

CS 106
Introduction to Computer Science I

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Today's Topics

- Questions / comments?
- Range
- We'll write a few programs together incorporating some recent concepts.
- Programmer-defined functions --- `def` keyword

For loop with range

- Range returns an object that produces a sequence of integers.
- Range can be called in 3 ways:
 - `range(stop)`
 - `range(start, stop)`
 - `range(start, stop, step)`
 - Each of these produces a sequence of ints starting at start and ending just before stop (that is, stop is not inclusive)
 - In first call above, start defaults to 0
 - step in third call changes the default of 1 to what is passed in

```
for i in range(10):  
    print(i)
```

- 0,1,2,3,4,5,6,7,8, and 9 will print all on separate lines

For loop with range

```
for i in range(5,10):  
    print(i)
```

5,6,7,8, and 9 will print

```
for i in range(1,20,3):  
    print(i)
```

1, 4, 7, 10, 13, 16, 19 prints

Programs to write together

- 1. Ask user to repeatedly enter numbers, q to quit, and show smallest, largest and average of the numbers
 - Write it 2 ways --- with and without saving the numbers to a list
- 2. determine the product of the odd integers from 1 to 15 inclusive
- 3. modify the last one to ask user for upper limit and whether to do multiply the odds or evens

Creating programmer-defined functions

- Just as Python allows us to call functions already written (e.g. `print`, `min`, `max`, `input`, etc.), Python allows us to write our own functions that can then be called.

- Syntax example:

```
def funname(parm1, parm2):
```

```
    # body of function
```

```
    return returnval
```

Creating programmer-defined functions

- `def funname(parm1, parm2):`
 `# body of function`
 `return ____`

`funname` is a name you make up (allowable characters same rules as variable names)

`parm1, parm2` etc. are a comma separated list of parameters (variable names you make up) can have 0 or more parameters

Some functions return a value to the caller. This is done by the `return` statement which is `return` followed by the value to be returned.

Creating programmer-defined functions

- Let's write a function that returns a random string among "Hello", "Goodbye" or "#\$%@\$#!"
 - Note: this will have 0 parameters and will return a string

Creating programmer-defined functions

- Let's write a function that takes in 4 numbers and returns the largest of the 4 numbers
 - This function will have 4 parameters and a return statement