PyCharm

Random Numbers

import random

- always needed at the top of your program

random.random() - generates a random between 0.0 (inclusive) and 1.0 (exclusive)

module   function

random.randint(start,end)

- generates a number between start and end (inclusive)

random.randrange(start, end, step)

- generates a number between start and end (exclusive) using step value

Debugger

- a program that is used to load other running programs in order to evaluate the status of the loaded program while it is running

- this includes viewing variables and their values, "stepping" through code while it is running, "breakpoints" allowing the program to run until a certain point is hit

Functions

- allows a block of code to be executed separately from the program flow

- can be executed any number of times

- can be executed from anywhere in your program

```python
def  func_name():

    # code to be executed goes here
```

_____

```python
func_name() # function is executed here
```

Local vs Global Variables

- a local variable is only inside a function, inside a loop or inside an if statement and is not referenced outside that area

- a global variable is declared at the "highest" point of a program and can be accessed inside/outside of a function, inside/outside of a loop, or anywhere in your program

Function Parameters

```
def func_name(a, b, c):

    # the body of the function
```

- variables "a", "b", and "c" are local variables that are only accessible in the function

```
func_name(1, 2, 3)
```

- passes the values (1, 2, 3) into the local variable (a, b, c)

Global Constants

MAX_COUNT = 10

    - located at the top of the program

    - aren't actually constants, just by convention

    - usage makes the program easier to maintain

    - removes "magic" numbers located throughout a program

Returning Values

- allows data to be passed from the function to the caller

    (e.g. func_name() # this is the caller)

```python
def func_name():
    return value   # value can be anything
```

Modules

- pre-existing Python functions

- can be imported into your programs

```python
import math
import random as r
from random import randint
from random import randint as r
```