



CodeHS

Response to:

RFP1421282045 Computer Science Curriculum
Iowa Department of Administrative
Services

Submitted by:

CodeHS

March 1, 2021

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Describe any order, judgment or decree of any Federal or State authority barring, suspending or otherwise limiting the right of the Respondent to engage in any business, practice or activity.	41
A list and summary of all litigation or threatened litigation, administrative or regulatory proceedings, or similar matters to which the Respondent or its officers have been a party.	41
Any irregularities discovered in any of the accounts maintained by the Respondent on behalf of others. Describe the circumstances and disposition of the irregularities. Failure to disclose these matters may result in rejection of the Proposal or termination of any subsequent Contract. The above disclosures are a continuing requirement of the Respondent. Respondent shall provide written notification to the Agency of any such matter commencing or occurring after submission of a Proposal, and with respect to the successful Respondent, following execution of the Contract.	42
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Describe the benefits to students and educators in terms of content and skills growth, attitudes and intentions.	77
Provide evidence of testing to show what measures were used to measure student learning, as a result of engaging with the curriculum.	77

Provide evidence of engaging learners who traditionally have been underrepresented in computer science, including but not limited to English Learners, persons of low income (FRL) and students with disabilities, as well as engaging learners to address race-ethnicity and gender gaps.	78
Provide evidence that participation in the curriculum resulted in positive learning outcomes for students.	79
In addition to student performance on AP exams mentioned above, students complete several full-length projects in every course. These projects help students begin their portfolio of work, which can be used as they apply to higher education or career opportunities. To see a few demos of what students complete throughout their coursework, visit codehs.com/demos/.	79
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Exhibit 1 - Transmittal Letter

March 1, 2021

**Iowa Department of Administrative Services
Hoover State Office Building, 3rd Floor
Des Moines, Iowa 50319**

CodeHS is pleased to respond to RFP1421282045 Computer Science Curriculum for the Iowa Department of Administrative Services. CodeHS fills the Agency's request because we provide a comprehensive solution for computer science education including a full software platform, computer science professional development, teacher tools and resources, and computer science curriculum for hundreds of thousands of students.

CodeHS understands and acknowledges the information provided by the Agency and is willing and able to accommodate the requirements relevant to this RFP, which will be demonstrated throughout this submission.

CodeHS is the most scalable way to offer high-quality computer science programs. We provide a complete platform including an online coding environment, student introductory level and AP curriculum that map to Iowa CS standards, lesson plans, progress tracking, grading, and PD.

There are currently over 27,000 monthly active classrooms on CodeHS and over 2 million students have learned to code using our platform. Classrooms all over the world are using CodeHS because of our professional development, clean and simple to use cloud interface, proven methodology to teach programming, and the ability to track and report on all aspects of the computer science program. CodeHS is already used throughout Iowa, with over 50 schools in the state currently using CodeHS to teach computer science. We believe that CodeHS is the best option for the Agency's computer science initiatives.

If you have any questions, please contact me. As Director of Sales, I attest to the accuracy of the information included in this submission and will serve as the principal contact for this proposal.

Sincerely,



Meg Davis, Director of Sales
CodeHS
747 N. La Salle Dr. Ste 500
Chicago, IL 60654
E: hello@codehs.com | Ph: 415-889-3376 | Fax: N/A

Exhibit 2 - Executive Summary

CodeHS is a web-based platform that provides everything a school or district needs to implement computer science. This proposal details our experience and qualifications, as well as an overview of our platform. CodeHS is currently used by schools in Iowa to teach computer science.

CodeHS offers multiple plans depending on how the platform is being used. Our curriculum and some basic platform features are available for free, and we also have many paid features available for individual school or district purchases. Additionally, we offer student certifications and teacher professional development training.

Overview of Services

Below is a list of the services CodeHS offers, which will be addressed throughout this submission.

Curriculum and Basic CodeHS Platform

This is our Free Plan, which provides access to all of the courses in our course catalog. On the free plan, teachers can enroll students, view and grade student code, and share feedback with students. Teachers can also create their own content and assign it to students on the Free Plan.

CodeHS Pro Plan

This refers to the paid platform features on CodeHS. There are many different license types available for the Pro plan depending on usage, all of which are detailed in our Cost Proposal. The Pro Plan features are described in the “Goods and Services” section of this proposal, and an overview is also available on our website at <https://codehs.com/pro>.

Free Plan vs. Pro Plan

You can find a detailed breakdown of platform features available on the Free and Pro plans on our website at https://codehs.com/info/plans_detail.

Professional Development

CodeHS offers multiple types of professional development, including asynchronous online courses as well as synchronous PD workshops led by our PD team. Due to the Covid-19 pandemic, PD workshops are currently being conducted virtually. When CodeHS and the Agency mutually agree it is safe to do so, CodeHS will also offer in-person PD workshops. Depending on the purchase, professional development opportunities may be free or paid.

Certifications

CodeHS also offers student certifications. These certifications are given by CodeHS when students pass a Certification Exam. Currently, there are five Certifications available: JavaScript, Python, Java, Web Design, and Cybersecurity. To take a certification exam, students must

redeem a certification exam voucher, which must be purchased by the school or district. Pricing details are included in our Cost Proposal.

Compliance

Respondent has read and understands the terms and conditions of this RFP, including the Contract provisions in Section 6.

All services proposed in this submission are services that the CodeHS team has experience delivering to schools and districts across the country.

If awarded a contract with the Agency, CodeHS will comply with the specifications of this RFP and with the terms and conditions of the contract. Our team has experience executing contracts with schools, districts, and state organizations and is able to ensure compliance to contract terms after a contract has been fully executed by both parties. Our sales, customer success, engineering, and operations departments will work together as needed to ensure compliance to all parts of any contract with the Agency.

Exhibit 3 - Firm Proposal Terms

As stated above, all services proposed in this submission are services that the CodeHS team has experience delivering to schools and districts across the country. The curriculum, platform features, training options, and any other services described in this proposal are currently available for purchase. Specific offerings are currently available for free, as detailed in this proposal. Any licenses or items that must be purchased will continue to be available at the price points listed in the attached Cost Proposal. All terms of this proposal, including price, will remain firm for at least 120 days following the submission deadline of this RFP.

Exhibit 4 - Respondent Background Information

Does your state have a preference for instate Contractors? Yes or No. If yes, please include the details of the preference.

No

Name, address, telephone number, fax number and e-mail address of the Respondent including all d/b/a's or assumed names or other operating names of the Respondent and any local addresses and phone numbers.

Name:

CodeHS

Address:

Jeremy Keeshin % CodeHS
747 N La Salle Dr. Ste 500
Chicago, IL 60654

Phone:

415-889-3376

Fax:

N/A

Email:

hello@codehs.com

Business name & Legal name:

CodeHS
CodeHS, Inc.

Form of business entity, e.g., corporation, partnership, proprietorship, or LLC.

C-corporation

Copy of W-9

<p>Form W-9 (Rev. October 2018) Department of the Treasury Internal Revenue Service</p>	<p>Request for Taxpayer Identification Number and Certification</p> <p>▶ Go to www.irs.gov/FormW9 for instructions and the latest information.</p>	<p>Give Form to the requester. Do not send to the IRS.</p>
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<p>Print or type. See Specific Instructions on page 3.</p>	<p>1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank. CodeHS, Inc.</p> <p>2 Business name/disregarded entity name, if different from above CodeHS</p> <p>3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only one of the following seven boxes.</p> <p><input type="checkbox"/> Individual/sole proprietor or single-member LLC</p> <p><input checked="" type="checkbox"/> C Corporation</p> <p><input type="checkbox"/> S Corporation</p> <p><input type="checkbox"/> Partnership</p> <p><input type="checkbox"/> Trust/estate</p> <p><input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶ _____</p> <p>Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is not disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.</p> <p><input type="checkbox"/> Other (see instructions) ▶ _____</p>	<p>4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):</p> <p>Exempt payee code (if any) _____</p> <p>Exemption from FATCA reporting code (if any) _____</p> <p><small>(Applies to accounts maintained outside the U.S.)</small></p>
	<p>5 Address (number, street, and apt. or suite no.) See instructions. 42A Dore St</p> <p>6 City, state, and ZIP code San Francisco, CA 94103</p> <p>7 List account number(s) here (optional)</p>	<p>Requester's name and address (optional)</p>

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number								
or								
Employer identification number								
4	5	-	5	3	4	1	3	6

Part II Certification

Under penalties of perjury, I certify that:

- The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
- I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
- I am a U.S. citizen or other U.S. person (defined below); and
- The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here	<p>Signature of U.S. person ▶ </p>	<p>Date ▶ 2/11/2021</p>
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General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to www.irs.gov/FormW9.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, later.

State of incorporation, state of formation, or state of organization.

CodeHS was incorporated in Delaware on May 10, 2012.

The location(s) including address and telephone numbers of the offices and other facilities that relate to the Respondent's performance under the terms of this RFP.

CodeHS
747 N La Salle Dr. Ste 500
Chicago, IL 60654

Number of employees.

45

Type of business.

CodeHS is a software company. We sell a web-based platform to help schools and districts teach computer science. We offer curriculum, a suite of teacher tools and resources, and professional development.

Name, address and telephone number of the Respondent's representative to contact regarding all contractual and technical matters concerning the Proposal.

Meg Davis
747 N La Salle Dr. Ste 500
Chicago, IL 60654
415-570-9434
hello@codehscom

Please note that contact by email or telephone is preferred for any contract matters.

Name, contact information and qualifications of any subcontractors who will be involved with this project the Respondent proposes to use and the nature of the goods and/or services the subcontractor would perform.

CodeHS will not be using subcontractors in connection with this project.

Respondent's accounting firm.

SFBay Financial

Awarded Respondent will be required to register to do business in Iowa before payments can be made.

CodeHS has registered with VSS. Our Vendor Number is VS000007099.

Exhibit 5 - Experience

The Respondent must provide the following information regarding its experience:

- *Number of years in business.*
- *Number of years of experience with providing the types of services sought by the RFP.*
- *The level of technical experience in providing the types of services sought by the RFP.*

Company Overview

CodeHS was founded in May of 2012 to make teaching computer science in K12 schools easier and more accessible. We believe that in the 21st century, coding is a foundational skill, just like reading and writing. That's why we say: Read, Write, Code. We do this by providing great curriculum, tools, and resources to teachers, students, and schools to implement high quality computer science programs. We believe that everyone should get the chance to learn to code, and that it's a skill that provides limitless creative opportunity to students. We want to help make computer science education fun and accessible, and believe you need both great tools as well as a great community to make this happen.

Since being founded almost 9 years ago, CodeHS has been successfully implemented in many different settings, from after-school clubs to district-wide multi-year pathways for thousands of students. To date, millions of students have learned to code using CodeHS. CodeHS is also used by teachers of all experience levels because we provide standards-aligned curriculum with lesson plans, while enabling teachers to customize their courses and adapt lessons based on their preferences or teaching style.

Our team has previous experience creating state-specific curriculum and PD workshops. Additionally, through our Certified Educator and Teacher Trainer programs, our team has experience partnering with current CS teachers to better understand their unique needs based on their state and local community.

Throughout the summer of 2020, CodeHS trained over 1,500 computer science teachers across the country. There are currently over 27,000 monthly active classrooms on our platform and millions of students who have learned to code through CodeHS. Our team has the capacity and experience necessary to support Iowa teachers in partnership with the Agency.

CodeHS Team - Departments

CodeHS has a team dedicated to providing the most comprehensive computer science resources for schools to offer computer science education. Our team consists of several departments that work together to ensure CodeHS users are having the best experience imaginable. The team that will deliver computer science curriculum and professional development to teachers and students in Iowa will consist of our curriculum, customer success,

customer support, professional development, and engineering teams.

Curriculum Team: Our curriculum engineers are responsible for student curriculums. They work to make sure our curriculum is up to date with current technologies and languages, as well as mapping to current standards offered. The curriculum engineers also work with the College Board, for AP level courses, to ensure our courses are aligned to College Board standards and provide the rigor set by them.

Director of Sales: Our Director of Sales is responsible for all items relating to Iowa's RFP, and any requirements during the award period. The Director of Sales will act as the main contact at CodeHS and provide any information and answers needed.

Customer Success Team: Our customer success managers are responsible for ensuring a successful implementation and rollout of computer science curriculum after award. The customer success management team consists of former teachers who can work one-on-one with teachers and administrators to help answer questions and strategize. They will work with schools in Iowa and provide relevant reports and data to help track and determine the success of the initiative. They can be reached via phone, email, chat to help with the needs of teachers.

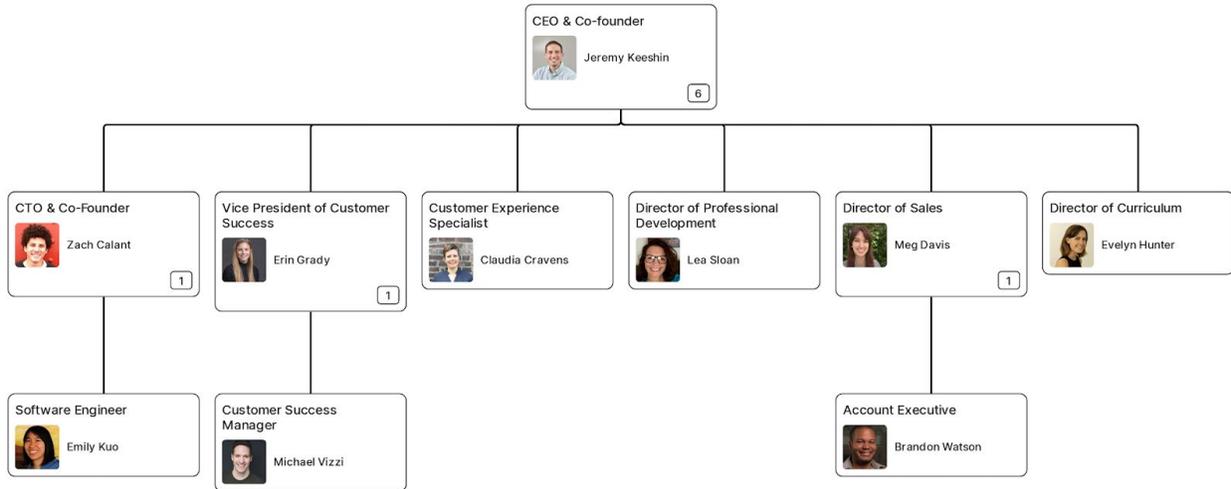
Customer Support: CodeHS has a full support team that is available through the chat system on CodeHS. If teachers are struggling, they send a link to a program to our support team and we can help them debug a program on which they are stuck. Because the chat icon is available within the platform, teachers are able to send these types of questions during class and get a quick response from our team. This kind of support is something that is unique to CodeHS.

Engineering: Our engineers are responsible for the stability of the platform. They work to correct any potential bugs in the codebase and ensure that servers are running and balanced to provide access to the Iowa's teachers and students.

Professional Development: Our professional development team is responsible for leading sessions built to empower teachers, new or experienced, with the skills, pedagogical knowledge, and confidence to start teaching computer science. They also provide feedback for our self paced professional development courses.

These departments will work together to support school customers. Each department has experience working cohesively to support implementations across multiple schools within a district and ensure the planning and clear communication needed to coordinate computer science program rollouts across several different campuses at the same time.

The following CodeHS organization chart shows all of the team members who will be working with Iowa schools:



Goods and Services

A list of all goods and/or services similar to those sought by this RFP that the Respondent has provided to other businesses or governmental entities.

Free Features

Curriculum

CodeHS offers a pathway of courses for grades 6-12 in Iowa, which can be found in the table below. Here is a link which provides more information: <https://codehs.com/info/states/iowa>

CodeHS Iowa 6-12 Computer Science Curriculum Pathway

Here are the CodeHS courses that align with Iowa middle school and high school computer science state standards for grades 6-12.

