

# Lesson 3.02: User-Defined Functions ## Learning Objectives Students will be able to... \* Define and identify: \*\*abstraction, def\*\* \* Create functions ## Materials/Preparation \* [Do Now] \* [Lab - Birthday Song & Random Cards] ([printable lab document]) ([editable lab document]) \* Associated Reading - section 3.2 of Book \* Read through the do now, lesson, and lab so that you are familiar with the requirements and can assist students. \* [Associated Readings 3.2](https://tealsk12.gitbook.io/intro-cs-2/readings#3-2) ## Pacing Guide | \*\*Duration\*\* | \*\*Description\*\* | | ----- | ----- | | 5 Minutes | Do Now | | 10 Minutes | Lesson | | 35 Minutes | Lab | | 5 Minutes | Debrief | ## Instructor's Notes ### 1. Do Now \* Students should take 5 minutes to follow the instructions on the Do Now in order to create/manipulate a user-defined function. ### 2. Lesson ##### Abstraction \* Abstraction is managing the complexity of a program by removing details and pushing them down to a lower level \* Ask students to brainstorm why a function might be useful in programming. \* Less repeated code. \* Breaking the problem up into smaller pieces and solving each piece ##### Demonstration \* Demonstrate to students how you create a function using \*def\*, calling out the syntax and where arguments would go. \* Ask students how they would call your example function. \* Have students practice making a function that takes two arguments, adds them together, and returns the sum. ##### Function Contracts \* Introduce the concept of a function contract using `#`, which adds a comment (non-executed line of code) \* The function contract should \* specify the name \* explain the purpose \* list what arguments it takes in and the types of those arguments \* specify the return type ### 3. Lab \* Practice making a function that will take in a name as an argument and output the 'happy birthday song' to that name. \* Create a function that randomly selects 5 cards from a deck of cards (repeating allowed). ### 4. Debrief \* Check student progress and completion of the lab, wrap up by taking any final questions. ## Accommodation/Differentiation If students are moving quickly, they could go back and use functions to improve an old project. ## Forum discussion [Lesson 3.02: User-Defined Functions (TEALS Discourse Account Required)](https://forums.tealsk12.org/c/2nd-semester-unit-3-functions/lesson-3-02-user-defined-functions) [Do Now]:do\_now.md.html [Lab - Birthday Song & Random Cards]:lab.md.html [printable lab document]: https://github.com/TEALSK12/2nd-semester-introduction-to-computer-science/raw/master/units/3\_unit/02\_lesson/lab.pdf [editable lab document]: https://github.com/TEALSK12/2nd-semester-introduction-to-computer-science/raw/master/units/3\_unit/02\_lesson/lab.docx