Course: New York Computer Science 9-12 | Module: Control Structures

Lesson 6.2: If/Else Statements

https://codehs.com/course/19963/lesson/6.2

Description	In this lesson, students learn about if statements as a way to make decisions and execute specific code depending on the validity of a condition.
Objective	Students will be able to: • Explain the purpose of if statements • Create their own if statements to selective choose which code is executed in their programs
Activities	6.2.1 Video: If Statements 6.2.2 Check for Understanding: If Statements Quiz 6.2.3 Example: Are You Logged In? 6.2.4 Exercise: Is It Raining? 6.2.5 Exercise: Mood Playlist 6.2.6 Badge: Conditionals Badge
Prior Knowledge	• Proficiency with initializing and assigning variables. • Proficiency with boolean variables • Proficiency with logical operators (&&, ll, !) • Proficiency with comparison operators (<, <=, >, >=, ==, !=)
Planning Notes	• If students have completed the Karel unit, they should be familiar with if statements already. Pick a Karel exercise to use as an example to refresh their memory about if statements.
Standards Addressed	

Teaching and Learning Strategies	**Lesson Opener:**
	• Have students complete the beginning of class discussion questions. [5 -7 mins]
	  ◦ Have students share their if statements with one another. Write out student answers on the board in pseudocode:
	`if outdoors`
	`  swim`
	`if wearingHelmet`
	`  bike`
	• Review Karel if statements with the class by pulling up sample code from earlier. Have students discuss in small groups how if statements in Karel worked, and what they were used for. [5 mins]
	  ◦ Inform students that if statements are actually part of every programming language, and we can use them in JavaScript as well!
	Activities:
	• Watch the *If Statements* video and complete the corresponding quiz. [5-7 mins]

	◦ Have students recall the different ways they can make booleans ▪ Literal values (true, false) ▪ Boolean variables ▪ Expressions with logical operators (a && b) ▪ Expressions with comparison operators (a > b) • Explore the *Are you logged in?* example. [10 mins] • Complete *Is it raining?* and *Mood Playlist* exercises. [10-15 mins] **Lesson Closer:** • Have students complete the end-of-class discussion questions. [5 min]
Discussion Questions	**Beginning of Class:** • What is something you only do if you are wearing a helmet? What is something you only do if you are outdoors? Create propositional statements: "If __**, then** __" ◦ *If I'm wearing a helmet, then I am biking.* ◦ *If I'm outdoors, then I am going on a run.* • How could we translate the if statements above into boolean expressions? For example, what boolean value would `hasHelmet` be assigned if I want to ride a bike? ◦ `let hasHelmet = true;` ◦ `let isOutside = true;` **End of Class:** • Write out the statements from the beginning of class in code using boolean variables. For example: `if (wearingHelmet) { bike(); }` • Describe how you would write code that only executes if the user inputs a number greater than 10. ◦ *Create an if statement that checks if the user input is greater than 10. If that's true, then the code will execute inside the if statement.* • Why are if statements useful? ◦ *if statements allow programmers to create branching programs that change depending on a condition. This allows programs to be more flexible and personalized based on user input.* • What is a program, app, or website you use that only does something if you input a certain value, or perform a certain action? Write out an example of the if statement that makes this happen. ◦ *If the filter button on the Snapchat filter is clicked, then a specific filter will be applied to the picture.* ◦ *If shuffle is pressed on an app, the music player will shuffle the playlist.*
Resources/Handouts	

Vocabulary

Term	Definition
If Statement	An if statement lets you ask a question to the program and only run code if the answer is true.
If Else Statement	Control structure that lets us do either one section of code or another depending on a test.

Conditional Statement	A statement that evaluates to true or false.

Modification: Advanced	Modification: Special Education	Modification: English Language Learners
• Encourage student to replace if statements with more efficient if/else statements in *Negative Numbers* and *Great Names*.	• Have students write down the if statement conditionals on paper before writing any code in the editor. • Allow students to work in pairs.	• Have students write down the if statement conditionals on paper before writing any code in the editor in whatever language they prefer. • Allow students to work in pairs.