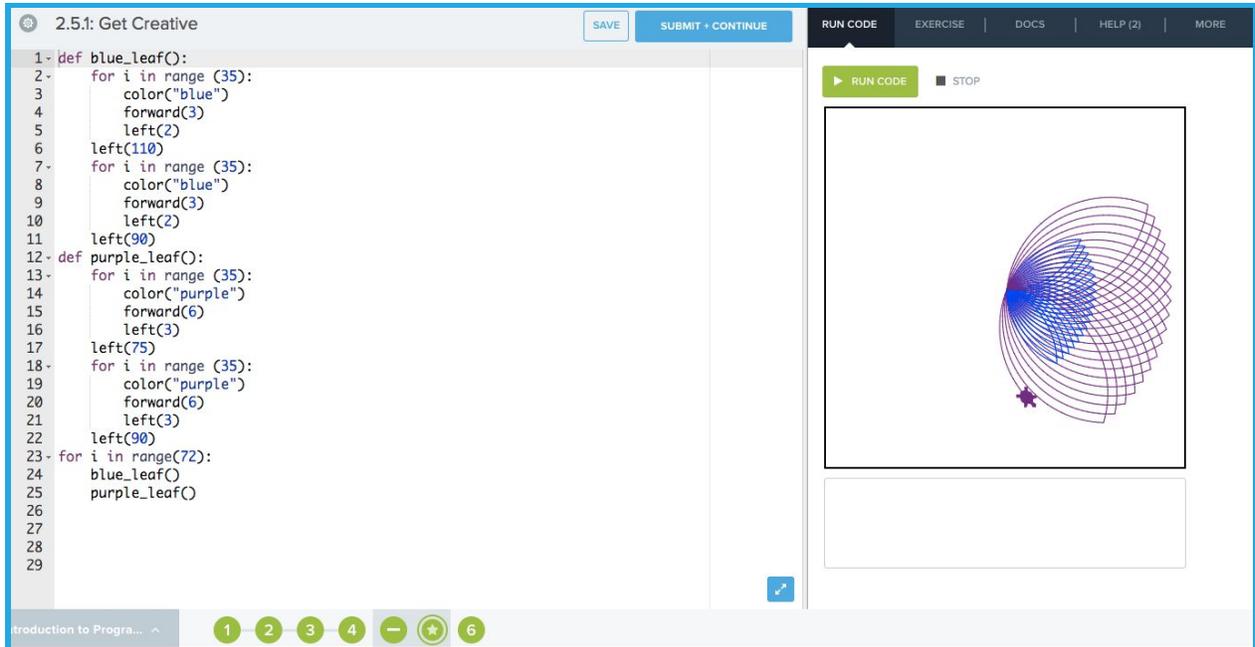
6th	7th	8th	9th	10th	11th	12th
Iowa Tech Apps and Coding						
			Iowa Course 3A			
				AP Computer Science Principles		
					Iowa Course 3B	
					AP Computer Science A (Nitro)	

Pre-Built Assessments

All of the CodeHS courses are designed with assessments built directly into the course. Every single lesson within every course has pre-built assessments to evaluate student comprehension of the concepts covered. Each course has multiple types of assessments, including pre-tests and

post-tests, multiple-choice exams, and project-based assessments that can be open-ended or provide direct instruction. Our curriculum team creates these assessments and maps them to many state and national standards, including the CSTA 6-12 Computer Science Standards

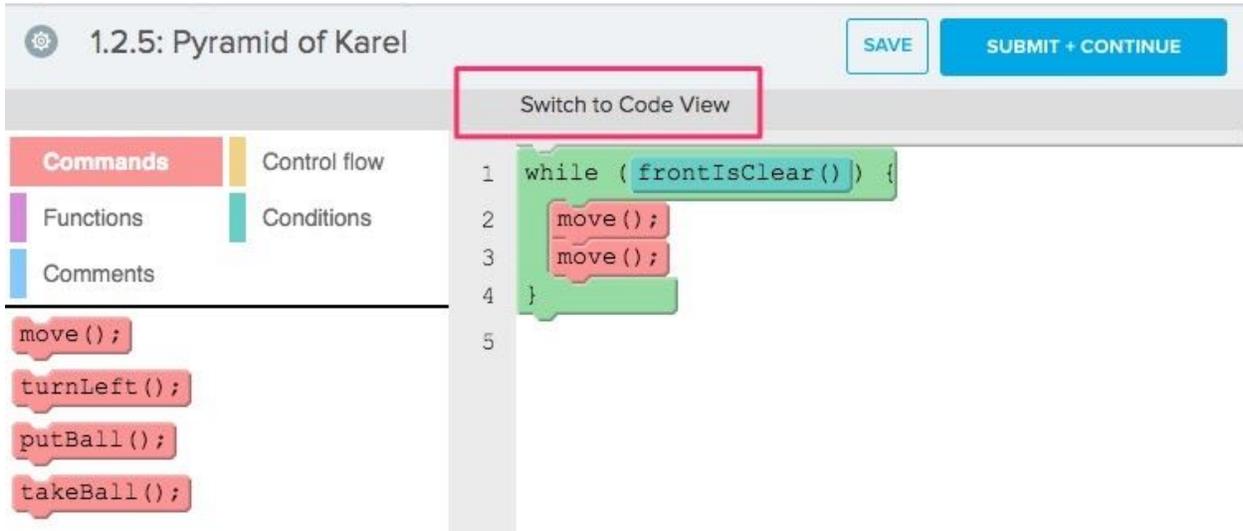
Outside of the course, there are additional pre-built assessments available for teachers to select from and assign to their students. This includes offline assessments and supplemental curriculum modules developed by our curriculum team, as well as an online repository of quiz questions and projects contributed by our teacher community.



Block Coding AND Script Coding Options for Student Progression

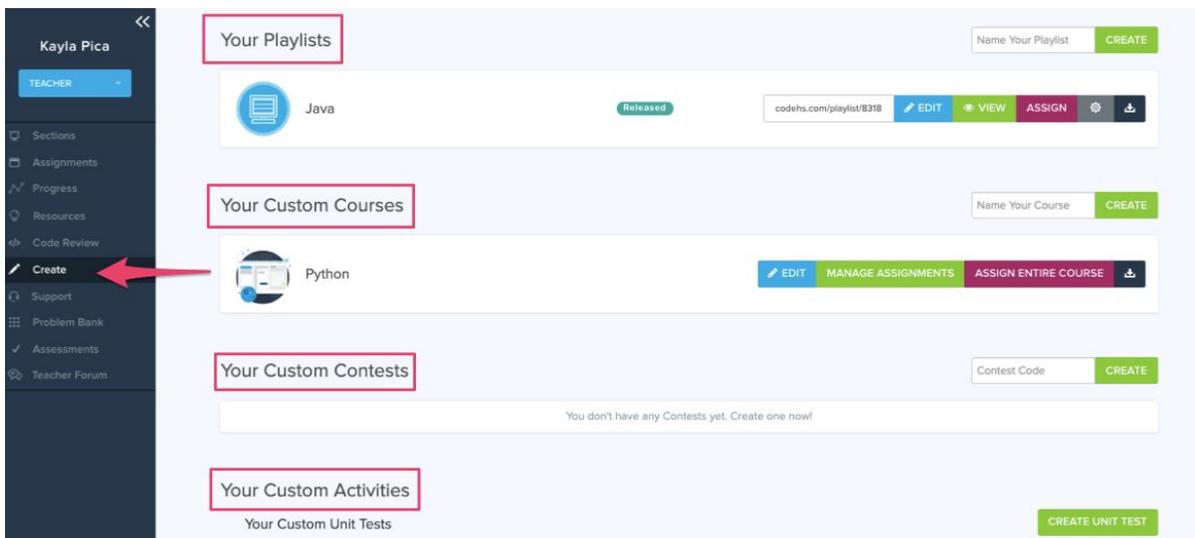
The table above displaying our 6-12 Computer Science Pathway denotes which courses include block coding options. Middle school courses (grades 6-8) allow students to choose between block and text coding throughout the full course. Most high school courses (grades 9-12) with blocks allow students to use blocks initially and then progress into text coding only.

When blocks are available, students can easily toggle between block and text coding to ease the progression from using blocks to text.



Customizable Instruction

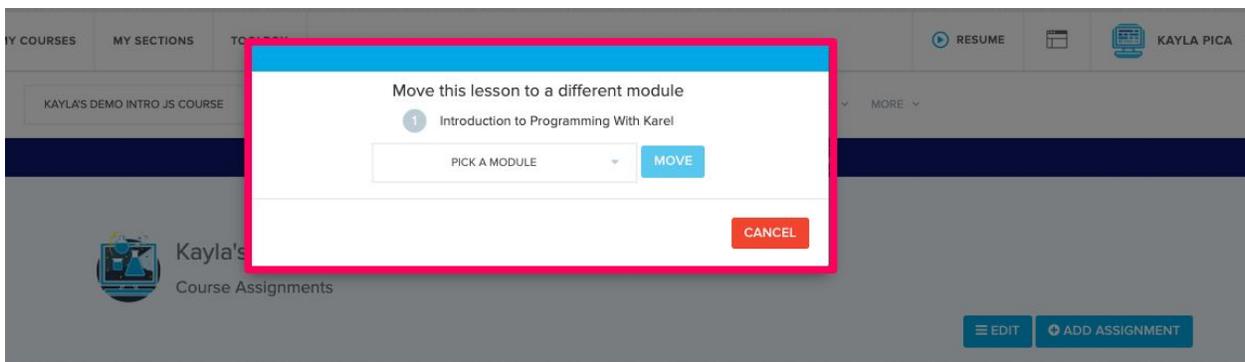
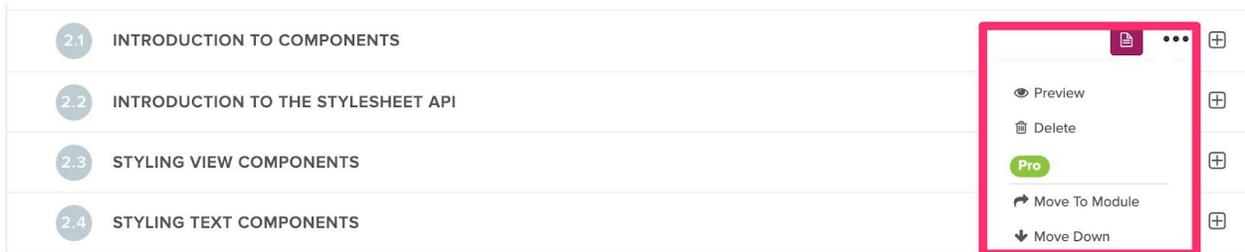
Using the Create tool, teachers can create online learning modules made up of their own quizzes, sample and exercise problems, and open-ended projects in a variety of different programming languages. Once teachers create the content, it's easy to assign it to students and utilize all of the other teacher tools to track progress, view student work, and provide feedback.



Teachers can remove or tweak course activities and assignments

Teachers also have full scope over modifying, removing, and moving content within their courses. Teachers can easily remove or reorder assignments as needed. Teachers can also add content that they have created, as mentioned above, or teachers can add content from a different CodeHS course or assignments that have been written by our teacher community and

contributed to our Problem Bank. More information on these capabilities is enclosed in this proposal within the Assessment Capabilities and Grading sections.



Student Help Portal--Students Can Request Help From Teacher After Classroom Hours and Can Post Code They Are Struggling With

Students can easily request help from their teacher outside of class through CodeHS. Directly within the code editor for every assignment, students can pull up the "Conversation" tab and ask for help. The conversation thread is located right next to the student's code, so both the student and teacher are able to view and run the code related to the student's question.

The screenshot shows the CodeHS interface for an exercise titled "1.2.4: Make a Tower". At the top left, it says "Status: Not Submitted". The code editor contains the following JavaScript code:

```

1 move();
2 turnLeft();
3 putBall();
4 move();
5 putBall();
6 move();
7 putBall();
8 move();
9 turnRight();
    
```

On the left, the "RESULT WORLD" shows a 10x10 grid with a Karel robot at (3,3) and three yellow balls at (3,4), (4,4), and (5,4). Below the grid is a "SHOW EXERCISE" button. Under "QUICK DOCS", the following code is listed:

```

move();
turnLeft();
putBall();
takeBall();
    
```

On the right, a sidebar shows a list of comments:

- CodeHS Student started on Feb. 21, 2020, 4:53 p.m.
- CodeHS Student commented on Feb. 21, 2020, 4:56 p.m. with the text: "I am stuck! Karel won't turn right."
- Pro Teacher (TEACHER) commented on Feb. 21, 2020, 5:01 p.m. with the text: "Yes, Karel still needs to be taught how to turnRight. Here is a hint--revisit to 4 Karel commands we learned in class. which one can you to change the direction Karel is facing?"

Auto Grading Availability

Within any coding exercise, students receive instant feedback from autograders, and have the opportunity to make adjustments to their programs until they have passed any autograder checks. CodeHS encourages teachers to implement mastery-based learning to ensure that students have an adequate understanding of prerequisite concepts before moving to advanced materials.

The screenshot shows the CodeHS interface for an exercise titled "3.5.8: Snowman". The code editor contains the following JavaScript code:

```

1 /* Constants representing the radius of the top, middle,
2  * and bottom snowball. */
3 var BOTTOM_RADIUS = 100;
4 var MID_RADIUS = 60;
5 var TOP_RADIUS = 30;
6
7 function start(){
8     var x = getWidth() / 2;
9     var y = getHeight();
10
11     var circleBot = new Circle(100);
12     circleBot.setPosition(x,y - 100);
13     circleBot.setColor(Color.gray);
14     add(circleBot);
15
16     var circleMid = new Circle(60);
17     circleMid.setPosition(x,y - 260);
18     circleMid.setColor(Color.gray);
19     add(circleMid);
20
21     var circleTop = new Circle(30);
22     circleTop.setPosition(x,y - 350);
23     circleTop.setColor(Color.gray);
24     add(circleTop);
25
26     var leftEye = new Circle(3);
27     leftEye.setPosition(x - 12, y - 360);
28     leftEye.setColor(Color.black);
29     add(leftEye);
30
    
```

On the right, a sidebar with a "GRADING" tab shows the following test cases, all marked as "Success":

- Your snowman should be composed of three circles.
- Your bottom circle should have a radius of 100 and sit on the bottom of the canvas no matter the dimensions.
- Your middle circle should have a radius of 60 and sit on top of the bottom circle no matter the dimensions.
- Your bottom circle should have a radius of 30 and sit on top of the middle circle no matter the dimensions.
- Your bottom circle should have a radius of 100 and sit on the bottom of the canvas no matter the dimensions.
- Your middle circle should have a radius of 60 and sit on top of the bottom circle no matter the dimensions.

Paid Features

Aside from our free curriculum offerings, we also offer a Pro Plan, which gives teachers additional tools and resources to manage their class. A description of some of these features is below. You can also read about these features on our website at: <https://codehs.com/pro>.

Ability for Teacher to Lock and Unlock Units to Control Access

The Access Controls page lets you set Visibility at the module, lesson, or item (assignment) level. Everything in a course defaults to being Available. If you want to lock a module, you can simply click the dropdown for that module and choose “Locked.” Using this setting, teachers are also able to Schedule access to be available at specific dates and times, and then schedule when access should be locked again. Whenever an assignment or module is locked, students will be directed to a page letting them know that the item is locked.

	Visibility	Availability Start Date/Time	Availability End Date/Time
▶ PROGRAMMING WITH KAREL	Available	<input type="text"/>	<input type="text"/>
▶ KAREL CHALLENGES	Available	<input type="text"/>	<input type="text"/>
▶ JAVASCRIPT AND GRAPHICS	Locked	<input type="text"/>	<input type="text"/>
▶ JAVASCRIPT CONTROL STRUCTURES	Scheduled	<input type="text"/>	<input type="text"/>

🔒 This assignment is locked 🔒

Your section **Period 1** has locked this activity. You will be able to view and complete it once your teacher releases the activity.

[RETURN TO ASSIGNMENTS PAGE](#)

Ability to Track Students' Progress

Teachers are able to view dashboards and monitor student progress and performance. When viewing student progress, teachers are able to view the status of each assignment for every student (not started, submitted, graded, re-submitted). Teachers are able to click through to a specific assignment if they wish to view the student's submission.

Our customizable gradebook allows teachers to add and remove assignments from the gradebook, customize points awarded and total possible points for every assignment, and export all of this data to an Excel or CSV file.

The screenshot shows a progress tracking interface for 'Tracy's Demo Intro JS Course'. At the top, it displays 'Tracy's Demo Section' and 'MODULE: PROGRAMMING WITH KAREL'. There are 'EXPORT EXCEL' and 'EXPORT CSV' buttons. A key indicates progress status with colored dots: green (not started), yellow (submitted), pink (graded), and grey (re-submitted). The dashboard lists modules from 1.1 to 1.5.1. A table below shows progress for students: Liam Davis, Dirk Garcia, Ava Jackson, Mason Lee, Logan Moore, Dirk Thomas, and Mia Thomas. Annotations include: 'Filter progress by module' pointing to the module filter, 'Export progress data' pointing to the export buttons, and 'View student program' pointing to a student's progress row.

Student	1.1 Introduction to Progr...	1.1.1 Introduction to Progr...	1.1.2 Quiz: Karel Comm...	1.1.3 Our First Karel Comm...	1.1.4 Your First Karel Progr...	1.1.5 Short Stack	1.2 More Basic Karel	1.2.1 More Basic Karel	1.2.2 More Basic Karel	1.2.3 Tennis Ball	1.2.4 Make a Tower	1.2.5 Pyramid of Karel	1.3 Karel Can't Turn Right	1.3.1 Karel Can't Turn Right	1.3.2 Karel Can't Turn Right	1.3.3 Tower and Turn Rig...	1.3.4 Slide Karel	1.3.5 Firemen Karel	1.3.6 Karel Turns Right Ba...	1.4 Functions in Karel	1.4.1 Functions in Karel	1.4.2 Functions in Karel	1.4.3 Functions in Karel	1.4.4 Functions in Karel	1.4.5 The Start Fun...	1.5.1 The r...		
Liam Davis	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Dirk Garcia	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Ava Jackson	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Mason Lee	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Logan Moore	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Dirk Thomas	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Mia Thomas	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Tracy's Demo Intro JS Course > Tracy's Demo Section

Gradebook for Section: Tracy's Demo Section

MODULE: PROGRAMMING WITH KAREL

EXPORT EXCEL CSV

EDIT SETTINGS

KEY ● ● ● ● ● ●

Edit the point value for assignments

Export Gradebook data to your LMS

Remove assignments from the Gradebook

View student submissions & adjust grades

Students	Letter Grade	%	Total Earned	Total Graded	Total Possible	1.1 Introduction to Programmin...	1.1.1 Introduction to Programmin...	1.1.2 Quiz: Karel Commands	1.1.3 Our First Karel Program	1.1.5 Short Stack	1.2 More Basic Karel	1.2.2 More Basic Karel Quiz	1.2.3 Tennis Ball Square	1.2.4 Make a Tower	1.2.5 Pyramid of Karel	1.3 Karel Can't Turn Right	1.3.1 Karel Can't Turn Right	1.3.2 Karel Can't Turn Right	1.3.3 Tr...		
Max Points						10	1	5	6		4	4	9	9		6	2	2	6	7	7
Liam Davis	A+	99.52%	414.0	416	534	10	1	5	--		4	4	--	9		6	2	2	6	7	--
Dirk Garcia	A+	98.74%	471.0	477	526	10	1	5	--		4	4	--	8		6	2	2	6	7	--
Ava Jackson	A-	92.59%	75.0	81	534	10	1	5	5		2	4	--			2	2	--	--	--	--
Mason Lee	A+	100.78%	30.0	129	534	10	1	5	--		--	4	--			2	6	7	--	--	--
Logan Moore	A	95.06%	77.0	81	534	10	1	5	7		2	4	--			2	--	--	--	--	--
Dirk Thomas	A+	100.0%	129.0	129	534	10	1	5	--		--	4	--			--	2	6	7	--	--

Complete Lesson Plans

CodeHS provides complete lesson plans for every lesson, which include several resources such as solution references, glossaries, teacher-facing problem (assignment) guides, lesson modifications for differentiation, discussion questions, and more.

