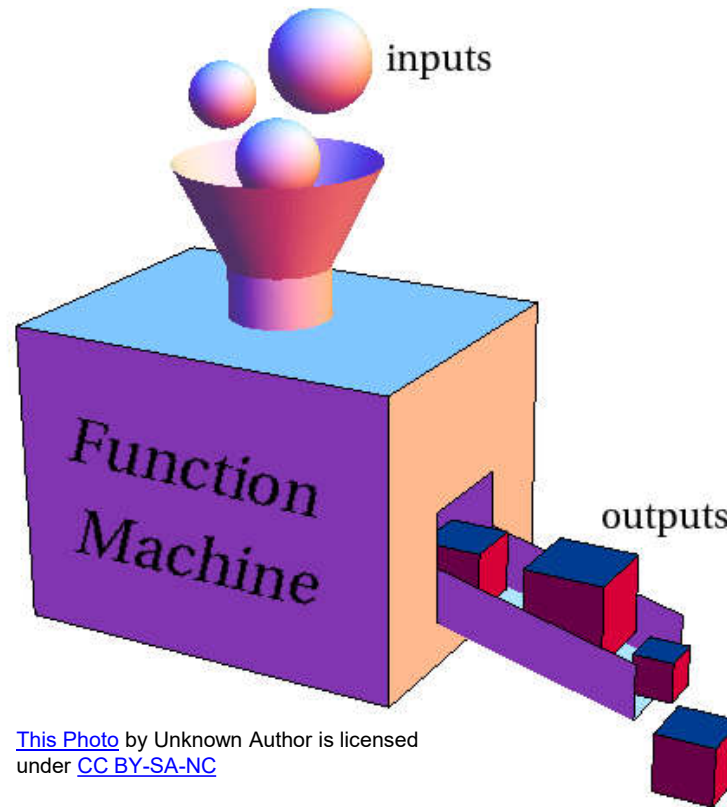


User Defined Functions



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User Defined Functions

- Simple example of calling a function three times
 - No data passed in; no data passed back

```
def simpleOutput():  
    print("Python is fun!")  
  
simpleOutput()  
simpleOutput()  
simpleOutput()
```

Output:

```
Python is fun!  
Python is fun!  
Python is fun!
```

- Always place all your user-defined functions at the top under your comments
- Function called three times.
- If there is nothing in the parentheses () no data is being passed into the function

User Defined Functions

- Another example of calling a function three times
 - Data passed in; no data passed back

```
def simpleOutput(text):  
    print("Python is", text + "!")  
simpleOutput("fun")  
simpleOutput("cool")  
simpleOutput("awesome")
```

- Function called three times.
- String data passed in

Output:

```
- -  
Python is fun!  
Python is cool!  
Python is awesome!
```

User Defined Functions

- You can pass **multiple values** (variables or values) **into** a function
 - 10 and 40 are arguments (values) being passed into the function where they are accepted as parameters

```
def calcPay(rate, hours):  
    payCheck = rate * hours  
    print("You made $%.2f" % payCheck, "this pay period.")  
  
calcPay(10, 40)
```

Output:

```
You made $400.00 this pay period.
```

User Defined Functions

- You can also pass **multiple values** (variables or values) **back to the main** from a function

```
def getInput():  
    rate = float(input("What is your hourly rate? "))  
    hours = float(input("How many hours straight time did you work? "))  
    ot = float(input("How many overtime hours did you work? "))  
    return rate, hours, ot  
  
rate, hours, ot = getInput()  
payCheck = ((rate * hours) + (rate + 1.5 * hours))  
print("You made $%.2f" % payCheck, "this pay.")
```


Output:

```
What is your hourly rate? 10  
How many hours straight time did you work? 40  
How many overtime hours did you work? 5  
You made $470.00 this pay.
```

User Defined Functions

- Example of passing data back to main from function

```
def getPrice():  
    price = float(input("Please enter product price: "))  
    return price  
  
price1 = getPrice()  
price2 = getPrice()  
price3 = getPrice()  
print("The 3 product prices are: ", price1, price2, price3)
```



