

Lesson 16: Mouse Input

Overview

Question of the Day: What are more ways that the computer can react to user input?

In this lesson students continue to explore ways to use conditional statements to take user input. In addition to the keyboard commands learned yesterday, students will learn about several ways to take mouse input. They will also expand their understanding of conditionals to include `else`, which allows for the computer to run a certain section of code when a condition is true, and a different section of code when it is not.

Purpose

Students have learned how to make simple decisions with conditionals. Sometimes, however, we want to make decisions based on whether the condition we asked about originally was false. That's where else statements come in. Else statements are a second statement which is attached to an if statement. Else statements execute when the conditions they are attached to are false.

This concept is introduced alongside several new mouse input commands, allowing students to gradually build up programs that use input in different ways.

Assessment Opportunities

1. **Use an if-else statement to control the flow of a program.**

See Level 8 in Code Studio.

2. **Respond to a variety of types of user input.**

Use the wrap up discussion to check students' understanding of the different types of user input. You may also informally check their ability to use them as they progress through the Code Studio lesson.

Standards

Full Course Alignment

CSTA K-12 Computer Science Standards (2017)

► **AP** - Algorithms & Programming

Objectives

Students will be able to:

- Respond to a variety of types of user input.
- Use an if-else statement to control the flow of a program.

Links

Heads Up! Please make a copy of any documents you plan to share with students.

For the teachers

- **CSD Unit 3 - Interactive Animations and Games** - Slides
- **If-Else Statements** - Resource

For the students

- **If/Else Statements** - Video ([Download](#))

Vocabulary

- **Conditionals** - Statements that only run when certain conditions are true.

Introduced Code

- `if (__) { __; } else { __; }`
- `keyWentDown(code)`
- `keyWentUp(code)`
- `mouseDidMove`
- `mouseDown(button)`
- `mouseWentDown(button)`
- `mouseWentUp(button)`
- `visible`

Agenda

Lesson Modifications

Warm Up (5 minutes)

3-2-1 Review

Activity (35 minutes)

If/Else and More Input

Wrap Up (5 minutes)

Wrap Up

Teaching Guide

Lesson Modifications



Attention, teachers! If you are teaching virtually or in a socially-distanced classroom, please **click here** to access modifications that can be used during this lesson.

Warm Up (5 minutes)

3-2-1 Review

Prompt: What are three different things that you've been able to do with conditionals? What are two big things that everyone should remember when using conditionals? What's one thing you still want to learn how to program?

Share: Allow students to share out their responses.

Discussion Goal

Students may come up with many different specific scenarios, but make sure that they are differentiating between conditionals that respond to user input and those that respond to other changes in the program, such as a score increase, the location of a sprite, or player lives lost. Major things to remember may include putting the conditionals in the draw loop or paying attention to how the blocks are nested.

Remarks

That's great! Today we're going to look at a way to make our conditionals even more powerful, and see some new ways to get user input.

Question of the Day: What are more ways that the computer can react to user input?

Activity (35 minutes)

If/Else and More Input

Transition: Move the class to Code Studio, and have students complete the prediction level as a class or in small groups, then talk about what they found.

Video: Watch the video as a class and review the discussion questions together.

 1

Prediction

Questions to Consider with Video:

- What's an example of when you would need an "if/else" statement?

 2

Video: If/Else Statements

 Discussion Goal

Goal:

Make sure students are thinking of situations in which they want two different things to happen, depending on the situation. For example, they may say that they want one animation if the sprite is moving to the left and a different animation if the sprite is moving to the right. Challenge the students to think about when they would just use an `if` block, and when an `ifelse` block is necessary.

 3-6


Skill Building

3

4

5

6

 Assessment Opportunity

Level 3: You can use this level as a formative assessment for students. Click inside the level to view a rubric and leave feedback to your students


Level 4: You can use this level as a formative assessment for students. Click inside the level to view a rubric and leave feedback to your students

 7

Practice

 8

Assessment

 Assessment Opportunity

You can use this level as a formative assessment for students. Click inside the level to view a rubric and leave feedback to your students

Wrap Up (5 minutes)

Wrap Up

Question of the Day: What are more ways that the computer can react to user input?

Prompt: You now have many different ways to detect user input. With a partner, choose three different user input commands and think of an example of when you might use them. Be ready to share with the class!

✔ Assessment Opportunity ▲

This discussion serves as a brief review and assessment of the new user input commands. As students share out, press them to explain why their choice is better than other, similar choices (`mouseDown` / `mouseWentDown` / `mouseWentUp`). If any commands are missing after all the groups have shared out, elicit the missing ones from the group before moving on.