Problem Guides
Refer to the problem guides for a more in-depth look at this lesson's problems.

Problem Guide	
1.2.4 Make a Tower	Free
1.2.5 Pyramid of Karel	Free

Vocabulary
These are the key terms for this lesson.

Term	Definition
lowerCamelCase	lowerCamelCase is a naming convention where the first letter is lower case, and each subsequent start of a word is upper case.
World	A "world" or "Karel World" is a grid that karel lives in.
Karel	Karel is a dog who listens to your commands.
Command	A command is an instruction you can give to Karel.

Textbook Resources
CodeHS has a textbook for this course! Click on the link to open a new tab with the corresponding lesson section of the textbook.

Textbook
More Basic Karel

Solution References
Refer to the solution reference for a more detailed look at exercise solutions.

Solution Reference
1.2.4 Make a Tower

See examples below of each resource for reference:

Objectives

Every Lesson Plan includes the lessons objectives:

Objective

Students will be able to...

- Explain what variables are and what they are used for
- Create their own variables
- Print out the values stored in variables

Online Textbook for Reference

The CodeHS Lesson Plan links to the corresponding lesson in our online textbook.

The screenshot shows a lesson page for 'Variables' on CodeHS. On the left is a navigation menu with a table of contents including 'Introduction', '1. Programming with Karel', and sub-sections 1.1 through 1.12. The main content area has a title 'Variables' and a sub-section 'What Are Variables?'. The text explains that variables are like boxes for storing values and provides an example of buying nails. A code block shows a variable named 'Number of Nails I Need' with the value '53'.

Discussion (Focus) Questions

Ever Lesson Plan includes discussion questions to use during class:

Discussion Questions

Beginning of Class:

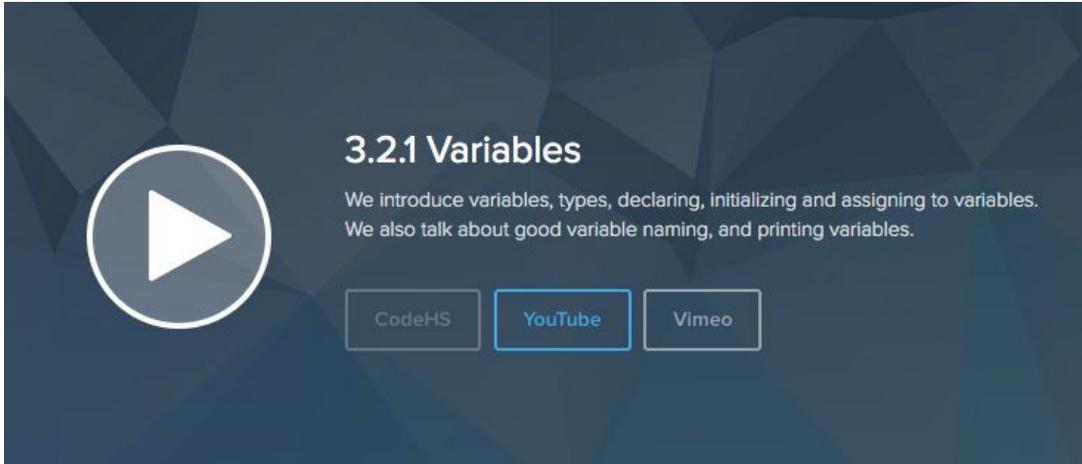
- What are some mathematical formulas that you know that use variables in them?
 - $y = mx + b$
- What is a variable in mathematical terms, and what is its purpose?
 - *Variables are used to represent a numerical value or formula. We use them as placeholders so that when the actual values that are being input are known, we can easily place them in the correct location in a particular formula. They are also useful to help organize information and store data.*

End of Class:

- What are the different variable types that can be used in Javascript?
 - *Booleans, ints, doubles, Strings*
- How would you create a variable named `myDog` and give it the value "Karel"?
 - `*var myDog = "Karel";`
- How would you print out the value stored inside of a variable named `numApples`?
 - `*println(numApples);`
- Why might variables be useful in our programs?
 - *Variables are useful because they allow us to store data, and change the results of a program depending on the input that is provided. This way we can create formulas that are executed rather than have to write new programs every time we want to change the numbers that are involved.*

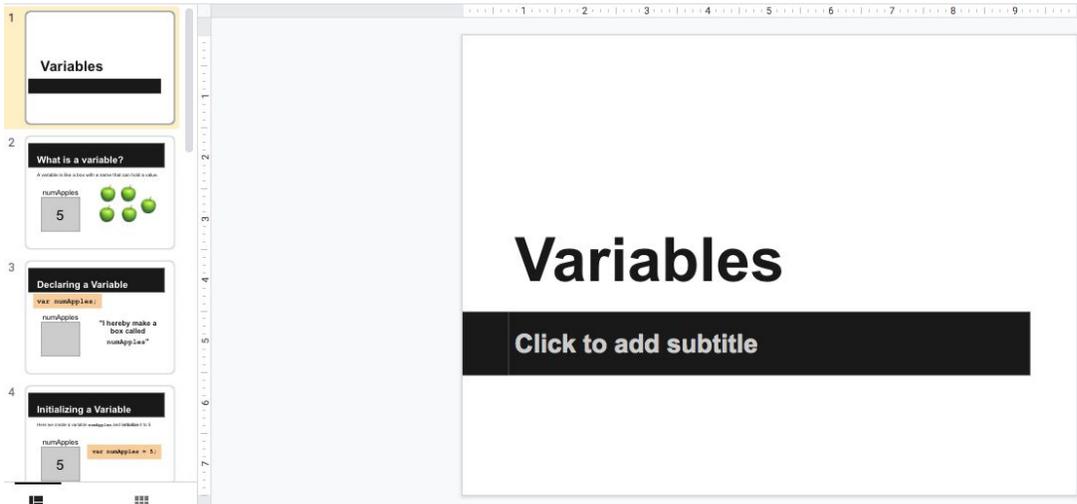
Video-Based Instruction When Needed (for absent students or students who need to listen to a lecture more than once)

Video-based instruction is available for every lesson. Videos are available through multiple sites, including directly through the CodeHS site.



Instructional Slides for Presentations/Lectures

The slide deck for every lesson is accessible on the Lesson Plan:



Learning Activities

Every Lesson Plan suggestions learning activities:

Teaching and Learning Strategies

Lesson Opener:

- Write a simple mathematical equation on the board that uses variables. Ask students what information they need to know in order to solve a mathematical equation, then ask them why mathematics includes variable values. [5 mins]
 - Consider using the beginning of class discussion questions to aid in this conversation.

Activities:

- Watch Variables video as a class and complete the corresponding quiz. [5 - 6 mins]
 - After the video, ask students to share with a partner how variables might be used in computer programs. Push students to think about how Facebook or mobile apps use variables.
- Have students explore *Basic Variables*. [3 mins]
 - Point out to students that the variable `numApples` changes value during the example. This shows how variables can be manipulated and changed after they are given an initial value.
- Complete *Daily Activities*. [5-7 mins]
 - Students may struggle with concatenating the String values that they will create in this exercise. Have students write out the full sentence that they want to write on paper, then remove the words that are represented by variables. The rest of the words should be written in String values in the `println` statement.

Lesson Closer:

- Have students complete the end of class discussion questions. [5- 7 mins]

Coding Solutions

Assignment code solutions are available in every Lesson Plan. Along with the solution, teachers can find common questions students have about each exercise and how to answer them.

Solution

```
function start(){
  var partOfDay = 'morning';
  var time = 8;
  println("In the " + partOfDay + " I wake up at " + time);

  partOfDay = 'afternoon';
  time = 12;
  println("In the " + partOfDay + " I eat lunch at " + time);

  partOfDay = 'evening';
  time = 10;
  println("In the " + partOfDay + " I go to sleep at " + time);
}
```

Common Questions

Question	Answer
Be sure to use a plus sign '+' when printing different items in a single println line (also called "concatenation").	To print some text and then a variable, the student should write something like: <code>println("Here is the text " + variableName)</code> . The plus sign can be used to combine different items into one printed line.
The variables holding the part of day and the time values should change throughout the program.	This helps demonstrate that the value of variables do not affect one another when changed.

Handouts

Lesson Plans include both student and teacher (with answer key) facing handouts.

Modification: Advanced

- Create a Karel program using an if/else statement in the Sandbox.

Modification: Special Education

- Allow students to use the Function Flowchart to track how the functions are called in the example exercises
- For Right Side Up, exercise, provide a partial solution by showing students the condition that will be used and allow students to write the commands that will follow.

Modification: English Language Learners

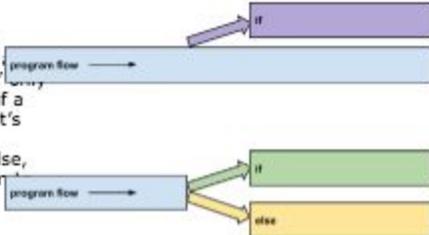
- Print out video slides and have students use dictionary to translate unknown vocabulary
- Pair programming with another student



To If, or Not to If

Corresponding Material
Programming with Karel, Lesson 11: If/Else Statements

Discussion
Understanding the difference between if and if/else can be a little difficult at first. Using 'if' causes a change in program if a certain condition is true -- if it's not true, the program flow continues uninterrupted. If/else, however, forces your program to choose between paths.



Class Exercise
It may seem that there is not a significant difference between if and if/else, but there are some significant (and unintended) consequences if you use the wrong conditional. For example, say you're trying to decide whether to eat or sleep:

```

if I am hungry
  eat food
if I am sleepy
  take a nap
    
```

```

if I am hungry
  eat food
else
  take a nap
    
```

The code on the left may seem reasonable... but what if you're both hungry *and* sleepy? You end up taking a nap and eating! The code on the right does what we need it to do.

Circle the correct conditional for Karel in each situation below:

1	If there is a ball present, Karel should take it. If there is no ball present, Karel should turn around.	if if, if if/else
2	If there is a ball present, Karel should take it. If the front is clear, Karel should move forward.	if if, if if/else
3	If there is a ball, Karel should take it. Otherwise, Karel should move forward.	if if, if if/else
4	If the front is clear, Karel should move forward. Otherwise, Karel should turn around.	if if, if if/else

Teaching Strategies

(also pictured above with Learning Activities)

Every Lesson Plan suggests teaching strategies for the lesson.

Teaching and Learning Strategies

Lesson Opener:

- Write a simple mathematical equation on the board that uses variables. Ask students what information they need to know in order to solve a mathematical equation, then ask them why mathematics includes variable values. [5 mins]
 - Consider using the beginning of class discussion questions to aid in this conversation.

Activities:

- Watch Variables video as a class and complete the corresponding quiz. [5 - 6 mins]
 - After the video, ask students to share with a partner how variables might be used in computer programs. Push students to think about how Facebook or mobile apps use variables.
- Have students explore *Basic Variables*. [3 mins]
 - Point out to students that the variable `numApples` changes value during the example. This shows how variables can be manipulated and changed after they are given an initial value.
- Complete *Daily Activities*. [5-7 mins]
 - Students may struggle with concatenating the String values that they will create in this exercise. Have students write out the full sentence that they want to write on paper, then remove the words that are represented by variables. The rest of the words should be written in String values in the `println` statement.

Lesson Closer:

- Have students complete the end of class discussion questions. [5- 7 mins]

Modification Ideas

Every Lesson Plan suggests modification strategies for remediation, accelerated learning, or ELL students.

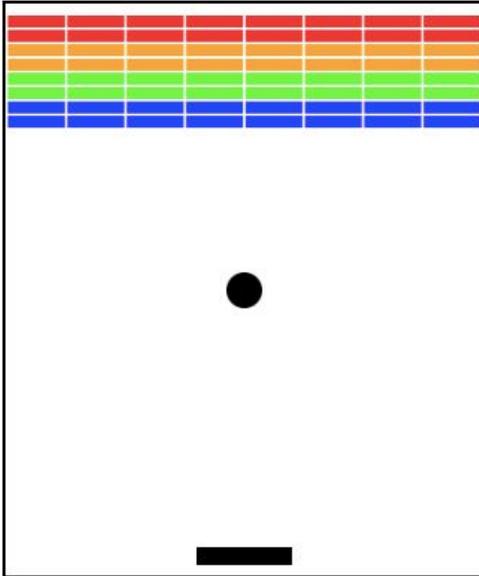
Open-Ended Projects to Inspire Students to Create and Apply Progressive Knowledge

Lesson Plans include guidance on the open-ended projects within the CodeHS curriculum:

Exercise 11.1.3: Breakout 10 points

Program Result

▶ RUN DEMO ■ STOP



Overview

[\(You can find your previous code here!\)](#)

The last part of the game is to get collisions working. You should remove bricks when the balls collide with them. This is VERY similar to bouncing the ball.

You just need to use the `getElementAt(x, y)` function to see if there is an element where the ball is. If the element is not null, then you can remove it with the remove function.

You also need the ball to bounce up if it collides with the paddle.

You want to check the four corners around the ball to see if there is an element there.

Last, there are just some miscellaneous things you can do:

- Pause the ball when it gets reset until you click. Kind of like the *Pause Ball* exercise.
- Stop the game after the ball falls to the bottom 3 times.
- Stop the game when all the bricks are removed.
- Display messages on the screen when you win or lose.

Then, you can just go crazy with extensions like these, if you're feeling up to it.

- Display a score
- Add powerups

Assessment Reports

Students are assessed within the CodeHS courses based on video quizzes, coding exercises, free-response questions, and end-of-unit quizzes. Teachers can give formative feedback directly in the code editor for students to see, and teachers can help students debug code and give final grades on coding exercises.

Teachers can use the many progress tracking tools available on Pro to track exactly where students are in a given course and can run a self-paced or more traditional class to assess their students. The CodeHS assessment tools and reports give teachers access to exactly the data teachers need to determine what curricular areas students need more support with. The CodeHS customizable Gradebook makes it easy to turn student progress and performance on CodeHS into a grade and to export that data to any external system.

Screenshots detailing report functionality have been included throughout this proposal. CodeHS dashboards are exportable to an Excel or CSV file. Upon request, CodeHS can create CSV reports in alternate formats specified by the school or district.

Tracy's Demo Intro JS Course > Tracy's Demo Section

Gradebook for Section: Tracy's Demo Section

MODULE: PROGRAMMING WITH KAREL

EXPORT EXCEL CSV

EDIT SETTINGS

KEY ● ● ● ● ● ●

Students

Max Points	Letter Grade	%	Total Earned	Total Possible	1.1 Introduction to Programmin...	1.1.1 Introduction to Programmin...	1.1.2 Quiz: Karel Commands	1.1.3 Our First Karel Program	1.1.5 Short Stack	1.2 More Basic Karel	1.2.2 More Basic Karel Quiz	1.2.3 Tennis Ball Square	1.2.4 Make a Tower	1.2.5 Pyramid of Karel	1.3 Karel Can't Turn Right	1.3.1 Karel Can't Turn Right	1.3.2 Karel Can't Turn Right	1.3.3 Tr...	
Liam Davis	A+	99.52%	414.0	416	534	10	1	5	6	4	4	9	9	6	2	2	6	7	7
Dirk Garcia	A+	98.74%	471.0	477	526	10	1	5	6	4	4	8	9	6	2	2	6	7	--
Ava Jackson	A-	92.59%	75.0	81	534	10	1	5	5	2	4	--	--	2	2	--	--	--	--
Mason Lee	A+	100.78%	30.0	129	534	10	1	5	--	--	4	--	--	2	2	6	7	--	--
Logan Moore	A	95.06%	77.0	81	534	10	1	5	7	2	4	--	--	2	--	--	--	--	--
Dirk Thomas	A+	100.0%	129.0	129	534	10	1	5	--	--	4	--	--	--	2	6	7	--	--

Grading

Built-in Gradebook Included

The CodeHS platform includes a powerful customizable gradebook. Our customizable gradebook allows teachers to add and remove assignments from the gradebook, customize points awarded and total possible points for every assignment, and export all of this data to an Excel or CSV file.

There are several settings teachers can customize within their gradebook so that their gradebook displays the exact assignments in the exact way that each individual teacher desires. Specific assignments can be removed individually, or in bulk based on the assignment type--for example, a teacher can choose whether or not to include all video assignments in the gradebook. Additionally, teachers can choose what is actually displayed in the gradebook and whether or not students have access to their grade report.

