CompSci 101
Fall 2021
Reminders

• Social distance
• Livestream/async option
• Ed Discussion
• Assignments
  • APT-0 due Thurs
  • Complete Prelab-1 ASAP
  • QZ1-4(Due 9/7 @145pm)-ONLY ONES EXTENDED
• Lab 1-Friday
  • Complete Prelab-1
  • Attend your assigned section!
• Assessments
  • 3C Assessment-Learning Innovation
  • “Who Are You?”-Ms. Velasco (Welcome email)
  • 80% response rate → Extra credit
Key instructions

• Input
• Output
• Assignments*
• Math/Logic
• Conditionals
• Repetition

*not listed in book
PFTD

• Functions
  • Pre-defined
  • Parameters
  • Scope

“The mere imparting of information is not education.”
• Dr. Carter G. Woodson
People to Know: Dr. Mark Dean

- Tennessee (BS, EE)
- Florida Atlantic (MS, EE)
- Stanford (PhD, EE)
- Developed ISA bus
- Holds 3 of 9 patents on original PC
- First Black IBM Fellow
- Former Dean & Professor Emeritus, University of Tennessee
Reminder: main

```
'''
Created on 8/30/2021

@author: alicia
```

```python
if __name__ == '__main__':
    pass
```
Reminders

• **Software goals**
  • Simplicity, reusability, easily modified

• **Algorithm**
  • Step-by-step solutions to problem
  • Multiple algorithms needed in a single program

• **Variables**
  • Names for memory locations
  • Variables store values
    • Reusability

• **DESIGN FIRST (KISS model)**
  • How do we do this?
Can we reuse algorithms?

• Ex: Directions to the Bryan Center
  • What if you need to give these to everyone in the class?
  • How do we make this simple, easy to modify, and reusable for 200+ people?
• How do we do this for programs we create?
Functions

• “A named sequence of statements that belong together.”
• Accomplishes one task
  • Sound familiar?
• Written separately as its own “container”-ish
  • NOT written inside “main” (but used there)
Requirements of any function

• You must know:
  1. Where it’s defined (i.e., located)
  2. How to use (i.e., call) it (name)
  3. Any input it requires (parameters/arguments)
  4. Expected result (if any) of its execution (i.e., value)
     • Variable to store that value
Ex. Directions to Bryan Center

• Where it’s defined (i.e., located)
  • Course website
• How to use (i.e., call) it (name)
  • directions
• Any input it requires (parameters/arguments)
  • Bryan Center
• Expected result (if any) of its execution (i.e., value)
  • Directions to Bryan Center provided
  • You must “store” these (pocket, picture, etc.)
Two types of functions

• Pre-defined
  • Built into Python language
  • Commonly used by programmers
  • print(), len(), random()

• Programmer-defined
  • YOU must create them from scratch!!

• Python Standard Library
  • https://docs.python.org/3/library/

• Additional Python reference
  • https://www.w3schools.com/python/default.asp
How to use pre-defined functions

1. Where it’s defined
2. How to use (i.e., call) it (name)
3. Any input required (parameters/arguments)
4. Expected result (if any) of its execution (i.e., value)
   • Variable to store that value

```python
import module_name

if __name__ == '__main__':
    print(module_name.function_name(arguments))
```

How do these functions work??
Random numbers

- `random.random()`
  - Return floating point number in range [0.0, 1.0)
  - Demo

- `random.randint(a, b)`
  - Return random integer N such that $a \leq N \leq b$

- How would we simulate rolling dice?
Activity 1: Rolling Dice
Reminders

• Some functions “return” values after they complete.
  • Your program must “catch” (i.e., store) that value in a variable.
  • Otherwise → no way of using results of the function
• Demo
Reminders

• Work smarter, not harder
• Design first
• Try to identify where you are stuck
  • Identify resources to help solve problem
• Leverage your design and PythonTutor to understand program flow of control
  • [http://pythontutor.com](http://pythontutor.com)