

Course: Video Game Design I Module: Programming With Karel



Lesson 1.4: Functions in Karel

<https://codehs.com/course/6555/lesson/1.4>

Description	<p>Functions are used to teach Karel a word or command. Using functions allow us to break down our program into smaller pieces and make it easier to understand.</p>
Objective	<p>Help students understand what functions are for and how using them improves programs.</p>
Activities	<p> 1.4.1 Video: Functions in Karel 1.4.2 Quiz: Functions in Karel Quiz 1.4.3 Example: Turn Around 1.4.4 Exercise: Pancakes 1.4.5 Exercise: Mario Karel </p>
Prior Knowledge	<p>Basic syntax rules in writing commands and functions.</p>
Planning Notes	<p>Revisit student created functions from earlier if needed. Speakers that enable students to hear music are needed for this activity.</p>
Standards Addressed	<p>N/A</p>
Teaching and Learning Strategies	<ul style="list-style-type: none"> • Choose one volunteer to be the dancer • The class will watch a dance and attempt to program the dancer to complete the steps. • Ensure that the dancer cannot see the dance and allow the class to watch the steps multiple times and write down the instructions. • Direct students to find steps that can be broken down into smaller parts so that the dancer can easily remember it. • Also note what parts of the dance are repeated. • The dancer will perform the dance according to instructions • Transition to the next activity by telling students that we use this process of breaking down programs by writing functions. Functions are used with Karel to teach her new words. • Watch the Functions in Karel video.

	<ul style="list-style-type: none"> • Have the class discuss what the difference is between defining a function and calling a function. • Direct students to complete Pancakes and Mario Karel either individually or in pairs.
Discussion Questions	<ul style="list-style-type: none"> • Why are functions important? • How do functions change how we think about our programs?
Resources/Handouts	<p>Dancing with Functions (student)</p> <p>Naming Functions (student)</p> <p>Naming Functions (teacher)</p> <p>Dancing with Functions (teacher)</p> <p>What's Wrong with This Function? (student)</p> <p>What's Wrong with This Function? (teacher)</p>

Vocabulary

Term		Definition
Modification: Advanced	Modification: Special Education	Modification: English Language Learners
<ul style="list-style-type: none"> • Have students create an original Sandbox program that defines and calls a minimum of 4 (four) functions. 	<ul style="list-style-type: none"> • Allow students to practice writing functions using the What's Wrong With This Function? handout. This handout reviews the rules and syntax. • This handout can also replace the homework assignment. 	<ul style="list-style-type: none"> • Complete a flowchart that diagrams how a function works in a program.