Tracy's Demo Intro JS Course > Tracy's Demo Section

Gradebook for Section: Tracy's Demo Section

MODULE: PROGRAMMING WITH KAREL

EXPORT EXCEL CSV

Export Gradebook data to your LMS

Edit the point value for assignments

Remove assignments from the Gradebook

View student submissions & adjust grades

EDIT SETTINGS

KEY ● ● ● ● ● ●

Students

Letter Grade	%	Total Earned	Total Graded	Total Possible	1.1 Introduction to Programmin...	1.1.1 Introduction to Programmin...	1.1.2 Quiz: Karel Commands	1.1.3 Our First Karel Program	1.1.5 Short Stack	1.2 More Basic Karel	1.2.2 More Basic Karel Quiz	1.2.3 Tennis Ball Square	1.2.4 Make a Tower	1.2.5 Pyramid of Karel	1.3 Karel Can't Turn Right	1.3.1 Karel Can't Turn Right	1.3.2 Karel Can't Turn Right	1.3.3 Tr...	
Max Points					10	1	5	6		4	4	9	9		6	2	2	6	7
Liam Davis	A+	99.52%	414.0	416	534	10	1	5	--	4	4	--	9		6	2	2	6	7
Dirk Garcia	A+	98.74%	471.0	477	526	10	1	5	--	4	4	--	8		6	2	2	6	7
Ava Jackson	A-	92.59%	75.0	81	534	10	1	5	5	2	4	--	--		2	2	--	--	
Mason Lee	A+	100.78%	30.0	129	534	10	1	5	--	--	4	--	--		2	6	7	--	
Logan Moore	A	95.06%	77.0	81	534	10	1	5	7	2	4	--	--		2	--	--	--	
Dirk Thomas	A+	100.0%	129.0	129	534	10	1	5	--	--	4	--	--		--	2	6	7	

MY COURSES MY SECTIONS

PRO'S DEMO SECTION

Pro's Demo Intro JS Course > P

KEY ● ● ● ● ● ●

ALL STUDENTS

SORT BY: LAST NAME

EDIT SETTINGS

Points

Activity Type

Logan Anderson

Dirk Garcia

Sophia Jones

Emma Moore

Oliver Swift

Noah White

Sophia White

Sophia Wilson

Configure Your Gradebook

Include in Gradebook:

This setting controls which types of assignments are in the gradebook. This will remove all unchecked types from your gradebook, and they will not be included in the computation of grades.

Videos Exercises

Quizzes Challenges

Examples Badges

Other Free Responses

Display Settings:

This setting controls whether quizzes and exercises are displayed in the gradebook. This does not remove them from your gradebook, and they are still included in the computation of grades.

Display All

Display only: Quizzes Exercises Challenges Free Responses

Student Permissions:

This setting controls whether students can see their grade report for this section. View more information [here](#).

Students can view their grade report:

Late Assignments:

This setting controls whether all assignments automatically receive a zero after the due date. An assignment can still be manually graded after the due date. Checking this box will also retroactively give all late unopened or not submitted assignments a zero.

All late assignments are finalized to zero:

Grade Calculations:

NEW This setting controls how the final percentage grade is calculated.

Earned points out of total graded points:

Earned points out of total possible points:

Unchecking this setting will hide the letter grade from the gradebook and students' grade reports.

Display letter grade:

RESUME

PRO TEA

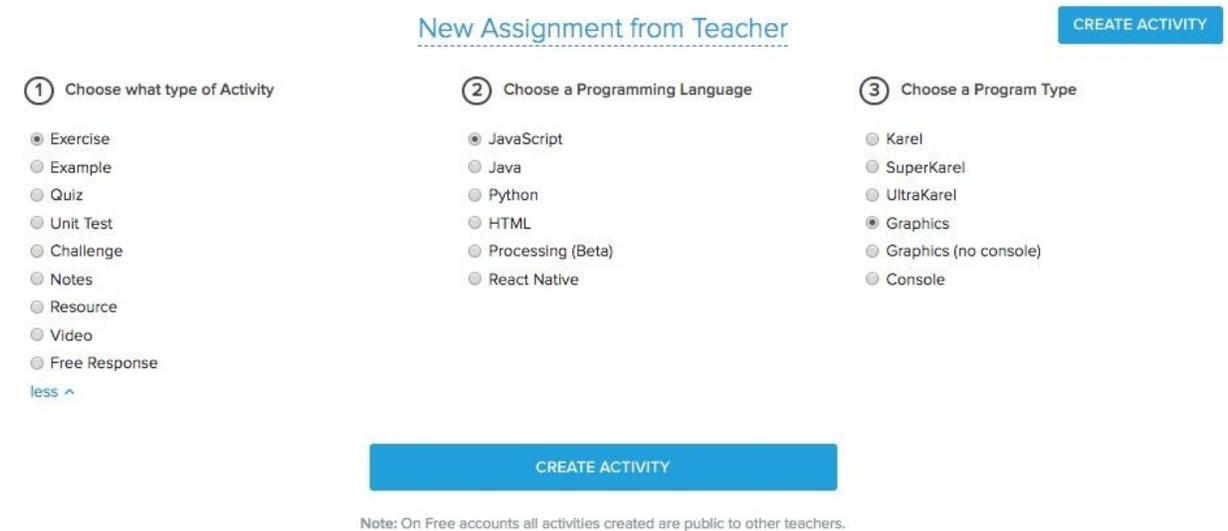
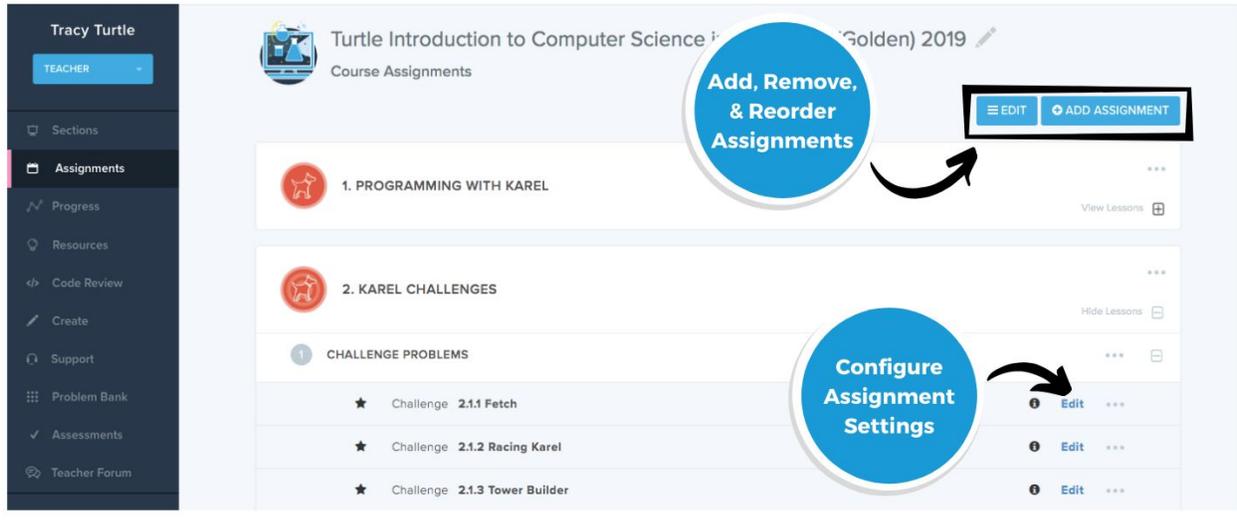
SETTINGS MORE

MODULE: PROGRAMMING WITH KAREL LESSON: ALL LESSONS

1.3.4 Pancakes with Start	1.6.4 The Two Towers	1.7.4 The Two Towers + Comme...	1.8.4 The Two Towers + Comme...	1.9.5 Take 'em All	1.9.6 Drizzy Karel	1.9.7 Ball in Each Corner	1.9.8 Lots of Hurdles	1.10.5 Is There
6	6	10	9	5	6	8	5	8
6	6	--	--	--	--	--	--	--
6	6	10	9	5	6	--	5	--
6	6	--	--	--	--	--	--	--
6	6	10	9	5	6	--	5	8
--	--	--	--	--	--	--	--	--
6	6	10	9	5	6	--	5	--
--	--	--	--	--	--	--	--	--
6	6	10	9	5	6	--	5	8

Includes Teacher Ability to Add Their Own Assignments

Teachers can easily add their own assignments to CodeHS and incorporate them into the CodeHS course they are teaching. Teachers can create assignments of any type--such as uploading supplemental videos to watch, creating quizzes, creating exercises and open-ended projects, or providing resources for students to review.



Allows Editing Point Values For Assignments

Teachers can easily edit the assigned point values for assignments. This can be done from the assignment's settings page, or directly in the customizable gradebook.

Edit point values for assignments

Activity Type	Points
Letter Grade	
%	
Total Earned	
Total Possible	
11.4 Your First Karel Program	7
11.5 Short Stack	6
12.4 Make a Tower	9
12.5 Pyramid of Karel	9
13.4 Slide Karel	8
13.5 Fireman Karel	7
14.4 Pancakes	6
14.5 Mario Karel	5
15.4 Pancakes with Start	6
16.4 The Two Towers	6
17.4 The Two Towers	10
18.4 The Two Towers + Co...	9
19.5 Take 'em All	5
19.6 Dizzy Karel	6
19.7 Ball in Each Corner	8
19.8 Lots of Hurdles	5
110.5 Is There	8
	4

Can Set Custom Due Dates

Teachers are able to set due dates for any assignment. Due dates can be customized by assignment, class, and even student. Teachers can set the same due date for the entire class or can update a due date for specific students if needed to allow for extensions due to absences or any other circumstances.

Edit due dates by Class

Due dates by activity

Activity	Due Date
PROGRAMMING WITH KAREL	02/25/2020
KAREL CHALLENGES	03/03/2020
JAVASCRIPT AND GRAPHICS	Mixed
HELLO WORLD	Mixed
Video Hello World	03/05/2020
Quiz Hello World Quiz	03/05/2020
Example Hello World	03/05/2020
Exercise Your Name and Hobby	03/06/2020

3.3.4 Dinner Plans

Configure per-student settings for **Pro's Demo Section**. [Click Here to Edit Assignment for All Sections](#)

Individual Student Settings

	Assigned Pro	Due Date Pro	Copy/Paste Prevention Pro	Allow Blocks	Availability Pro
Dirk Garcia	<input checked="" type="checkbox"/>	WED 3/11/20	<input type="checkbox"/> x	<input type="checkbox"/> x	Locked
Emma Moore	<input checked="" type="checkbox"/>	MON 3/09/20	<input type="checkbox"/> x	<input type="checkbox"/> x	Locked
Logan Anderson	<input checked="" type="checkbox"/>	MON 3/09/20	<input type="checkbox"/> x	<input type="checkbox"/> x	Locked
Noah White	<input checked="" type="checkbox"/>	MON 3/09/20	<input checked="" type="checkbox"/>	<input type="checkbox"/> x	Locked
Oliver Swift	<input checked="" type="checkbox"/>	MON 3/09/20	<input type="checkbox"/> x	<input type="checkbox"/> x	Locked
Sophia Jones	<input checked="" type="checkbox"/>	MON 3/09/20	<input type="checkbox"/> x	<input type="checkbox"/> x	Locked
Sophia White	<input checked="" type="checkbox"/>	MON 3/09/20	<input type="checkbox"/> x	<input type="checkbox"/> x	Locked
Sophia Wilson	<input checked="" type="checkbox"/>	MON 3/09/20	<input type="checkbox"/> x	<input type="checkbox"/> x	Locked

Additionally, teachers can decide which exercises they wish to grade manually in addition to the autograders that will always be in place. This allows teachers to customize settings so that some exercises are *only* auto-graded and will not appear in the teacher's grading queue at all. Assignments teachers set to be auto-graded will automatically give credit to students that pass the auto graders.

Pro's Demo Intro JS Course

Grading settings allow you to choose which assignments you'd prefer to review manually. Editing the grading settings below will apply changes to **ALL** sections for this course.

Teacher Graded

These are assignments you'd like to manually review and score. Students still need to pass all test cases before submitting. To start grading submissions for these assignments, visit [Fast Grade](#).

Automatically Graded

Once submitted, these assignments will be automatically given full credit. Students will need to pass all test cases in order to submit and receive a score.

Assignment Grader

PROGRAMMING WITH KAREL	TEACHER	AUTO
KAREL CHALLENGES	TEACHER	AUTO
JAVASCRIPT AND GRAPHICS	TEACHER	AUTO MIXED

CodeHS also has many Professional Development opportunities. These include free virtual workshops which are held throughout the year, self paced professional development courses, which you can find here: <https://codehs.com/info/pd/online>. Schools and districts also have the opportunity to purchase private professional development workshops for their staff, cost of which

will vary depending on number of attendees and length of session.

Letters of Reference

Letters of reference from three (3) previous or current customers or clients knowledgeable of the Respondent's performance in providing goods and/or services similar to the goods and/or services described in this RFP and a contact person and telephone number for each reference.

Reference letters can be found on the following pages.

Blue Valley Schools



To the Iowa Department of Education:

I would like to lend Blue Valley's support to the response and proposal you are receiving from CodeHS for "Computer Science Curriculum."

The Blue Valley School district serves more than twenty thousand students and is home to five high schools. For the past 3 years, we have partnered with CodeHS to address growing community and industry demands for computer science education.

CodeHS takes a comprehensive approach to computer science by providing great curriculum, tools, and resources to teachers, students, and schools to implement high quality computer science programs. Blue Valley has aimed to make computer science education fun and accessible across a wide course offering, including AP classes, Intro to Programming, Web Design and Game Design, and I believe CodeHS has been an integral part of making this happen.

CodeHS has continuously evolved their product to help our teachers deliver in the classroom. We've recently taken another step to integrate CodeHS with our LMS provider, which is expected to further enhance our comprehensive approach to computer science.

Blue Valley recommends you give consideration to the CodeHS proposal.

Sincerely,

Eric Owen
Blue Valley Schools
District Coordinator, CTE
ejowen@bluevalleyk12.org
913-239-4134

	Education Services	
15020 Metcalf Ave., P.O. Box 23901	Overland Park, Kansas	66283-0901
(913) 239-4000	www.bluevalleyk12.org	Fax (913) 239-4588

South-Western City School District



South-Western City School District

3805 Marlane Drive
Grove City, Ohio 43123
Phone: (614) 801-300
Fax: (614) 871-2781
Web site: www.swcsd.us

Travis K. Wood
Career Education Technology Specialist
South-Western Career Academy
4750 Big Run Road South
Grove City, Ohio 43123

February 24, 2021

To the Iowa Department of Education:

I am writing on behalf of CodeHS and the tremendous curriculum and professional development they have provided our district over the past few years. The South-Western City School District services over twenty thousand students and is home to four high schools. With computer science and coding becoming ever prevalent in industry, we saw a need to provide computer programming as elective courses within our high schools. These in turn would hopefully lead into our Mobile App Development, Cyber Security, or Software Development programs.

The CodeHS platform provided exactly what we needed in building these courses aligned with our state standards. The professional development team provided our teachers with the tools needed to successfully implement the curriculum and are always on call to help. Their platform is easy to navigate for both teachers and students, and provides teachers and administrators with detailed analytics of usage and progress. CodeHS has been especially helpful during the pandemic by providing access for our students to quality instruction during our remote and blended learning environments.

I believe CodeHS will continuously improve their platform to meet the needs of students in this ever changing educational climate. I have no doubt that CodeHS will work to provide the services needed to any institution they work with. I have no reservations in making this recommendation.

Sincerely,

A handwritten signature in black ink that reads 'Travis K. Wood'.

Travis K. Wood
CTE Technology Specialist

Web site: www.swcsd.us | Facebook: www.facebook.com/SWCSD | Twitter: [@SWCSD](https://twitter.com/SWCSD)

Odebolt Arthur Battle Creek Ida Grove Community School District

Matt Alexander,
Superintendent
OABCIG Community
School District
900 John Montgomery Dr.
Ida Grove IA 51445
712-364-3687
FAX: 712-364-3609
malexander@oabcig.org



Odebolt Arthur Battle Creek Ida Grove Community School District

Pat Miller, Principal
OABCIG High School
900 John Montgomery Dr.
Ida Grove IA 51445
712-364-3371
FAX: 712-364-4463
pmiller@oabcig.org

Alan Henderson, Principal
OABCIG Elementary-Ida
Grove
403 Barnes St.
Ida Grove IA 51445
712-364-2360
FAX: 712-364-3103
ahenderson@oabcig.org

Doug Mogensen, Principal
OABCIG Elementary-
Odebolt &
OABCIG Middle School
600 South Maple
Odebolt IA 51458
712-668-2289
FAX: 712-668-2631
dmogensen@oabcig.org

Kathy A. Leonard
Business Manager
OABCIG Community
School District
900 John Montgomery Dr.
Ida Grove IA 51445
712-364-2255
FAX: 712-364-3609
kleonard@oabcig.org

Julie Weeda
Director of Technology &
Innovation
OABCIG Community
School District
900 John Montgomery Dr.
Ida Grove IA 51445
712-364-3371
jweeda@oabcig.org

Mistaya Hoefling
K-12 Curriculum Director
OABCIG Community
School District
600 South Maple
Odebolt IA 51458
712-668-2289
mhoefling@oabcig.org

February 24, 2021

To the Iowa Department of Education,

I am writing to you to support the **CodeHS** response and proposal you are receiving for a computer science curriculum. I have been using **CodeHS** for 2 years to teach my students about programming using the programming language Python.

Using the course content in **CodeHS** has allowed me to focus on individual student needs and less on developing the course content needed to deliver the instruction. In addition, students are individually engaged in the lessons and the lessons are well developed. I have used other online courses before and the structure and sequencing of the lessons/courses don't always make sense.

I know there are even more possibilities with our **CodeHS** partnership, and having the ability to increase our offerings without requiring a new provider, is comforting. The combination of responsiveness, reliability and flexibility on the part of **CodeHS** has created a valued partnership that would be beneficial to any organization looking to build a comprehensive computer science program.

As a teacher at OABCIG Community Schools, I would recommend you strongly consider the **CodeHS** proposal.

Sincerely,

Kari Hadden

Kari Hadden
Business\Computer Teacher
OABCIG High School
900 John Montgomery Drive
Ida Grove, IA 51445
khadden@oabcig.org

Exhibit 6 - Termination, Litigation, Debarment

Has the Respondent had a contract for goods and/or services terminated for any reason? If so, provide full details regarding the termination.

