

Ryan Baker

December 25, 2024

Contents

Lecture Objectives

1 Functions

- What is a function?
 - In programming, a function is a reusable block of code
 - It (optionally) takes input and (optionally) returns an output
- Why use functions?
 - We often want to repeat the same behavior on different pieces of data
 - Rather than pasting the same code many times, we use a function
 - * Functions help to keep code maintainable and readable
 - There is a balance to strike when extracting code into functions
 - * Too few functions results in long and repetitive code
 - * Too many functions will result in sub-optimal performance and a code base that is very hard to read
 - Every time a function is called a new frame needs to be pushed to the stack and we jump around the executable
- How to define a function: **type name(arguments)**
 - **type**: The return type of the function (can be `void`)
 - **name**: The function's name
 - **arguments**: The input arguments to a function
 - * Specified as **type name** in a comma separated list
 - * **Example**: `int add(int a, int b, int c) {...}`
 - Together, the function's name and arguments make up the signature
- How to call a function: **name(arguments)**
 - **Example**: `int sum = add(1, 2, 3); // sum = 6`