- Function called three times.
- Float data passed back to main

Sample run (three user inputs from keyboard 10.99 23.98 99.22):


```
Please enter product price: 10.99  
Please enter product price: 23.98  
Please enter product price: 99.22  
The 3 product prices are: 10.99 23.98 99.22
```

User Defined Functions

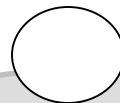
- A function with no data being passed into the function from the main and no data being passed back to the main

```
def drawCircle():  
    import turtle  
    myTurtle = turtle.Turtle()  
    myTurtle.circle(40)  
    turtle.getscreen()._root.mainloop()
```

drawCircle()




- Place your user-defined functions at the top of program under the comments
- drawCicle() calls/runs the drawCircle() function above
- Output is a circle is drawn on screen
- Notice camel case in function name



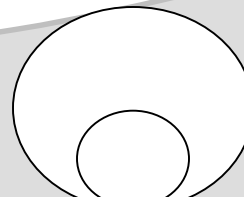
User Defined Functions

- A function with one variable/argument passed into it; no data passed out. Function called/run twice.

```
def drawCircle(x):  
    myTurtle = turtle.Turtle()  
    myTurtle.circle(x)  
  
import turtle  
drawCircle(20)  
drawCircle(40)  
turtle.getscreen()._root.mainloop()
```

A diagram consisting of two blue curved arrows. The first arrow starts from the first call to 'drawCircle(20)' and points to the 'def' line of the function definition. The second arrow starts from the second call to 'drawCircle(40)' and also points to the 'def' line of the function definition.


- Output is two circles drawn on screen with the second one being larger.



User Defined Functions

- A function with **two variables**/arguments passed into it; **no data being passed back** to main.
- Function is called once.

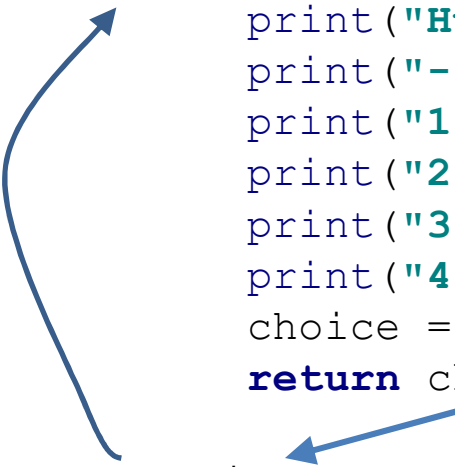
```
def basicMath(x,y):  
    print(x, "+", y, "= %.1f" % (x + y))  
    print(x, "-", y, "= %.1f" % (x - y))  
    print(x, "*", y, "= %.1f" % (x * y))  
    print(x, "/", y, "= %.1f" % (x / y))
```

 basicMath(2, 3.555)

User Defined Functions

- A function with **no** being passed into main, but **one variable** being passed back to main (return command)

```
def hr_menu():  
    print("Human Resources Main Menu")  
    print("-" * 25)  
    print("1. Look up employee")  
    print("2. Add employee")  
    print("3. Look up benefits")  
    print("4. Look up policies")  
    choice = input("\nPlease enter menu choice: ")  
    return choice  
  
choice = hr_menu()  
print("\nYou chose menu item", choice)
```



User Defined Functions

- Sample run of previous program – 1 entered as user input

Human Resources Main Menu

1. Look up employee
2. Add employee
3. Look up benefits
4. Look up policies

Please enter menu choice: 1

You chose menu item 1

User Defined Functions

- A function with one variable being passed in and one variable being passed back. Function called three times.

```
def inputScore(name):  
    print("Please enter", name, "score: ", end='')  
    score = float(input(""))  
    return score  
  
hw1 = inputScore("Homework #1")  
hw2 = inputScore("Homework #2")  
hw3 = inputScore("Homework #3")  
print("Your average is %.0f" % ((hw1 + hw2 + hw3)/3), "%")
```