A small number of schools have stopped their computer science programs which may impact their contract.

Describe any damages or penalties assessed against or dispute resolution settlements entered into by Respondent under any existing or past contracts for goods and/or services. Provide full details regarding the circumstances, including dollar amount of damages, penalties and settlement payments.

N/A - CodeHS has not had any legal disputes, and therefore no damages, penalties, or dispute resolution settlements.

Describe any order, judgment or decree of any Federal or State authority barring, suspending or otherwise limiting the right of the Respondent to engage in any business, practice or activity.

N/A - Neither CodeHS nor its officers or representatives have been debarred or suspended.

A list and summary of all litigation or threatened litigation, administrative or regulatory proceedings, or similar matters to which the Respondent or its officers have been a party.

N/A - Neither CodeHS nor its officers have been party to any litigation, threatened litigation, or administrative or regulatory proceedings.

Any irregularities discovered in any of the accounts maintained by the Respondent on behalf of others. Describe the circumstances and disposition of the irregularities. Failure to disclose these matters may result in rejection of the Proposal or termination of any subsequent Contract. The above disclosures are a continuing requirement of the Respondent. Respondent shall provide written notification to the Agency of any such matter commencing or occurring after submission of a Proposal, and with respect to the successful Respondent, following execution of the Contract.

N/A - there are no such irregularities.

Exhibit 7 - Criminal History and Background Investigation

The Respondent hereby explicitly authorizes the Agency to conduct criminal history and/or other background investigation(s) of the Respondent, its officers, directors, shareholders, partners and managerial and supervisory personnel who will be involved in the performance of the Contract.

Exhibit 8 - Acceptance of Terms & Conditions

By submitting a Proposal, Respondent acknowledges its acceptance of the terms and conditions of the RFP. CodeHS does not take exception to any provisions within the General Terms of Conditions or this RFP.

Exhibit 9 - Certification Letter

Attachment #1 Certification Letter

(Date) 3/1/21

Kelli Sizenbach, Issuing Officer
Iowa Department of Administrative Services
Hoover State Office Building, Level 3
1305 East Walnut Street
Des Moines, IA 50319-0105

Re: RFP1421282045- PROPOSAL CERTIFICATIONS

Dear Kelli Sizenbach:

I certify that the contents of the Proposal submitted on behalf of CodeHS in response to **Iowa Department of Administrative Services** for RFP1421282045 for a Computer Science Curriculum are true and accurate. I also certify that Respondent has not knowingly made any false statements in its Proposal.

Certification of Independence

I certify that I am a representative of Respondent expressly authorized to make the following certifications on behalf of Respondent. By submitting a Proposal in response to the RFP, I certify on behalf of the Respondent the following:

1. The Proposal has been developed independently, without consultation, communication or agreement with any employee or consultant to the Agency or with any person serving as a member of the evaluation committee.
2. The Proposal has been developed independently, without consultation, communication or agreement with any other Respondent or parties for the purpose of restricting competition.
3. Unless otherwise required by law, the information found in the Proposal has not been and will not be knowingly disclosed, directly or indirectly prior to Agency's issuance of the Notice of Intent to Award the contract.
4. No attempt has been made or will be made by Respondent to induce any other Respondent to submit or not to submit a Proposal for the purpose of restricting competition.
5. No relationship exists or will exist during the contract period between Respondent and the Agency or any other State agency that interferes with fair competition or constitutes a conflict of interest.

Certification Regarding Debarment

I certify that, to the best of my knowledge, neither Respondent nor any of its principals: (a) are presently or have been debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by a Federal Agency or State Agency; (b) have within a five year period preceding this Proposal been convicted of, or had a civil judgment rendered against them for commission of fraud, a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state, or local) transaction or contract under a public transaction, violation of antitrust statutes; commission of embezzlement, theft, forgery, falsification or destruction of records, making false statements, or receiving stolen property; (c) are presently indicted for or criminally or civilly charged by a government entity (federal, state, or local) with the commission of any of the offenses enumerated in (b) of this certification; and (d) have not within a three year period preceding this Proposal had one or more public transactions (federal, state, or local) terminated for cause.

This certification is a material representation of fact upon which the Agency has relied upon when this transaction was entered into. If it is later determined that Respondent knowingly rendered an erroneous certification, in addition to other remedies available, the Agency may pursue available remedies including suspension, debarment, or termination of the contract.

Certification Regarding Registration, Collection, and Remission of Sales and Use Tax

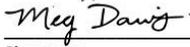
Pursuant to *Iowa Code sections 423.2(10) and 423.5(8) (2016)* a retailer in Iowa or a retailer maintaining a business in Iowa that enters into a contract with a state agency must register, collect, and remit Iowa sales tax and Iowa use tax levied under *Iowa Code chapter 423* on all sales of tangible personal property and enumerated services. The Act also requires Respondents to certify their compliance with sales tax registration, collection, and remission requirements and provides potential consequences if the certification is false or fraudulent.

By submitting a Proposal in response to the (RFP), the Respondent certifies the following: (check the applicable box)

- Respondent is registered with the Iowa Department of Revenue, collects, and remits Iowa sales and use taxes as required by *Iowa Code chapter 423*; or
- Respondent is not a "retailer" or a "retailer maintaining a place of business in this state" as those terms are defined in *Iowa Code subsections 423.1(47) and (48)(2016)*.

Respondent also acknowledges that the Agency may declare the Respondent's Proposal or resulting contract void if the above certification is false. The Respondent also understands that fraudulent certification may result in the Agency or its representative filing for damages for breach of contract in addition to other remedies available to Agency.

Sincerely,



Signature

Meg Davis, Director of Sales

Name and Title of Authorized Representative

3/1/21

Date

Exhibit 10 - Authorization to Release Information

Attachment #2
Authorization to Release Information Letter

(Date) 3/1/21

Kelli Sizenbach, Issuing Officer
Iowa Department of Administrative Services
Hoover State Office Building, Level 3
1305 East Walnut Street
Des Moines, IA 50319-0105

Re: RFP1421282045 - AUTHORIZATION TO RELEASE INFORMATION

Dear Kelli:

CodeHS hereby authorizes the **Iowa Department of Administrative Services** ("Agency") or a member of the Evaluation Committee to obtain information regarding its performance on other contracts, agreements or other business arrangements, its business reputation, and any other matter pertinent to evaluation and the selection of a successful Respondent in response to RFP1421282045.

The Respondent acknowledges that it may not agree with the information and opinions given by such person or entity in response to a reference request. The Respondent acknowledges that the information and opinions given by such person or entity may hurt its chances to receive contract awards from the State or may otherwise hurt its reputation or operations. The Respondent is willing to take that risk.

The Respondent hereby releases, acquits and forever discharges the State of Iowa, the Agency, their officers, directors, employees and agents from any and all liability whatsoever, including all claims, demands and causes of action of every nature and kind affecting the undersigned that it may have or ever claim to have relating to information, data, opinions, and references obtained by the Agency or the Evaluation Committee in the evaluation and selection of a successful Respondent in response to the RFP.

The Respondent authorizes representatives of the Agency or the Evaluation Committee to contact any and all of the persons, entities, and references which are, directly or indirectly, listed, submitted, or referenced in the Respondent's Proposal submitted in response to RFP.

The Respondent further authorizes any and all persons, and entities to provide information, data, and opinions with regard to its performance under any contract, agreement, or other business arrangement, its ability to perform, business reputation, and any other matter pertinent to the evaluation of the Respondent's Proposal. The Respondent hereby releases, acquits and forever discharges any such person or entity and their officers, directors, employees and agents from any and all liability whatsoever, including all claims, demands and causes of action of every nature and kind affecting the Respondent that it may have or ever claim to have relating to information, data, opinions, and references supplied to the Agency or the Evaluation Committee in the evaluation and selection of a successful Respondent in response to RFP.

A photocopy or facsimile of this signed Authorization is as valid as an original.

Sincerely,



Signature

Meg Davis, Director of Sales

Name and Title of Authorized Representative

3/1/21

Date

Exhibit 11 - Mandatory Specifications

Curriculum - Mandatory Requirements

4.1.1 Curricula must be aligned to the Iowa/CSTA Standards.

Yes.

CodeHS provides alignments that map courses to the CSTA standards adopted by the state of Iowa. The Iowa Foundations of Computer Science course is fully aligned to the CSTA 3A standards framework. To view all curricular alignment to Iowa high school standards, view the following links:

Foundations of Computer Science Alignment:

https://codehs.com/standards/framework/IA_3A/course/6358

AP Computer Science Principles Alignment:

https://codehs.com/standards/framework/IA_3B/course/6166

You can use our standards explorer tool to view curricular alignments for any course in our pathway:

codehs.com/standards/framework/IA_3A

codehs.com/standards/framework/IA_3B

4.1.2 Must prepare teachers to teach the provided computer science curriculum by the start of the 2021-22 school year.

Yes.

CodeHS curriculum includes everything a teacher needs to run a successful computer science course. All of our student curriculum is free and includes assessments, instructional videos, and coding examples. Teachers under the pro plan also have access to full lesson plans with offline activities, discussion questions, and recommended student interventions. Teachers don't have to worry about developing their own instructional materials with CodeHS, and can focus on the delivery and support student learning.

CodeHS also has experience training thousands of teachers to teach computer science, and the CodeHS PD program has been reviewed and approved by CSTA's quality PD opportunities board.

4.1.3 Curriculum grade level(s) must be identified.

Yes.

CodeHS identifies the appropriate grade level for all of our courses. A recommended course pathway for Iowa can be found at codehs.com/info/states/iowa.

CodeHS Iowa 6-12 Computer Science Curriculum Pathway

Here are the CodeHS courses that align with Iowa middle school and high school computer science state standards for grades 6-12.

6th	7th	8th	9th	10th	11th	12th
Iowa Tech Apps and Coding						
			Iowa Foundations of Computer Science			
				AP Computer Science Principles		
					Iowa Course 3B	
					AP Computer Science A (Nitro)	

4.1.4 Length of curriculum (unit, semester, full year) and model of delivery (traditional classroom, virtual, or blended) must be provided. After school curriculums are not considered in this round.

Yes.

CodeHS indicates the length of each course by identifying it as a unit, semester, or full year course and offering the average number of contact hours needed for completion. CodeHS does offer flexibility in our course delivery model. All courses can be taught virtually, but CodeHS also provides lesson plan materials for unplugged activities that can be delivered in a traditional classroom. Our team provides best practices for implementation of each model in our professional development program.

4.1.5 Curriculum must be designed to be offered by classroom teacher.

Yes.

CodeHS curriculum is designed to be taught by a teacher. All teacher materials are provided, including online resources, unplugged activities, and full lesson plans.

Professional Development - Mandatory Requirements

4.2.1 Must include professional development that is delivered by the Respondent around implementation of the curriculum.

Yes.

Each workshop and online PD course has sessions or content around course and content pathways, foundational content knowledge, blended instructional strategies, and planning and pacing a CS course with students.

In a kick-off workshop, teachers are enrolled in a demonstration course so they can experience the CodeHS platform from a student perspective. The structure of the kick-off workshop includes the following curricula focus:

- Experiencing CodeHS lessons and code editor from a student perspective
- Exploring major CodeHS courses and pathways with targeted grade levels and customized feedback on implementing any chosen curriculum/pathway

The CodeHS online PD courses include the following curricula focus:

- Content Bootcamp: Teachers work through a few modules of the actual student course that they will be teaching. The time spent working through modules of the student course gives them a preview of the material and familiarity with what students will see on the site.
- Teaching {Specific Course Title}: Teachers focus on instructional strategies that address student course-specific content. Strategies addressed include grade-and-respond questions, common misunderstandings, and best practices for teaching specific concepts.
- Debugging: Teachers practice specific debugging methods, including using breakpoints, printing to debug, pseudocode, etc.

4.2.2 Professional development must be available before the beginning of the 2021-22 school year.

Yes.

One or two-day workshops can be delivered any time when teachers are available (generally June - August) and corresponding online PD courses are available any time. In-person PD workshops are TBD, but if that is not possible we can deliver virtual events. Teachers can select a workshop, online PD course, or both.

4.2.3 Information about whether aligned professional development is required in order to use the provided curriculum.

No, the aligned professional development is not required in order to use the provided curriculum. Although the aligned PD is recommended, the CodeHS curriculum includes everything a teacher

needs to run a successful computer science course and therefore we do not require teachers participate in professional development to use CodeHS.

If the Agency determines it is essential for Professional Development to be required for Iowa teachers, CodeHS will work directly with the Agency to determine the best way to fulfill this requirement.

Implementation

Yes

If awarded a contract with the Agency, CodeHS will work collaboratively with the Agency to determine an implementation schedule appropriate for Iowa schools and districts.

Exhibit 12 - Program Overview

• Describe the origin of the program.

Jeremy and Zach, the co-founders of CodeHS, studied computer science at Stanford and were Teaching Assistants together. Teaching and building tools for the TA program, they began thinking about how computer science was typically not engaging or accessible at the high school level. This inspired them to start CodeHS, so they could give students around the world the same opportunities as Stanford computer science students.

At CodeHS, we believe that in the 21st century, coding is a foundational skill, just like reading and writing. That’s why we say: Read, Write, Code. We do this by providing great curriculum, tools, and resources to teachers, students, and schools to implement high quality computer science programs. We believe that everyone should get the chance to learn to code, and that it’s a skill that provides limitless creative opportunity to students. We want to help make computer science education fun and accessible, and believe you need both great tools as well as a great community to make this happen.

• Provide the length of time the program has been offered.

CodeHS was founded on May 10, 2012.

• Provide the content covered and a description of the curriculum.

CodeHS offers a full 6-12 pathway for computer science. CodeHS courses teach students applicable computer science skills. With a focus on helping students develop problem-solving and computational thinking skills, students come away both with a knowledge of professional programming languages and the conceptual understanding needed to learn new languages.

The following table outlines our recommended high school pathway for Iowa due to its adoption of the CSTA standards. Below the table are descriptions of each course. In addition to these courses, the CodeHS course catalogue contains over 60 courses that cover a wide range of topics. Some of these topics include interdisciplinary units, intro and advanced cybersecurity, intro and advanced web development, and virtual reality. Our full course catalog of 60+ courses can be found at codehs.com/course/catalog.

9th	10th	11th	12th
Iowa Foundations of Computer Science <i>Fully aligned to CSTA 3A</i>			
	AP Computer Science Principles in JavaScript or Python		
		AP Computer Science A (Nitro)	

Iowa Foundations of Computer Science

The Iowa Foundations of Computer Science is fully aligned to the CSTA 3A standards for students in grades 9-10. The course is a first year computer science course that teaches students the fundamentals of computer programming. The course is composed of six main modules, each followed by a project or set of challenges. The course culminates in a final project where students create an interactive story using JavaScript graphics.

Module	Description
Unit 1: Digital Citizenship and Cyber Hygiene	This module includes topics on Internet etiquette and how to stay safe on the world wide web. We will also look at the potential effects of our digital footprints, how to protect information from online risks, and the implications of cyberbullying. Finally, the module includes how to find and cite quality resources online.
Unit 2: Intro to Programming in JavaScript with Karel the Dog	In this module, students learn the basics of JavaScript by giving Karel commands to solve puzzles. We use Karel to show students what it means to program, and allow you to focus on problem solving.
Unit 3: Karel Challenges	In this module, students take all the foundational concepts from Karel to solve some programming challenges.
Unit 4: Networks and the Internet	In this module, students explore the structure and design of the internet, and how this design affects the reliability of network communication, the security of data, and personal privacy
Unit 5: Javascript & Graphics	In this module, students learn the basics of JavaScript, including variables, user input, mathematics, basic graphics, and image representations.
Unit 6: Graphics Challenges	In this module, students learn how to pair program! Students use all the foundational concepts from JavaScript Graphics to solve some programming challenges.
Unit 7: JavaScript Control Structures	In this module, students learn how to use control structures such as if/else statements and loops to make more advanced programs in JavaScript.
Unit 8: Control Structures Challenges	In this module, students apply all the foundational concepts from the Control Structures unit to solve some programming challenges.
Unit 9: Functions, Events, and Lists	In this module, students learn how to write reusable code with functions and parameters.

Unit 10: Final Project	In this module, students apply all the skills you've learned throughout the course to create a final program with a partner!
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AP Computer Science Principles in JavaScript or Python

AP[®] Computer Science Principles introduces students to the foundational concepts of computer science and explores the impact computing and technology have on our society.

With a unique focus on creative problem solving and real-world applications, the CodeHS AP Computer Science Principles course gives students the opportunity to explore several important topics of computing using their own ideas and creativity, use the power of computing to create artifacts of personal value, and develop an interest in computer science that will foster further endeavors in the field. The curriculum has been pre-approved by the College Board's AP Course Audit as meeting or exceeding the curricular expectations colleges and universities have for this subject.

Module	Description
Web Development	Introduces HTML, CSS, and the processes involved in viewing web pages on the Internet. Students create several simple web pages using the CodeHS online editor, including their own website about themselves, hosted on their own custom codehs.me URL. This personal website will serve as a running portfolio of each creative project they create.
Introduction to Programming	Teaches what it means to "program" and allows students to focus on solving problems using code, rather than getting bogged down in syntax. Students solve problems by moving Karel the Dog around the grid.
Digital Information	Teaches the various ways we represent information digitally. Topics covered include number systems, encoding data, programmatically creating pixel images, comparing data encodings, compressing and encrypting data.
The Internet	Explores the structure and design of the internet, the reliability of network communication, the security of data, and personal privacy. Students will learn about the protocols and algorithms used in the internet, and the importance of cybersecurity.
Data	Introduces computational tools used to store massive amounts of data, manipulate and visualize data, find patterns in data, and pull conclusions from data. Students will consider how the modern wealth of data collection has impacted society in positive and negative ways.

