### **Javascript: Conditionals**

### **Duration: 1 Week**

### **Summary**

This lesson introduces conditional (if) statements that implement decisions in the program. It introduces the notion of logical expressions that yield boolean values (true/false). It shows the students several predefined boolean variables, such as MousePressed, that provide the program with information about interaction with the user. The lesson also includes tips on debugging a program and shows how to do it in Khan Javascript by using print statements.

### **Learning Objectives**

* Explain what a conditional statement is and how it can be used to control behavior in a program.
* Write Khan Javascript If statements.
* Explain what a Boolean variable, like *MouseIsPressed*, is in Khan Javascript.
* Program with *MouseIsPressed* in Khan Javascript.
* Explain what a Boolean expression is.
* Program with a Boolean expression in Khan Javascript.
* State the Khan Javascript syntax for relational operators, for instance --- being "is equal".
* Explain the meaning of logical operators, like "and", and how they can be used in conditional statements.
* Write Khan Javascript code with logical operators in conditional statements.
* Explain how to generate a *random* integer in Khan Javascript.
* Explain *if* and *else* and how it makes decisions about what code to run.
* Program with *if* and *else* in Khan Javascript.
* Explain *else if* and how it can be added to if/else statements.
* Program with *else if* in Khan Javascript.
* Evaluate the correctness of a program. [AP CSP P4, LO 5.4.1]
* Define *bug* and debugging.
* Debug a program using print statements.
* Employ appropriate mathematical and logical concepts in programming, such as forming logical boolean expressions. [AP CSP P1, LO 5.5.1]

### **Course Material**

Sign in to Khan Academy before completing the following tutorials.

Complete the following Videos and Exercises, in order. You will earn points for completing the exercises labeled "Do". You must be signed in to Khan Academy to have it show that you completed these modules. The assignment requires that you show this.

**Logic and if Statements**

* Watch: [If Statements](https://www.khanacademy.org/computing/cs/programming/logic-if-statements/p/if-statements) [4:21]
* Do: [Bouncy Ball](https://www.khanacademy.org/computing/cs/programming/logic-if-statements/p/challenge-bouncy-ball)
* Watch: [More Mouse Interaction](https://www.khanacademy.org/computing/cs/programming/logic-if-statements/p/more-mouse-interaction) [4:28]
* Do: [Your First Painting App](https://www.khanacademy.org/computing/cs/programming/logic-if-statements/p/challenge-your-first-painting-app)
* Watch: [Booleans](https://www.khanacademy.org/computing/cs/programming/logic-if-statements/p/booleans) [6:35]
* Do: [Number Analyzer](https://www.khanacademy.org/computing/cs/programming/logic-if-statements/p/challenge-number-analyzer)
* Watch: [Logic Operators](https://www.khanacademy.org/computing/cs/programming/logic-if-statements/p/logical-operators) [4:31]
* Do: [Your First Button](https://www.khanacademy.org/computing/cs/programming/logic-if-statements/p/challenge-your-first-button)
* Do: [Smarter Button](https://www.khanacademy.org/computing/cs/programming/logic-if-statements/p/challenge-smarter-button)
* Watch: [If/Else - Part 1](https://www.khanacademy.org/computing/computer-programming/programming/logic-if-statements/p/ifelse-part-1) [4:44]
* Do: [Flashy Flash Card](https://www.khanacademy.org/computing/cs/programming/logic-if-statements/p/challenge-flashy-flash-card)
* Watch: [If/Else - Part 2](https://www.khanacademy.org/computing/computer-programming/programming/logic-if-statements/p/ifelse-part-2) [5:52]
* Read: [Review: Logic and if Statements](https://www.khanacademy.org/computing/cs/programming/logic-if-statements/a/review-logic-and-if-statements)
* Watch: [Debugging With Print Statements](https://www.khanacademy.org/computing/computer-programming/programming/debugging-programs/p/debugging-with-printlns) [5:50]
* Read: [More On Debugging](https://www.khanacademy.org/computing/computer-programming/programming/debugging-programs/a/more-debugging-tips)

### **Assessments**

* Conceptual Quiz:
  + [Conditionals and If/Else](https://docs.google.com/document/d/1oikKf7Z7SRly5jCtsaJVfMAb6_zOu-ZHC9YuEo_3jhE/edit?usp=sharing) (requires access)
* Practical Assignment:
  + [Javascript: Conditionals](https://drive.google.com/open?id=1ChdmUw2mKfkpHGpau73CqedukM55iLd_NN7GJuUBHb4) | [Grading Rubric](https://drive.google.com/open?id=1qdeQ84aLinSlx32FwjkrE0cbKRqsWKfLmcCKxZSrGOM) | [Answer Key](https://docs.google.com/a/my.uri.edu/document/d/1SEFcvVv4bsrT_yU_oTpR5ardA5kIBA-pNq84hX2oNZo/edit?usp=sharing)