

Course: Video Game Design I Module: Programming With Karel



Lesson 1.4: Functions in Karel

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

Description	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.
Objective	Help students understand what functions are for and how using them improves programs.
Activities	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
Prior Knowledge	Basic syntax rules in writing commands and functions.
Planning Notes	Revisit student created functions from earlier if needed. Speakers that enable students to hear music are needed for this activity.
Standards Addressed	N/A
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.