



CodeHS

Indiana Computer Science: 6th Grade
Middle School, 30 hours

Course Overview and Goals

CodeHS takes a modular approach to middle school curriculum, where each module contains about 10 hours of content and introduces students to a specific topic within the field of computer science. Designed specifically for middle school students, students will explore topics in a variety of engaging and interactive ways.

The Indiana Computer Science: 6th Grade course is an introductory course for early middle school students. It is great for students who are completely new to coding or for students who are continuing on their coding journey. The modules in this course are stand alone modules, and they can be taught in any order. The only exception is that students need to have completed Karel Adventures 1 before starting Karel Adventures 2.

This course is the first course in the **CodeHS Indiana Middle School Pathway**:

6th	Indiana Computer Science: 6th Grade
7th	Indiana Computer Science: 7th Grade
8th	Indiana Computer Science: 8th Grade

Learning Environment: The course utilizes a blended classroom approach. The content is a mix of web-based and physical activities. Students will write and run code in the browser, create digital presentations, complete interactive activities online, and engage in in-person collaborative exercises with classmates. Teachers utilize tools and resources provided by CodeHS to leverage time in the classroom and give focused 1-on-1 attention to students.

Module Overviews

Module 1: Karel Adventures 1 (10 hours)

Students learn the basics of JavaScript as they follow Karel the Dog on two fun-filled adventures.

Browse the full content of this unit at <https://codehs.com/course/22912/explore/module/27401>

Topics Covered	● Sequencing ● Syntax ● Commands ● Debugging ● Conditionals ● Conditional Statements ● While loops
Example Assignments	● Debug #1 ○ In this program, Karel should move forward 4 times, but there are some errors. Use the error messages to help find and fix the bugs! ● Riley the Troublemaker ○ Protect the tennis balls from Riley the Rabbit (he's just a gray square in Karel's world) by building a wall around the bucket! ● Asteroid Field ○ It looks like there is an asteroid field in between Karel and Mars! Help Karel to destroy each asteroid. Program Karel to use if statements and conditions to paint each asteroid (orange square) black. ● Tracking Tracy ○ Tracy left a trail through the sand. Follow the trail to find Tracy! You can nest different code structures together by putting if statements, if/else statements, and while loops inside each other.

Module 2: Karel Adventures 2 (10 hours)

Students learn the basics of JavaScript as they follow Karel the Dog on another fun-filled adventure.

Browse the full content of this unit at <https://codehs.com/course/22912/explore/module/27819>

Topics Covered	● Syntax ● Commands ● Conditional Statements ● Control Statements ● Functions ● Top-Down Decomposition ● Loops
Example Assignments	● Karel Clean Up ○ For this exercise, you are going to help Karel pick up all the dropped balls to take them to the park and hide them for the scavenger hunt. There are multiple Karel worlds of different sizes, so you will need to use a “while” loop to get you to the end, and inside the while loop you will need an “if” statement to pick up a ball if one is present.

	● Find the Park ○ Karel needs to set up the scavenger hunt in the park. You need to help Karel navigate the city streets to make it to the park. Watch out for the cars (black squares)! Karel needs to go around these squares on the way to the park. Once at the park, Karel should grab the tennis ball and finish facing east. ● Making Custom Colors ○ For this activity, you are going to create 4 squares with custom colors. The first will be all red, the second all green, and the third all blue. The fourth color can be any color you choose! ● Collect the Tennis Balls ○ In this challenge, you will combine all of the coding skills you have learned with Karel to write a program that has Karel pick up all of the tennis balls. Your program should work in all three worlds.
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Module 3: Exploring Computing (10 hours)

Students explore different technologies and the impact they have on our world.

Browse the full content of this unit at <https://codehs.com/course/22912/explore/module/42383>

Topics Covered	● History of Computing ● Software ● Hardware ● Operating Systems ● Cloud Computing ● Ethics and Legal Considerations ● The Future of Computing
Example Assignments	● History of Computing ○ <i>Jigsaw: Computer Interaction Over the Decades:</i> In this activity, students are going to work in small groups to research what it was like to interact with computers over the various decades. For each section, students will want to consider what was typical for most computers. For example, GUI interfaces were first used in the 1970s, but they were not typical until the 1980s. ● Hardware ○ <i>Brainstorm: New Computer Components:</i> In this activity, students are going to work with a partner to brainstorm 3 new components for a computer. It can be an entirely new idea or an improvement of an existing component. For each idea, answer the following questions: What is it? Does it replace something, or is it an additional item? If it replaces something, what is it replacing? How will this be helpful in the future?