

Lesson 2.03: Conditionals ## Learning Objectives Students will be able to... * Define and identify: `if`, `else`, `elif`, conditionals, flow of control` * Create chaining if statements * Understand how conditional statements alter the flow of control of a program ## Materials/Preparation * [Do Now] * [Lab - Game Show] ([printable lab document]) ([editable lab document]) * Solution (access protected resources by clicking on "Additional Curriculum Materials" on the [TEALS Dashboard]) * [Associated Readings 2.3] (<https://tealsk12.gitbook.io/intro-cs-2/readings#2-3>) * Read through the do now, lesson, and lab so that you are familiar with the requirements and can assist students * **Microsoft Learn - Conditionals Video** [! [Conditionals Video](<https://img.youtube.com/vi/5pPKYWqkoek/0.jpg>)](<https://www.youtube.com/watch?v=5pPKYWqkoek>) * **Microsoft Learn - Handling Multiple Conditionals Video** [! [Multiple Conditionals Video](<https://img.youtube.com/vi/oYaGJBMoXok/0.jpg>)](<https://www.youtube.com/watch?v=oYaGJBMoXok>) * **Microsoft Learn - Complex Conditions Video** [! [Multiple Conditionals Video](<https://img.youtube.com/vi/IBOHc87yFYw/0.jpg>)](<https://www.youtube.com/watch?v=IBOHc87yFYw>)] ## Pacing Guide | **Duration** | **Description** | | ----- | ----- | | 5 Minutes | Do Now | | 10 Minutes | Lesson | | 35 Minutes | Lab | | 5 Minutes | Debrief | ## Instructor's Notes ### 1. Do Now * Project the Do Now on the board, circulate around the class to check that students are working and understand the instructions. * Students should quickly realize that they do not have all the tools necessary to complete the task. ### 2. Lesson ##### Instruction * Ask students what they felt like they needed that they had in Snap! * Explain that in order to write useful programs, we almost always need the ability to check conditions and change the behavior of the program accordingly. * **Conditional** statements give us this ability to affect the **flow of control**. * The simplest form is the `if` statement. The Boolean expression after `if` is called the condition. If it is true, then the indented statement gets executed. If not, nothing happens. ``python if x > 0: print("x is positive") `` ##### Take a look at this example ``python animal = input("What is your favorite animal?") if animal == 'cat' or 'dog': print("A great pet!") else: print("Good choice") `` ##### Discussion * Give students time to predict the output for various inputs in the above example. * Discuss why the code is buggy * fix it together as a class. ##### Demonstration * Write out the syntax of the `if` statement on the board. Point out the Boolean expression(condition), the colon, and the indentation. * Ask students if they recall what else went along with the if statement when they used it in Snap! * `else` is used when there are two possibilities and the condition determines which one gets executed. * Demonstrate the syntax of `else` * Describe the `elif` statement * Sometimes there are more than two possibilities and we need more than two branches. One way to express a computation like that is a chained conditional: * Demonstrate the syntax of `elif` ### 3. Lab * Students convert the triangle program written in Snap! into Python. * Students must also write a program that simulates a list index using `if` statements. ### 4. Debrief * Check student progress and completion of the lab, wrap up by taking any final questions. * Have students write down a couple of learnings that they stood out to them today in their notebooks. ## Accommodation/Differentiation Use the following as an extension activity for students that are moving quickly: * Convert and finish the following SNAP Vending Machine program in Python. ![Vending Machine](python_2.04_vending_machine.png) If students are moving quickly, this lesson can move onto lists. ## Forums discussion [Lesson 2.03: Conditionals (TEALS Discourse Account Required)] (<https://forums.tealsk12.org/c/2nd-semester-unit-2/lesson-2-03-conditionals>) [Do Now]:do_now.md.html [Lab - Game Show]:lab.md.html [TEALS Dashboard]:<http://www.tealsk12.org/dashboard> [printable lab document]: https://github.com/TEALSK12/2nd-semester-introduction-to-computer-science/raw/master/units/2_unit/03_lesson/lab.pdf [editable lab document]: https://github.com/TEALSK12/2nd-semester-introduction-to-computer-science/raw/master/units/2_unit/03_lesson/lab.docx