Course: Video Game Design in JavaScript (2023) l Module: Animation and Games

Lesson 9.6: Key Events

https://codehs.com/course/20517/lesson/9.6

Description	In this lesson, students will learn how to use keyboard keys to control events. Keyboard events capture when the user presses keys on the keyboard. This allows students to write programs that take input from the keyboard to change what is happening in the program.
Objective	Students will be able to: • Explain how events are different from timers. • Create interactive programs that use events to respond to the keyboard input.
Activities	9.6.1 Video: Key Events 9.6.2 Check for Understanding: Key Events Quiz 9.6.3 Example: Keyboard Character 9.6.4 Exercise: Basic Snake 9.6.5 Notes: Project: Evasion (Key Events) 9.6.6 Free Response: Project Reflection
Prior Knowledge	• Functions, parameters, and return values • Callback functions • Mouse events lessons
Planning Notes	• There is a handout that accompanies this lesson. It can be used as an in class activity or a homework assignment. Determine if and how this handout will be used and make the appropriate number of printouts prior to the class period. • There are extension exercises to the *Basic Snake* activity which can be found in the *Practice: Graphics and Animation* supplemental module. These can be used to challenge students who are moving quickly through the material or assigned as a group project before the end of the course. • This lesson includes the final phase of the Evasion project, which means it will likely take 2-3 class periods to complete the entire lesson, depending on student ability and which extensions students pursue.
Standards Addressed	

Teaching and Learning Strategies	**Lesson Opener:**
	
	• Have students brainstorm and write down answers to the discussion questions listed below. Students can work individually or in groups/pairs. Have them share their responses. [5 mins]
	
	Activities:
	
	• Watch video individually or as a class and have students complete the quiz. [5-7 mins]
	• Walk through *Keyboard Character* as a class. Isn't it cute?! [5 mins]
	• Complete the *Basic Snake* exercise individually or in pairs. [10-20 mins]
	   ○ For those who might struggle with this exercise, consider having them complete this lesson's handout first, as one of the questions included is very similar to the code students will need to write for this exercise.
	   ○ For advanced students looking to have their snake grow, have them reference their *Dripping Paint* exercise or assign them the *Snake Game* lesson in the supplemental modules.
	• Complete their *Project: Evasion* program! [30+ mins]
	   ○ This is the final step in this project, so plan ahead on how much time you would like to give them to finish up their programs. There have been many optional extension ideas over the last few lessons for students to consider.
	   ○ Consider having students share their final projects with the class or in small groups! It's always fun and a great learning experience for students to see each others work. Highlight any projects that included the extensions or went above and beyond!
	• Complete *Project Reflection* free response questions. [10-15 mins]
	
	Lesson Closer:
	
	• Students can complete the *Key Events* handout activity in pairs or individually if time permits, or for homework. [7-10 mins]
	• Have students reflect and discuss their responses to the end of class discussion questions. [5 mins]

Discussion Questions	**Beginning of class:**
	
	• What is an event?
	   ○ *An event occurs when the user interacts with our program.*
	• How are mouse events triggered?
	   ○ *When a user clicks or drags their mouse, we can use the information as a trigger for an event.*
	• Is the mouse the only means we have of interacting with a computer game? If not, what else can be used?
	   ○ *The keyboard! We can interact by clicking or holding down various keys to make objects move on the screen.*

End of class:

- How are key events triggered?
  - *When a user types a key on their keyboard, we can use this information to trigger and event.*
- How can we determine what key was pressed to trigger an event?
  - *We use the command* `e.key == [key code]`, like `e.key == "a".`*
- How have apps or games that you've interacted with use key events?
  - *Answers will vary.*

Resources/Handouts

[Pair Programming Guide](#)

[Events: Key Pressed (Student)](#)

[Events: Key Pressed (Teacher)](#)

Vocabulary

Term	Definition
[Event](#)	An event is an action (such as clicking the mouse or pressing a key on the keyboard) that a program detects and uses as input.
[Callback Function](#)	A function passed as a parameter to another function in order to be called later.
[Key Event](#)	A key event is when the user does presses any of the keyboard keys.

Modification: Advanced	Modification: Special Education	Modification: English Language Learners
- Encourage students to extend their Evasion project or Basic Snake activity. - Have students share out with the class any extensions they successfully incorporated. - Have students support others in finishing up their projects.	- Define the methods keyDownMethod, isKeyPressed, and keyUpMethod to students beforehand. Show student where these methods exist in the DOCS tab. - Show how the key event structure is similar to the mouse event structure.	- Define the methods keyDownMethod, isKeyPressed, and keyUpMethod to students beforehand. Show student where these methods exist in the DOCS tab. - Show how the key event structure is similar to the mouse event structure.

	• Show how the conditionals used to check which key is pressed is the same as checking for the value of a variable.	• Show how the conditionals used to check which key is pressed is the same as checking for the value of a variable.

• Show how the conditionals used to check which key is pressed is the same as checking for the value of a variable.

• Show how the conditionals used to check which key is pressed is the same as checking for the value of a variable.