Performance Tasks	Students create their AP Performance Tasks including a chance to review course content and practice the skills necessary to complete each performance task.
Review for the AP Exam	This unit gives students a review of the topics covered in the course and provides practice solving AP Exam style multiple choice questions.
Final Project	Students brainstorm a final project, discuss ideas with peers, scope and plan out milestones for incremental development, and build their own creative final product from scratch.

AP Computer Science (Nitro)

CodeHS's AP CSA course is endorsed by the College Board and introduces students to computer science through programming. The course is designed to help students master the basics of Java and equip them to successfully pass the College Board AP Computer Science A Exam at the end of the school year.

Module	Description
Primitive Types	This unit introduces students to the Java programming language and the use of classes, providing students with a firm foundation of concepts that will be leveraged and built upon in all future units.
Using Objects	This unit introduces a new type of data: reference data. Reference data allows real-world objects to be represented in varying degrees specific to a programmer's purpose. This unit builds on students' ability to write expressions by introducing them to Math class methods to write expressions for generating random numbers and other more complex operations.
Boolean Expressions and if Statements	Algorithms are composed of three building blocks: sequencing, selection, and iteration. This unit focuses on selection, which is represented in a program by using conditional statements. Conditional statements give the program the ability to decide and respond appropriately and are a critical aspect of any nontrivial computer program.
Iteration	This unit focuses on iteration using while and for loops. Boolean expressions are also one of the main components in iteration. This unit introduces several standard algorithms that use iteration.

	<p>Knowledge of standard algorithms makes solving similar problems easier, as algorithms can be modified or combined to suit new situations.</p>
Writing Classes	<p>This unit will pull together information from all previous units to create new, user-defined reference data types in the form of classes. The ability to accurately model real-world entities in a computer program is a large part of what makes computer science so powerful. This unit focuses on identifying appropriate behaviors and attributes of real-world entities and organizing these into classes.</p>
Array	<p>This unit focuses on data structures, which are used to represent collections of related data using a single variable rather than multiple variables. Using a data structure along with iterative statements with appropriate bounds will allow for similar treatment to be applied more easily to all values in the collection.</p>
ArrayList	<p>The ArrayList object has a dynamic size, and the class contains methods for insertion and deletion of elements, making reordering and shifting items easier. Deciding which data structure to select becomes increasingly important as the size of the data set grows, such as when using a large real-world data set. In this unit, students will also learn about privacy concerns related to storing large amounts of personal data and about what can happen if such information is compromised.</p>
2D Array	<p>A 2D array is most suitable to represent a table. Each table element is accessed using the variable name and row and column indices. Unlike 1D arrays, 2D arrays require nested iterative statements to traverse and access all elements. The easiest way to accomplish this is in row-major order, but it is important to cover additional traversal patterns, such as back and forth or column-major.</p>
Inheritance	<p>In this unit, students will learn how to recognize common attributes and behaviors that can be used in a superclass and will then create a hierarchy by writing subclasses to extend a superclass. Recognizing and utilizing existing hierarchies will help students create more readable and maintainable programs.</p>
Recursion	<p>Sometimes a problem can be solved by solving smaller or simpler versions of the same problem rather than attempting an iterative solution. This is called recursion, and it is a powerful math and computer science idea. In this unit, students will revisit how control</p>

	is passed when methods are called, which is necessary knowledge when working with recursion.
--	--

• Describe the professional development delivered by the Respondent around implementation of the curriculum.

CodeHS offers Online Professional Development courses to prepare teachers to lead a computer science class. Each PD course is geared to prepare teachers for the specific CodeHS curriculum that they will be using with their students. The CodeHS Online PD courses teach both the basics of programming and the pedagogy behind teaching programming in a blended classroom. Teachers receive personalized help, feedback, and support from the CodeHS PD team as they work through the Professional Development course online. Online PD courses take about 30-50 hours to complete. Because of the online format, teachers are able to complete the PD at their pace and can revisit the course throughout the year.

Our online PD courses have been recognized by several outside organizations as effective training for new computer science teachers. CodeHS is recognized by the College Board as an endorsed provider of curriculum and professional development for AP[®] Computer Science Principles (AP CSP). The process to obtain the endorsement included a complete review of our curriculum by Learning List, who evaluated us as having 100% alignment to the learning objectives and computational thinking practices outlined in the AP Computer Science Principles Course Exam and Description. CodeHS is also recognized by the College Board as an endorsed provider of curriculum and professional development for AP CSA. These endorsements allow our professional development course to be used for approval codes in several states, including Arkansas.

In addition, we have a partnership with St. Catherine University in Minnesota for a few of our online professional development courses. St. Catherine University evaluated our curriculum and determined the content and rigor to be at the level of a graduate education course, so teachers who can complete our courses can optionally apply to receive graduate education credits from the university.

• Ensure the program can be offered during the school day rather than after-school.

CodeHS lessons are created with the intention of being used during the school day. Each lesson is designed to fit within a standard class period but can be adapted to fit any school schedule.

• Describe how the curriculum and professional development can fit into a K-12 CS plan, as required in HF 2629.

Although this proposal is focused on the 9-12 grade band, the CodeHS Iowa Computer Science Pathway extends from 6th to 12th grade. The pathway starts with the middle school course Iowa Tech Apps and Coding, which is fully aligned to the CSTA 2 standards for students in grades 6-8.

This course is an introductory course and is accessible to all students, regardless of their exposure in elementary school.

The high school pathway builds on Tech Apps and Coding. Students begin with Iowa Foundations of Computer Science, which is fully aligned to the CSTA 3A standards. From there, students can take college-level AP courses.

6th	7th	8th	9th	10th	11th	12th
Iowa Tech Apps and Coding <i>Fully aligned to CSTA 2</i>						
			Iowa Foundations of Computer Science <i>Fully aligned to CSTA 3A</i>			
				AP Computer Science Principles in JavaScript or Python		
					AP Computer Science A (Nitro)	

In addition to the Iowa pathway above, CodeHS offers Cybersecurity and Web Design pathways that enable students to pursue a focus in these areas of computer science.

• Describe how the curriculum engages diverse learners.

There are multiple structures in place to ensure that the curriculum is accessible to all learners. Each lesson plan includes modifications for Special Education and English Language Learner students. These modifications provide teachers with lesson-specific guidelines for adapting the material based on student need, such as modifying an article, creating a vocabulary handout, or leveraging pair programming.

Additionally, the CodeHS platform is designed to empower teachers to customize lessons based on the needs and interests of their students. Lesson plans provide teachers with multiple suggestions for implementation depending on the level of student understanding, access to resources, and interests. There is also a wide variety of curriculum that can be added as supplemental material. With this option, teachers can add activities that align with the interests and needs of their students. Teachers also have the ability to create their own content within the platform if they want to include a lesson that addresses a specific student interest.

There are also many opportunities for students to explore their own interests within the context of computer science. Many projects enable students to choose their own topic. This creates a

high level of student engagement as students are able to use specific computer science skills to develop a deeper understanding of their own passions.

• **Describe how the curriculum connects to the world of work and proof of success**

Information technology is an essential industry in Iowa that is growing twice as fast as other occupations - 12.5 percent growth compared to 6.5 percent growth. Between 2014 and 2024, the Bureau of Labor Statistics projected 490,000 new jobs in IT and 1.1 million job openings due to growth and replacement. Introducing students to the opportunities within IT early is essential to building the workforce needed to fulfill these job openings. (Source: [Cracking the Code](#), Iowa Department of Education)

CodeHS curriculum teaches students the basics of programming, computational thinking skills and problem solving skills. These are skills that programmers use every day in the workplace, providing students with the opportunity to both develop real world skills and explore their interest in future IT careers. The CodeHS curriculum includes opportunities for students to explore career pathways related to computer science, encouraging them to set goals for the steps they need to take beyond high school to find success in the field. Students are offered career role models on the CodeHS [Coding in the Wild](#) website, where people working across many fields and industries explain how coding is related to the work that they do.

Additionally, CodeHS cybersecurity courses and web design pathways provide students with concrete skills they can use in the workplace. In the web design pathway, students learn the basics of creating multi page websites as well as more advanced techniques, such as data storage and user interaction. In the cybersecurity pathway, students learn the basics of information technology and network security. These skills align with the skills of entry-level professionals and provide students with the opportunity to explore their interest in computer science careers.

In addition to the course content, CodeHS offers industry-relevant certification assessments that enable students to demonstrate their mastery of essential programming content.

Lastly, CodeHS courses build on each other to create pathways. Students can choose to expand their computer science knowledge to include a wider set of industry-relevant skills by pursuing courses in advanced programming, web design, or cybersecurity.

Exhibit 13 - Curriculum

- **Describe the format of curriculum delivery.**

CodeHS content is fully web-based, with students writing and running code and completing activities in the browser. Teachers utilize tools and resources provided by CodeHS to leverage time in the classroom and give focused attention to students. Each module, or unit, of the course is broken down into lessons, and each unit ends with a comprehensive unit test that assesses students' mastery of the material from that unit.

There are two main types of units: programming and non-programming. Programming modules focus on a specific programming language and skills within that language. Non-programming modules focus on additional computer science content beyond programming, such as digital citizenship, computer hardware, and cybersecurity.

The lessons in each programming module are structured in a similar way: students watch a video that explains and models a new command or concept, students explore a few examples to develop a deeper understanding of the topic, and students practice using the new command or concept by completing exercises.

Each programming module is followed by a series of challenges that require students to apply all of the skills they have learned so far to complete a complex problem. These challenges enable students to develop problem solving skills and perseverance as they break down complex problems into smaller problems and debug errors in their code. They also provide students with the ability to practice pair programming and build collaboration skills within the context of computer science.

The lessons in a non-programming module follow a similar structure as well. Students watch an introductory video and then explore the topic further through a variety of activities. These activities typically involve reading articles and watching videos related to current events and engaging in written activities that enable students to synthesize their understandings.

In addition to the online material, teachers are provided with full lesson plans that offer discussion questions, unplugged activities, and suggested interventions for students.

- **Describe the ability to provide stand-alone and integrated curriculum content.**

CodeHS makes it easy for teachers to choose the specific content they want to teach. Teachers can choose a full course to teach as a standalone computer science class, or they can choose individual modules to incorporate into an existing course for a more integrated approach.

Additionally, CodeHS has modules that are specifically designed as interdisciplinary. These modules enable teachers to find specific lessons that can be incorporated into core classes.

• **Provide a list of curriculum content currently available.**

We have over 60 computer science courses ranging from interdisciplinary coding units to year-long, college-level curriculum.

The Iowa Computer Science Pathway for grades 9-12 includes the following courses:

- Iowa Foundations of Computer Science
- AP Computer Science Principles in JavaScript or in Python
- AP Computer Science A (Nitro)

Additional Year-Long courses:

- Introduction to Computer Science in JavaScript
- Intro to Computer Science in Python 3
- Fundamentals of Cybersecurity
- Advanced Cybersecurity
- Web Design
- Web Development
- Introduction to Virtual Reality
- Introduction to Physical Computing with micro:bit or Arduino

Our full course catalog of 60+ courses can be found at <https://codehs.com/course/catalog>.

• **Describe how the Respondent's content aligns with Iowa/CSTA Standards.**

All CodeHS courses are aligned to the CSTA standards, which Iowa has adopted. Iowa Fundamentals of Computer Science covers 100% of the CSTA 3A standards. AP Computer Science Principles in JavaScript/Python covers 64% of CSTA 3B standards. You can find more information on our standards alignments in the "Standards" section of this proposal.

• **Describe the Respondent's targeted grade levels.**

Iowa Foundations of Computer Science is designed for students in grades 9 and 10. AP Computer Science Principles and AP Computer Science A are designed for students in grades 10 - 12.

CodeHS also offers 6-8 courses which are described in our separate proposal for the middle school grade band.

• **Provide the prerequisites for necessary for students to successfully progress through the curriculum.**

CodeHS has courses that range from beginner to advanced. Iowa Foundations of Computer Science has no prerequisites and is designed for beginners with no experience in computer science.

CodeHS AP Computer Science Principles and AP Computer Science A have no official prerequisites and do not require students to come in with any computer programming

experience. However, we recommend that students take Iowa Foundations of Computer Science prior to our AP courses. We also recommend that students complete a first-year high school algebra course prior to taking this course. Students should be comfortable with functions and function notation such as $f(x) = x + 2$ as well as using a Cartesian (x, y) coordinate system to represent points in a plane.

- **Provide sample artifacts from the curriculum.**

Screenshots are provided, however if you would like to view the sample artifacts on our website, you can log in with the following credentials:

Email: iowadoe@codehs.com

Password: iowaDEMO

[Sample Lesson Plan: For Loops with Karel](#)

Click on the link to view a sample lesson plan for For Loops with Karel:

www.codehs.com/iowa_hslessonplan

In this lesson, students learn how to use for loops in their programs. The for loop allows students to repeat a specific part of code a fixed number of times.

For loops are written like this:

```
for(var i = 0; i < 4; i++)  
{  
  // Code to be repeated 4 times  
}
```

Objective

Students will be able to:

- Create for loops to repeat code a fixed number of times
- Explain when a for loop should be used
- Utilize for loops to write programs that would be difficult / impossible without loops

Activities

These are all the activities included in the lesson.

Activity	
 2.10.1 For Loops	Print Slides 
	View Slides 
 2.10.2 For Loops Quiz	Print Quiz 
 2.10.3 Repeated Move	
 2.10.4 Put Down Tennis Balls	
 2.10.5 Take 'em All	
 2.10.6 Dizzy Karel	
 2.10.7 Ball in Each Corner	
 2.10.8 Lots of Hurdles	

Vocabulary

These are the key terms for this lesson.

Term	Definition
Loop	A loop is a way to repeat code in your program.
For Loop	A for loop lets us repeat code a fixed number of times .
Control Structure	A control structure lets us change the flow of the code.
Curly Bracket	An open curly bracket is { and a close curly bracket is }
Parentheses	(and)

Planning Notes

- This is a lengthy exercise. Consider using multiple class periods to complete this lesson, or assign portions of it for homework.
- Some exercises in this lesson are difficult. Consider scaffolding with students by having them pair program or complete the lessons as a class.
- There is a handout associated with this lesson that can be used in class, as an exit ticket, or as homework.

Teaching and Learning Strategies

Lesson Opener:

- Instruct students to write code to have Karel pick up a ball 5 times. When students are done, ask them how difficult it would be to create the same problem to pick up 50 balls. Explain to students that with the knowledge they know now that would be very difficult, but this lesson will teach them a new strategy for writing code that will make that task incredibly simple. [5-7min]

Activities:

- Watch *For Loops* and complete the corresponding quiz. [5-7 min]
 - As this is an important new topic, it may be good to watch the video as a class, and stop occasionally to check for student understanding.
- Explore the *Repeated Move* and *Put Down Tennis Balls* examples. [5 min]
 - Have students play around with the value of `i`, and the `i <`, and note the changes that occur when those aspects of the code are changed.
 - In *Put Down Tennis Balls*, ask students to change the location of `move()` inside of the for loop- what happens then?
- Have students complete the *For Loops* Handout individually or as a class. [5-7 min]
 - This is a good opportunity to notice any confusion students may have around for loops prior to getting started in the code editor.
- Complete *Take 'Em All*, and *Dizzy Karel*. [10 min]
 - These exercises are all similarly constructed, and only asks students to use for loops *without* functions.
- Complete *Ball in Each Corner* and *Lots of Hurdles*. [10 min]
 - These are more challenging problems that require students to create functions as well as for loops. Consider having students work in pairs to complete these, or assigning for homework depending on how quickly students are able to move through the materials.

Lesson Closer:

- If there is time, go through the end of class discussion questions. [5 min]
- If students did not go through the handout, assign this to students as additional practice, an exit ticket, or as homework. [5 min]

Prior Knowledge

- Basic Karel Commands
- SuperKarel Commands
- Functions

Discussion Questions

Beginning of Class:

- Write a program that makes Karel put down 5 balls.

```
function pickup5()
{
  takeBall();
  takeBall();
  takeBall();
  takeBall();
  takeBall();
}
```

- How difficult would it be to write a program to pick up 50 balls? Why?
 - *It would be difficult because you'd have to repeat `takeBall` 50 times- a routine that would take a while!*

End of Class:

- Why are for loops useful?
 - *They reduce the amount of code that needs to be written in a program, and help decrease the amount of redundant code in a program.*
- For loops extend the limits of what we can do with our programs. What is one Karel program you could write with a for loop that you couldn't do without one?
 - *Similar to the opening example, pick up 1000 balls.*
- Think of and write down three real-life scenarios that could use a for loop.
 - *For each class, do homework assignments.*
 - *Run 10 laps around the track.*
 - *Write a 500 word essay*

Modification: Advanced

- In the example exercises *Repeated Move* & *Put Down Tennis Balls*, encourage students to write functions using for loops

Modification: Special Education

- Pair programming with another student
- Print out video slides for students to reference
- Have students complete the handout instead of the last two computer exercises.

Modification: English Language Learners

- Print out video slides and have students use dictionary to translate unknown vocabulary
- Pair programming with another student
- Have students complete the handout instead of the last two computer exercises.

Sample Karel Programming Exercise: For Loops

This is an activity from the For Loops lesson detailed above. In the lesson plan, click on each activity in the Activities to explore and run the exercises.

