CSCI 141

Lecture 13:
A tiny bit more on Functions
Midterm Review
Announcements

• QOTD 10/21:
  • is now due Friday.
  • everyone now has a second attempt.

• There is no QOTD 10/23.
Goals

• As time allows:

  • Know the syntax for defining your own functions

  • Know how to define and use functions that take no arguments and return no values

  • Know how to use parameters to refer to the input arguments of a function

• Review for the midterm.
Functions, Revisited

What **is** a function, anyway?
- As a user, you can treat a function as a “black box”: all you need to know is:
  - the **inputs**, **effects**, and **return value**.
- Functions are named chunks of code.

```
Input(s) → [ ] → Return value
(Effects)
```

A bunch of (complicated) stuff is wrapped up in a nice, easy-to-use package.
QOTD

Which of the following is a true statement about the print function?

- It does not take inputs (arguments)
- It does not return a value
- It does not have any effects
- Using it requires knowing how it is written
Functions, Revisited

What **is** a function, anyway?

- As a user, you can treat a function as a “**black box**”: all you need to know is:
  - the **inputs**, **effects**, and **return value**.

- Functions are named chunks of code.

\[
\text{Input(s)} \rightarrow \boxed{\text{(Effects)}} \rightarrow \text{Return value}
\]

A bunch of (complicated) stuff is wrapped up in a nice, easy-to-use package.
Writing Functions: Syntax

Looking inside the black box...

```python
def name(parameters):
    statements
```

Input(s) → (Effects) → Return value
Writing Functions: Syntax

Looking inside the black box...

```
def name(parameters):
    statements
```

Input(s)

(Effects)

Return value

Two important questions:
Writing Functions: Syntax

Looking inside the black box...

\[
\text{def } \text{name}(\text{parameters}): \\
\text{statements}
\]

Two important questions:
1. How does the function use the arguments (inputs) passed to it?
Writing Functions: Syntax

Two important questions:
1. How does the function use the arguments (inputs) passed to it?
2. How does the function return a value?
Writing Functions: Syntax

Two important questions:
1. How does the function use the arguments (inputs) passed to it?
2. How does the function return a value?

Let’s dodge these questions for a moment…
Functions: the simplest kind

No arguments, no return value:

```python
def name():
    statements
```

Example:

```python
def print_hello():
    print("Hello, world!")
```
Demo: Function to print a rectangle of # symbols

Input(s):
• none

Return value:
• none

print_rectangle

Effects: prints a 2x10 rectangle of #s to the screen
Demo: Function to print a rectangle of a symbol passed in as an argument.

Input(s):
- character to make a rectangle out of

Print rectangle

Return value:
- none

Effects: prints a 2x10 rectangle of the given character to the screen
Divisibility Checks

• Which of the following is True if and only if $a$ is divisible by $b$?

A. $b \div a == 0$
B. $b \% a == 0$
C. $a \div b == 0$
D. $a \% b == 0$
Midterm Review: Questions?
Leftover Socrative Questions

- L04 - Operators
- L07 - Boolean evaluation practice
Write a program that computes the sum of the first 100000 terms of the following series:

\[ \frac{1}{1^2} + \frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{4^2} + \frac{1}{5^2} + \cdots \]

Then, multiply the result by 6 and take its square root.
Write a program that prints the result of a random roll of a pair of dice each time the user presses enter, and quits when they enter "exit".