CompSci 101
Fall 2021

Lecture 3

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

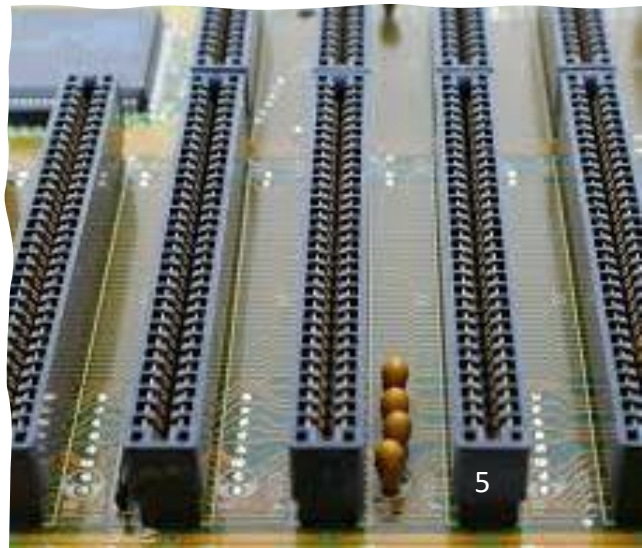
- Functions
  - Pre-defined
  - Parameters
  - Scope

“The mere imparting of information is not education.”

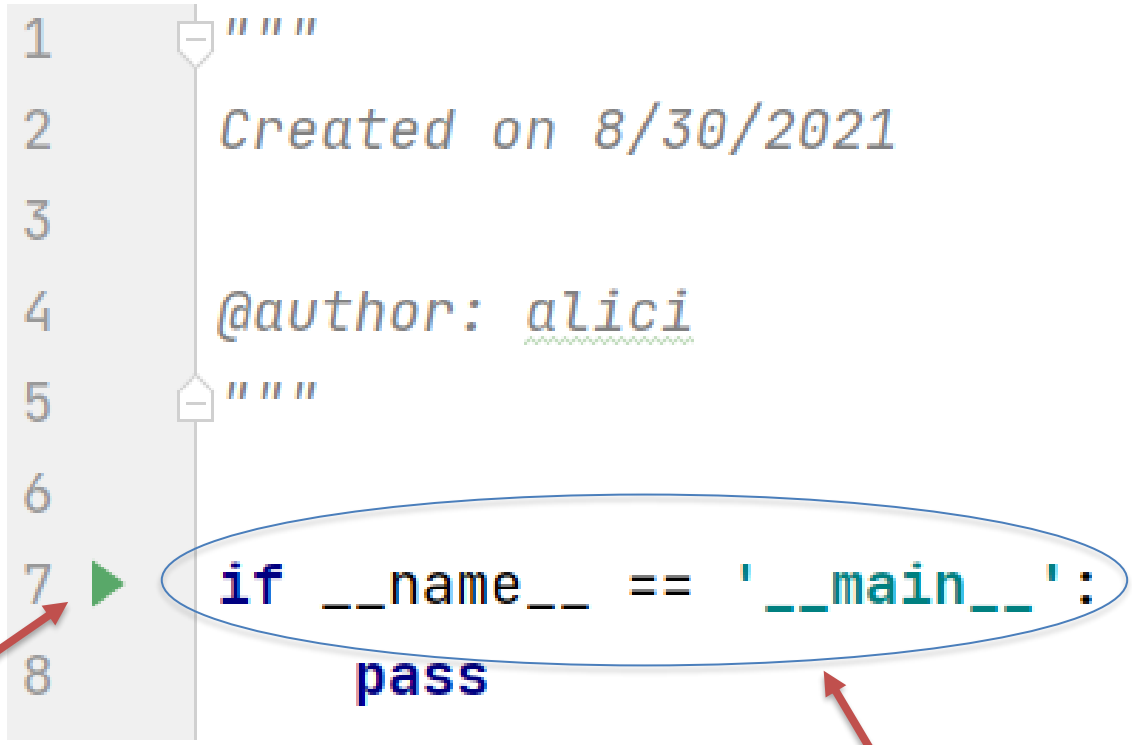
- Dr. Carter G. Woodson

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



Always indication of starting point IN PYCHARM ONLY

ALWAYS indication of starting point

Reminders

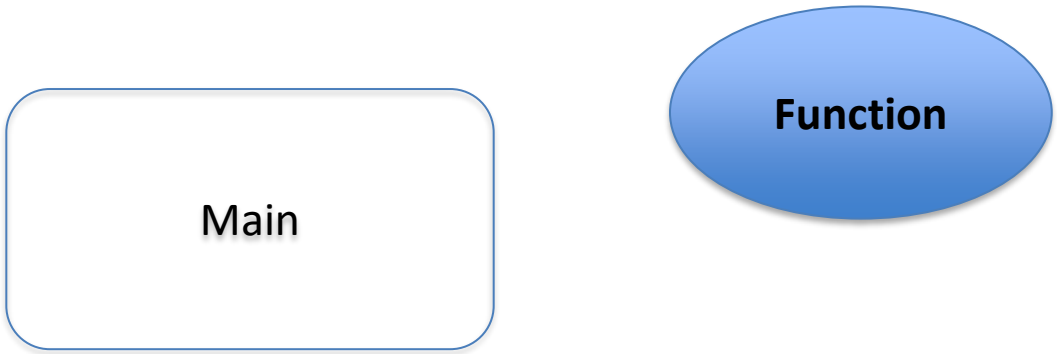
- Software goals
  - Simplicity, reusability, easily modified
- Algorithm
  - Step-by-step solutions to problem
  - Multiple algorithms needed in a single program
- Variables
  - Names for memory locations
  - Variables store values
    - Reusability
- DESIGN FIRST (KISS model)
  - How do we do this?

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

import *module_name*

if _ _name_ _ = = '_ _main_ _':
    print(*module_name*.*function_name*(*arguments*))

```
import math

if __name__ == '__main__':
    print(math.floor(6.3333345))
```

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 <= N <= b

- How would we simulate rolling dice?

Activity 1: Rolling Dice
http://bit.ly/101f21-08-31-1

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