The screenshot shows a programming environment with a code editor on the left and a Karel world grid on the right. The code editor contains the following JavaScript code:

```
1- function start(){
2-   for(var i = 0; i < 5; i++){
3-     jumpHurdle();
4-   }
5- }
6-
7- function jumpHurdle(){
8-   move();
9-   move();
10-  turnLeft();
11-  move();
12-  turnRight();
13-  move();
14-  turnRight();
15-  move();
16-  turnLeft();
17- }
18-
19-
20-
21-
22-
23-
```

The right side of the interface shows a Karel world grid with a small dog character at the bottom left. The grid is 20 rows by 20 columns. The world is named "ManyHurdles".

Sample Programming Exercises: JavaScript and Graphics

You can explore and run these activities online by following these steps:

1. Go to the lesson plan: <https://codehs.com/course/6358/lesson/5.5>
2. Find the Activities section
3. Click on 5.5.7 Flag of the Netherlands
4. Click on 5.5.8: Snowman

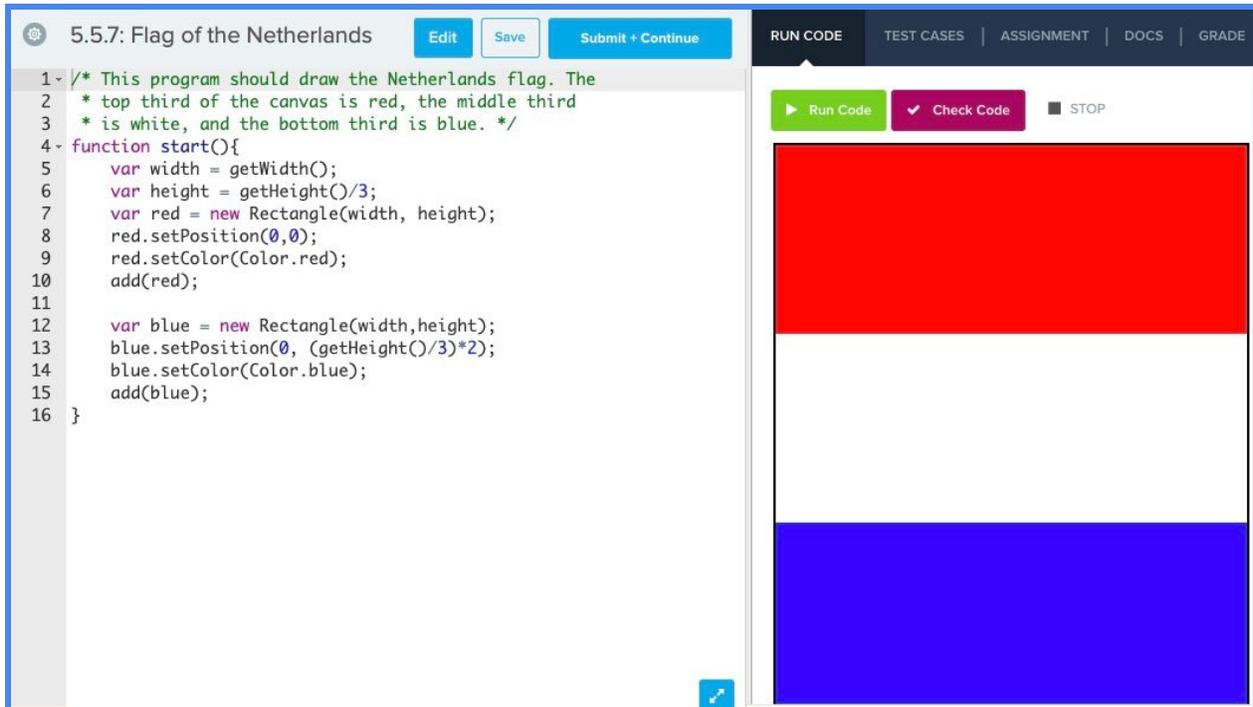
You can also find screenshots of the exercises below:

5.5.7: Flag of the Netherlands

```
1- /* This program should draw the Netherlands flag. The
2 * top third of the canvas is red, the middle third
3 * is white, and the bottom third is blue. */
4- function start(){
5   var width = getWidth();
6   var height = getHeight()/3;
7   var red = new Rectangle(width, height);
8   red.setPosition(0,0);
9   red.setColor(Color.red);
10  add(red);
11
12  var blue = new Rectangle(width,height);
13  blue.setPosition(0, (getHeight()/3)*2);
14  blue.setColor(Color.blue);
15  add(blue);
16 }
```

Run Code | TEST CASES | ASSIGNMENT | DOCS | GRADE

▶ Run Code | ✓ Check Code | ■ STOP

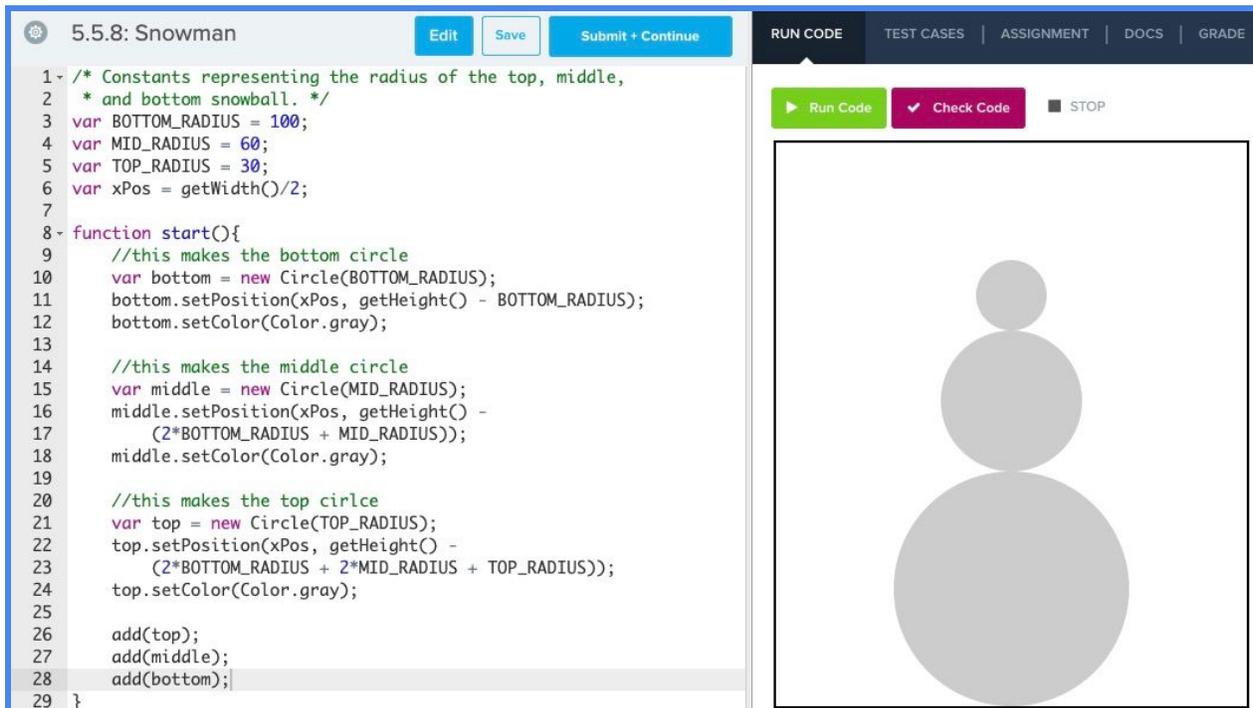


5.5.8: Snowman

```
1- /* Constants representing the radius of the top, middle,
2 * and bottom snowball. */
3 var BOTTOM_RADIUS = 100;
4 var MID_RADIUS = 60;
5 var TOP_RADIUS = 30;
6 var xPos = getWidth()/2;
7
8- function start(){
9   //this makes the bottom circle
10  var bottom = new Circle(BOTTOM_RADIUS);
11  bottom.setPosition(xPos, getHeight() - BOTTOM_RADIUS);
12  bottom.setColor(Color.gray);
13
14  //this makes the middle circle
15  var middle = new Circle(MID_RADIUS);
16  middle.setPosition(xPos, getHeight() -
17    (2*BOTTOM_RADIUS + MID_RADIUS));
18  middle.setColor(Color.gray);
19
20  //this makes the top circle
21  var top = new Circle(TOP_RADIUS);
22  top.setPosition(xPos, getHeight() -
23    (2*BOTTOM_RADIUS + 2*MID_RADIUS + TOP_RADIUS));
24  top.setColor(Color.gray);
25
26  add(top);
27  add(middle);
28  add(bottom);
29 }
```

Run Code | TEST CASES | ASSIGNMENT | DOCS | GRADE

▶ Run Code | ✓ Check Code | ■ STOP



Sample Non-Programming Exercises: What is Cybersecurity?

You can explore these activities online by following these steps:

5. Go to the lesson plan: <https://codehs.com/course/6358/lesson/1.1>

6. Find the Activities section
7. Click on the 1.1.8: Threat Map activity
8. Click on the 1.1.7: Internet of Things Reflection Activity



16.2.9 Threat Map

This threat map displays data for recent cyber attack attempts. Take some time to explore where the attacks are coming from and which countries are being targeted.

To view data around a specific country, click on the country on the map. (You may have to click the link below for this functionality).

The red lines represent malware which consists of a lot of different types of attacks such as viruses, ransomware, and more.

The purple lines represent phishing attacks which are fake emails and websites that attempt to trick users into sharing their passwords and sensitive information.

The yellow lines represent exploits which are attacks that takes advantage of a bug or vulnerability.

Once you are ready to move on, click "Continue".

Source:
"Live Cyber Attack Threat Map | Check Point
Get your threat intelligence, check point.com/

Continue

Exercise 16.2.8: Internet of Things Reflection 5 points

Let's Go!

Answer the following questions based on the videos in the previous activities.

1. What is the motivation for creating an *Internet of Things* by embedding computing devices in everyday objects?
2. How do we benefit from this increased interconnectivity?
3. What are the risks associated with this kind of connectivity?
4. How does the issue of cybersecurity relate to the Internet of Things?

Sample Student Handout

CodeHS Pro teachers also have access to student handouts. These handouts are designed to supplement specific lessons and provide students with additional, offline practice.



Dancing with Parameters

Corresponding Material
Functions and Parameters, Lesson 1: Functions and Parameters 1

Discussion
When creating programs, we want to avoid having to rewrite code we've already written. But what if we have several functions that contain a lot of the same code? Using **parameters** helps us cut down the number of new functions we need to create.

We want to use functions to teach someone how to do the "hokey pokey". We've already written three functions to help them dance the hokey pokey with their feet.

```

function rightFoot() {
  rightFootIn();
  rightFootOut();
  rightFootIn();
}

```

```

function leftFoot() {
  leftFootIn();
  leftFootOut();
  leftFootIn();
}

```

```

function hokeyPokey() {
  shakeAllAbout();
  turnAround();
}

```

We can see that a lot of commands are being repeated with only right and left changing. We can use parameters to shorten our program even further!

Class Exercise
Our goal is to write the commands for the Hokey Pokey with all of the following body parts:

1- Right foot	3- Right hand	5- Right knee	7- Right elbow	9- Right hip
2- Left foot	4- Left hand	6- Left knee	8- Left elbow	10- Left hip

If we had to write out separate function for each of these body parts, we'd have over 10 functions!

- Find a way to rewrite the `rightFoot()` function to take in parameters that will control the body part and side. Rename the function to something that makes sense! (Your commands will now consist of only `in(bodyPart, side)` or `out(bodyPart, side)`.)

• **Describe how the curriculum can fit into a K-12 plan, as required in HF 2629.**

Although this proposal is focused on the 9-12 grade band, the CodeHS Iowa Computer Science Pathway extends from 6th to 12th grade. The pathway starts with the middle school course Iowa Tech Apps and Coding, which is fully aligned to the CSTA 2 standards for students in grades 6-8. This course is an introductory course and is accessible to all students, regardless of their exposure in elementary school.

The high school pathway builds on the middle school course. Students begin with Iowa Foundations of Computer Science, which is fully aligned to the CSTA 3A standards. From there, students can begin taking college-level AP courses.

6th	7th	8th	9th	10th	11th	12th
-----	-----	-----	-----	------	------	------

Iowa Tech Apps and Coding <i>Fully aligned to CSTA 2</i>						
			Iowa Foundations of Computer Science <i>Fully aligned to CSTA 3A</i>			
				AP Computer Science Principles in JavaScript or Python		
					AP Computer Science A (Nitro)	

In addition to the Iowa pathway above, CodeHS offers Cybersecurity and Web Design pathways that enable students to pursue a focus in these areas of computer science.

• Describe how the curriculum addresses diverse learners, including the gender participation gap, traditionally underrepresented minority students, students with disabilities and English learners.

There are multiple structures in place to ensure that the curriculum is accessible to all learners. Each lesson plan includes modifications for Special Education and English Language Learner students. These modifications provide teachers with lesson-specific guidelines for adapting the material based on student need, such as modifying an article, creating a vocabulary handout, or leveraging pair programming.

Additionally, the CodeHS platform is designed to empower teachers to customize lessons based on the needs and interests of their students. Lesson plans provide teachers with multiple suggestions for implementation depending on the level of student understanding, access to resources, and interests. There is also a wide variety of curriculum that can be added as supplemental material. With this option, teachers can add activities that align with the interests and needs of their students. Teachers also have the ability to create their own content within the platform if they want to include a lesson that addresses a specific student interest.

There are also many opportunities for students to explore their own interests within the context of computer science. Many projects enable students to choose their own topic. This creates a high level of student engagement as students are able to use specific computer science skills to develop a deeper understanding of their own passions.

By exposing students to the collaborative nature of computer science as well as the wide variety of topics within the field, CodeHS empowers students to see themselves as members of the computer science community. As students develop concrete skills within the subject, they learn that regardless of where they come from or what they look like, they are equipped with knowledge they need to be successful.

Exhibit 14 - Professional Development

CodeHS Professional Development for High School

Describe the professional development delivered by the Respondent around implementation of the curriculum.

Each workshop and online PD course has sessions or content around course and content pathways, foundational content knowledge, blended instructional strategies, and planning and pacing a CS course with students.

In a kick-off workshop, teachers are enrolled in a demonstration course so they can experience the CodeHS platform from a student perspective. The structure of the kick-off workshop includes the following curricula focus:

- Experiencing CodeHS lessons and code editor from a student perspective
- Exploring major CodeHS courses and pathways with targeted grade levels and customized feedback on implementing any chosen curriculum/pathway

The CodeHS online PD courses include the following curricula focus:

- Content Bootcamp: Teachers work through a few modules of the actual student course that they will be teaching. The time spent working through modules of the student course gives them a preview of the material and familiarity with what students will see on the site.
- Teaching {Specific Course Title}: Teachers focus on instructional strategies that address student course-specific content. Strategies addressed include grade-and-respond questions, common misunderstandings, and best practices for teaching specific concepts.
- Debugging: Teachers practice specific debugging methods, including using breakpoints, printing to debug, pseudocode, etc.

• Describe the ability to prepare teachers to teach the curriculum within 6-12 months.

The CodeHS professional development program will provide Iowa teachers with the content knowledge, pedagogy, and instructional strategies to give teachers the confidence and skills needed to teach any computer science course. Teachers do not need to have any programming experience to participate.

The program delivery is flexible and can be delivered in any statewide, regional, or local capacity in a virtual, blended, or in-person delivery and is customizable. Teachers can select one OR both of the following:

- A 1-2 day, immersive, hands-on kick-off workshop, which can be 5-6 hours per day and condensed/expanded based on local needs and requirements.
- An asynchronous online course with full support that focuses on the student course of choice.

In a kick-off workshop, teachers are enrolled in a demonstration course so they can experience the CodeHS platform from a student perspective. They will also learn all of the tools that they can leverage to maximize student learning. The overall structure of the kick-off workshop includes the following general areas of focus:

- Experiencing CodeHS lessons and code editor from a student perspective
- Exploring major CodeHS courses and pathways with targeted grade levels and customized feedback on implementing any chosen curriculum/pathway
- CodeHS teacher tools for managing sections
- Leveraging progress monitoring, grading tools, and code review to differentiate, scaffold, provide student feedback, and help students debug coding exercises
- Strategies for utilizing lesson plans and additional classroom resources
- Computer science blended and virtual teaching strategies.
- Pacing and planning
- Creating original content to customize courses
- Increasing access and equity in computer science by addressing diverse learners (including the gender participation gap, traditionally underrepresented minority students, students with disabilities, and English learners)

In addition, Iowa teachers are further supported with a session on the CSTA standards and the CodeHS courses that fully encompass the CSTA 2 and CSTA 3A standards.

In a self-paced, fully instructor-supported professional development course, teachers are enrolled in a related PD course(s) based on the student course they plan to teach or are currently teaching. The online professional development courses consist of a series of learning modules that cover both the basics of programming and the pedagogy of teaching programming in a blended classroom for further depth and development (total time is approximately 40 hours). Teachers can complete each PD course on their own time to receive the training and PD support they need in a way that meets their specific needs. They also have lifetime access to their PD course.

General online PD course format:

- Welcome: Teachers learn about the format of the course, why it is important to teach CS, reflect on issues of access and equity, and set goals for the course.
- Content Bootcamp: Teachers work through a few modules of the actual student course that they will be teaching. The time spent working through modules of the student course gives them a preview of the material and familiarity with what students will see on the site.

- Using CodeHS Effectively: Teachers receive an overview of some of the teacher tools on CodeHS and best practices for using them in class.
- Teaching {Specific Course Title}: Teachers focus on instructional strategies that address student course-specific content. Strategies addressed include grade-and-respond questions, common misunderstandings, and best practices for teaching specific concepts.
- Debugging: Teachers practice specific debugging methods, including using breakpoints, printing to debug, pseudocode, etc.
- Teaching in a Blended Classroom: For many teachers, this is their first time running a classroom that is not lecture/practice-based, so questions like what is the role of a teacher in a blended classroom and how should they encourage student collaboration are considered.

• **Provide sample artifacts from the professional learning.**

Links to sample artifacts can be found in the sample agenda below.

• **Provide an agenda for one day of the professional development.**

Sample Day 1 Agenda

- Introductions and account setup
- The CodeHS code editor tools
- Sample lesson from a student perspective [[LINK TO SAMPLE](#)]
 - Strategies are modeled, and teachers actively participate as students
- Overview of the major CodeHS courses and pathways with discussion time for specific courses [[LINK TO SAMPLE](#)]
- Teacher tools for managing sections [[LINK TO SAMPLE](#)]
- How to leverage the CodeHS gradebook and code review to
 - Differentiate and scaffolding [[LINK TO SAMPLE](#)]
 - Provide student feedback [[LINK TO SAMPLE](#)]
 - Help students debug code
 - Grade student code
- Strategies for utilizing lesson plans and additional classroom resources
 - Computer science blended and virtual teaching strategies [[LINK TO SAMPLE](#)]
 - Planning and pacing courses and content [[LINK TO SAMPLE](#)]
 - Creating original content to customize courses [[LINK TO SAMPLE](#)]
 - Increasing access and equity in computer science [[LINK TO SAMPLE](#)]
 - The CSTA standards and the CodeHS Iowa courses: Iowa Tech Apps and Coding (CSTA 2) and Iowa Course 3A

• **Describe time needed for professional development: length, frequency, availability, and format of training (i.e. online, blended, etc.)**

One- or two-day customizable, kick-off workshops would be 1-2 days and delivered any time when teachers are available, most likely June - August before the beginning of the 2021-22 school year. The timeframe for each day would be 5-6 hours and can be condensed/expanded based on local needs/requirements. The workshops can be delivered in a blended/virtual/face-to-face (in-person) delivery depending on any local COVID restrictions. These workshops can be delivered at a statewide, regional, district, or school level if the participant count is at least 5. Teachers would be enrolled in an online PD course, and could start the course immediately with full CodeHS PD team support and the flexibility to work through at their own pace.

Teachers can select one OR both of the following:

- A 1-2 day, immersive, hands-on kick-off workshop, which can be 5-6 hours per day and condensed/expanded based on local requirements.
- An asynchronous online course with full support that focuses on the student course of choice.

Exhibit 15 - Standards

- **Include a list of standards addressed in the curricular materials.**

All of the main courses offered in the CodeHS 6-12 pathway are aligned to or support the Computer Science Teachers Association (CSTA) K-12 Computer Science Standards, which were adopted by the Iowa State Board of Education. You can find the alignments to the CSTA standards for each course in the links below:

- [Iowa Foundations of Computer Science](#) - 100% aligned to CSTA 3A
- [AP Computer Science Principles in JavaScript](#) - 64% aligned to CSTA 3B
- [AP Computer Science Principles in Python](#) - 67% aligned to CSTA 3B
- [AP Computer Science A \(Nitro\)](#) - 35% aligned to CSTA 3B

Additionally, our AP courses are 100% aligned to the AP framework outlined by the College Board.

- [AP Computer Science Principles in JavaScript](#) - 100% aligned to the AP CSP Framework
- [AP Computer Science Principles in Python](#) - 100% aligned to the AP CSP Framework
- [AP Computer Science A \(Nitro\)](#) - 100% aligned to the AP CSA Framework

CodeHS courses are also aligned to Iowa Core Standards for Math and Science. You can see explore how each course aligns to specific standards in the links below:

- [Alignment to Iowa 3A Standards](#)
- [Alignment to Iowa 3B Standards](#)
- [Alignment to Next Generation Science Standards for High School](#)
- [Alignment to Iowa Core Math Number and Quantity](#)
- [Alignment to Common Core Math Algebra](#)
- [Alignment to Common Core Math Functions](#)
- [Alignment to Iowa Core Math Geometry](#)
- [Alignment to Common Core Math Statistics and Probability](#)

- **Describe how standards are age and academically appropriate.**

The CSTA standards were created by a team of experts and outline age appropriate expectations by grade band. When developing curriculum aligned to each standard, CodeHS considers the age group and appropriately levels the delivery of instruction so it is academically appropriate.

- **Describe how content is aligned to standards.**

CodeHS curriculum developers use the standards as a guide when developing content. We break standards down into objectives, and from there we design lessons that enable students to learn, explore, and apply the target skill in a meaningful and engaging way. Teachers and

administrators can easily see which lessons offer standards coverage from our standards explorer and lesson plan pages.

- **Provide a detailed description of how three standards are met.**

3A-AP-6: Design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue by using events to initiate instructions.

This standard is addressed over a series of lessons that builds up to a final project in the Iowa Foundations of Computer Science course. Students first introduced to events in the Mouse Events: Mouse Clicked lesson. In this lesson, students learn about mouse events, callback functions, and how to incorporate user mouse clicks into their programs. Students explore examples and complete a few exercises that enable them to practice the new skill.

Then, in the next module, the Final Project, students use their understanding of mouse click events with other programming concepts to create a story using JavaScript Graphics. Over the course of the module, students use the design process to develop their story program. Students brainstorm ideas for their story and how to incorporate user interaction. They then create a prototype, get feedback from users, and develop a final product based on feedback. In the end, they present their programs, where they must explain how their program enables the user to interact with their story.

Throughout these lessons, students go from learning the basics of events to incorporating them in a cohesive way into larger programs that they design themselves.

3A-NI-04: Evaluate the scalability and reliability of networks, by describing the relationship between routers, switches, servers, topology, and addressing.

This standard is addressed throughout the Networks and The Internet module in the Iowa Foundations of Computer Science course. Students start by learning about the basics of networks and how routers make it possible to send information from one computer to another and one network to another. Students then learn about IP addresses and DNS and how the hierarchy approach makes the internet scalable. Students synthesize this learning by completing an exercise where they write a Story of the Internet, in which they have to explain the process for sending and receiving information over the internet.

3A-IC-24: Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices

This standard is addressed across multiple lessons and modules in the Iowa Foundations of Computer Science course. Students explore the positive and negative impacts of the internet in Lesson 4.7: The Impact of the Internet. In this lesson, students learn about the Digital Divide and reflect on the challenges of ensuring equitable access to the internet. Additionally, in the Digital Citizenship and Cyber Hygiene module, students delve into the topic of cyberbullying and digital footprints. In these lessons, students discuss how to prevent and deal with scenarios involving

cyberbullying as well as reflect on the impact of their own digital footprint. Students also consider issues of cybersecurity and the internet of things makes our lives more connected but potentially more vulnerable to hackers.

As a whole, these lessons give students the opportunity to learn about and explore different ways computing has impacted themselves and society as a whole.

Exhibit 16 - Evidence of Effectiveness

Provide how evaluation data was collected and an example of how an assessment informed program practice.

CodeHS courses include pretests to establish a baseline of student knowledge before taking each course. As students progress through each course, learning is measured by formative “check for understanding” quizzes and summative end of unit exams. These assessments are used to track student growth and identify areas for curriculum improvement. Insights from these assessments have informed our development of additional materials to support student mastery of topics such as problem decomposition.

Provide source(s) of evaluation evidence, including any third party, independent evaluation.

As an endorsed provider of AP Computer Science Principles and AP Computer Science A curriculum, CodeHS is provided with AP results from schools that use the CodeHS curriculum to prepare for the exam.

View 2018 Results:

<https://readwritecode.blog/2018-ap-exam-results-are-in-shoutout-to-all-our-ap-students-fc63329bdbc4>

Describe the benefits to students and educators in terms of content and skills growth, attitudes and intentions.

The pretest measures both student knowledge and mindsets toward computer science. We have measured that after just one computer science workshop with CodeHS, students are more likely to express self-confidence in computer science and demonstrate interest in pursuing computer science in college and beyond. Additionally, students and teachers learn the skills to complete full coding projects that can be used to build their portfolio of work. To see examples of programs students will complete, visit codehs.com/demos/.

Provide evidence of testing to show what measures were used to measure student learning, as a result of engaging with the curriculum.

CodeHS includes several assessment models, including exams and project-based assessments. CodeHS also provides teachers with a detailed view of student performance that can be used to inform interventions. To view all assessment tools, visit codehs.com/assessments/. Enter the following credentials to log in:

Email: iowadoe@codehs.com

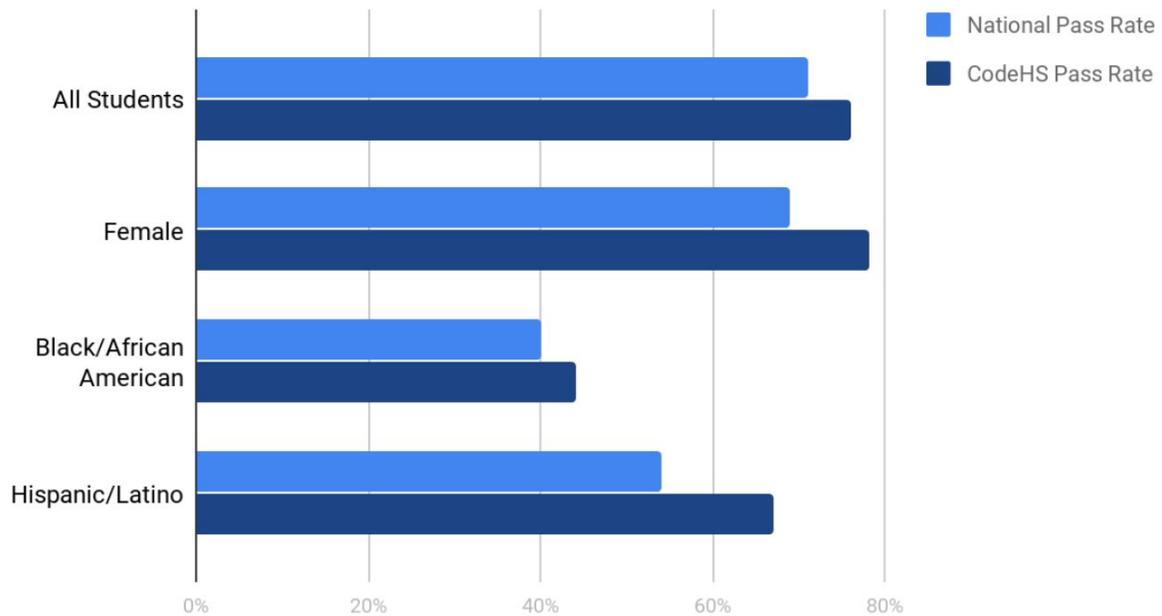
Password: iowaDEMO

Provide evidence of engaging learners who traditionally have been underrepresented in computer science, including but not limited to English Learners, persons of low income (FRL) and students with disabilities, as well as engaging learners to address race-ethnicity and gender gaps.

Each CodeHS lesson plan provides teachers with suggested modification for English Learners and Special Education students. The professional development program includes strategies to recruit and engage students typically underrepresented in computer science, and the CodeHS curriculum intentionally leaves room for student choice and voice in various assignments and projects.

In addition, we are given some demographic information on our AP learners. According to information provided by the College Board, CodeHS AP CSA curriculum is more likely to be taught to students from underrepresented minority groups. CodeHS pass rates for students who identified as with underrepresented groups including female, Black/African American, and Hispanic/Latino exceeded the national average for these groups, indicating that CodeHS sets these students up for success in AP and beyond.

AP Computer Science Principles 2018 Results



Provide evidence that participation in the curriculum resulted in positive learning outcomes for students.

In addition to student performance on AP exams mentioned above, students complete several full-length projects in every course. These projects help students begin their portfolio of work, which can be used as they apply to higher education or career opportunities. To see a few demos of what students complete throughout their coursework, visit codehs.com/demos/.

Exhibit 17 - Optional Features

- *Provide detailed information for any optional items that may be available.*
- *Provide any additional technology that may be needed to run the solution.*
- *Include costs for these items in the Cost Proposal*

As described throughout this Technical Proposal, aside from our free curriculum offerings, we also offer a Pro Plan, which gives teachers additional tools and resources to manage their class. Those additional features can be found here: https://codehs.com/info/plans_detail. No additional technology is required. Schools and districts are not required to purchase the Pro Plan to use CodeHS to teach computer science.

CodeHS also offers professional development opportunities, which are described in the “Professional Development” section of this RFP. As stated in the “Mandatory Specifications” section of this proposal, CodeHS does not currently require schools or districts to purchase professional development in order to use CodeHS and we consider this to be an optional feature. If the Agency determines it to be essential that PD is a requirement for teachers in Iowa, CodeHS will work with the Agency to determine the best way to establish this requirement in a way that is beneficial to Iowa schools and districts.

The Pro Plan features and Professional Development options have been discussed in other areas of the RFP in greater depth. In addition to these options, we also offer an industry relevant certification exam and certificate for students. The certifications for students are offered in the following areas: Java, Javascript, Python, Web Design, and Cybersecurity. No additional technology is required. Here is more information about our certification exams: <https://help.codehs.com/en/articles/3926926-codehs-certifications-overview>. In order to offer students a certification exam, the Agency, school, or district must purchase Certification Exam Vouchers.

Pricing for the Pro Plan, Professional Development, and Certification Exam Vouchers are all detailed in the attached Cost Proposal.

Exhibit 18 - Addendums



Governor Kim Reynolds
Lt. Governor Adam Gregg
Adam Steen, Director

February 15, 2021

To: All Potential Respondents
From: Kelli Sizenbach, Purchasing Agent
Subject: RFP1421282045

Addendum One

Please amend the subject RFP to include answers to the following timely received questions:

Q1. Will there be a need to crosswalk ISTE or other subject area standards to the Iowa CSTA standards?

A1. No. This is not required.

Q2. Are there metadata requirements for the curriculum and professional learning materials?

A2. No. There is no requirement.

Q3. Do you anticipate extending the bid due date?

A3. No.

Q4. What additional details are you willing to provide, if any, beyond what is stated in bid documents concerning how you will identify the winning bid?

A4. All information will be provided via the RFP document or an amendment.

Q5. Are Iowa school districts required to use certain LMSs, or do they choose their own? If there are preferred LMSs, could you provide a list?

A5. The decision about whether to use an LMS, and which LMS if any, is a local decision.

Q6. Section 1.12 of the "General Terms and Conditions for Service Contracts/Solicitations" specifies that all deliverables become the intellectual property of the State and Agency. Our company intends to offer a turn-key computer science curriculum solution that aligns precisely to Iowa standards, but we need to retain rights to our existing IP. Can you offer clarification about what type of deliverable the State would expect rights to?

A6. If you have proposed changes to the terms and conditions, please provide those as part of your response.

- Q7. Are you looking for standalone programs that teach the Iowa/CSTA standards for each grade band? Meaning, curricula that can be used to teach "specials/exploratory" classes?
- A7. We will consider both stand-alone curriculum and integrated curriculum.
- Q8. If we have nothing available for the K-5 and 6-8 bands, but have items for the 9-12/AP band, are we allowed to submit them?
- A8. Yes. Please note, separate proposals are required for each grade band.
- Q9. Do programs need to be platform specific? PC/Apple?
- A9. No.
- Q10. Should we include samples. If so, who/where should we send it to?
- A10. You are encouraged to provide sample artifacts from the curriculum and professional development. Samples should be included with your submission.
- Q11. Will the State provide an invoice when districts choose our product?
- A11. No. Individual districts will work directly with their selected vendor.

Please acknowledge receipt of this addendum by signing in the space provided below, and return this letter with your offer (do not send back separately).

I hereby acknowledge receipt of this addendum.



Signature

3/1/21

Date

Meg Davis, Director of Sales

Typed or Printed Name



Governor Kim Reynolds
Lt. Governor Adam Gregg
Adam Steen, Director

February 23, 2021

To: All Potential Respondents
From: Kelli Sizenbach, Purchasing Agent
Subject: RFP1421282045

Addendum Two

Please amend the subject RFP to include answers to the following timely received questions:

Q1. I see that in Exhibit 5 of this RFP, Letters of Reference are requested. Is the department looking specifically for letters that are written by our references, or only contact information? If actual letters are required, is there any kind of prompt that the references can follow? Would our references then send those directly to us to include in the RFP?

A1. Please provide letters of reference. There is not a specific template for these letters.

Q2. Would the resources on this list be the ONLY resources that districts could use the Computer Science Professional Development Incentive Funds on, or would the list be a starting point to help districts who don't know what their options are?

A2. The Computer Science Professional Development Incentive Fund cannot be used for curriculum. Recipients of Computer Science Professional Development Incentive fund grants choose their professional development approach. A different source of funding is available for districts and accredited nonpublic schools who are interested in the resources on our list.

Please acknowledge receipt of this addendum by signing in the space provided below, and return this letter with your offer (do not send back separately).

I hereby acknowledge receipt of this addendum.

Meg Davis
Signature

3/1/21
Date

Meg Davis, Director of Sales
Typed or Printed Name

Exhibit 19 - Request for Confidentiality

Part 1 – No Confidential Information Provided

Confidential Treatment Is Not Requested

Respondent acknowledges that proposal response contains no confidential, secret, privileged, or proprietary information. There is no request for confidential treatment of information contained in this proposal response.

This Form must be signed by the individual who signed the Respondent’s Proposal. The Respondent shall place this Form completed and signed in its Proposal.

- **Fill in and sign the following if you have provided no confidential information. If signing this Part 1, do not complete Part 2.**

CodeHS	RFP1421282045	Computer Science Curriculum
Company	RFP Number	RFP Title
	Director of Sales	3/1/21
Signature (required) Meg Davis	Title	Date

(Proceed to the next page only if Confidential Treatment is requested.)

Cost Proposal

Please find the Cost Proposal, which has been uploaded to VSS alongside this proposal.

