



BUFFALO STATE
The State University of New York

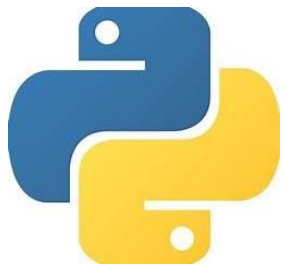
Introduction to Python Programming

Sarbani Banerjee, Ph.D.

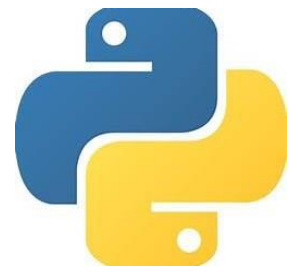
Computer Information Systems Department



Google CS[4]HS



Python Programming



Python is high-level, general purpose programming language

It is an interpreted language as opposed to compiled language (C++, Java)

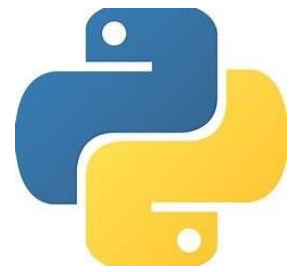
Python is friendly and easy to use and learn

It is powerful language - it runs everywhere



Python Programming

Output



Output String:

```
print("Hello World")
```

```
print('Hello World')
```

Concatenate Strings:

```
print("Py" + " thon")
```

```
print("Learning " + "Py" + " thon")
```

String and number:

```
print("The year of the pandemic is: ", 2020)
```

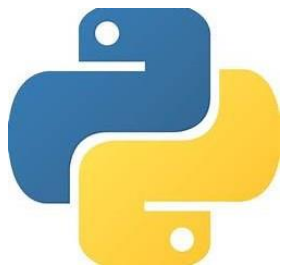
Python Programming

Variable and Operators



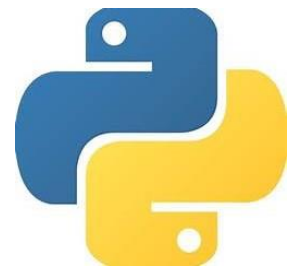
```
a = 1.2
b = 3
d, e = 5, 8
name = 'Sarbani'

print(a + b)           # 1.2 + 3 = 4.2
print(d - e)           # 5 - 8 = -3
print(d / b)           # 5 / 3 = 1.66        decimal result /
print(d // b)          # 5 // 3 = 1         integer result //
print(d * e)           # 5 * 8 = 40
print(d ** b)          # 5*5*5 = 125
print(d % b)           # 5 % 3 = 2         mod or % is the remainder
b += 7                 # b = b + 7, b = 3 + 7 = 10
d *= 3                 # d = d * 3, d = 5 * 3 = 15
```



Python Programming

Input



```
print ('What is your favorite color? ')
```

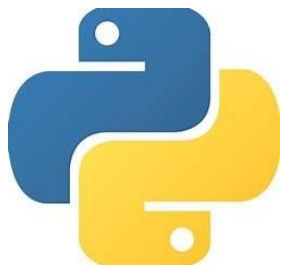
```
color = input()
```

```
print ('Your favorite color is ' + color)
```

equivalent program

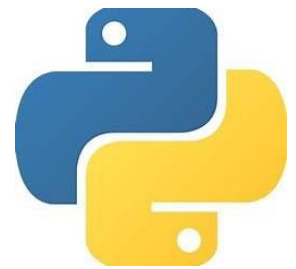
```
color = input('What is your favorite color? ')
```

```
print ('Your color is ' + color)
```



Python Programming

Conditionals



Relational Operators: < > >= <= == !=

```
# check if the color is 'blue'
```

```
if (color == 'blue'):
```

```
    print ('You entered' + color)    # indentation is important
```

```
# check if a is smaller ot larger
```

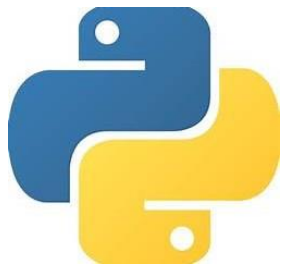
```
a, b = 9, 4
```

```
if (a < b):
```

```
    print ('a is smaller')
```

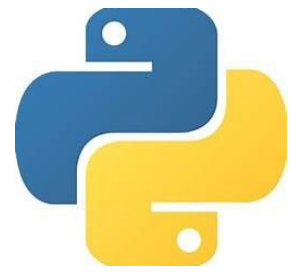
```
else:
```

```
    print('a is larger')    # indentation is important
```



Python Programming

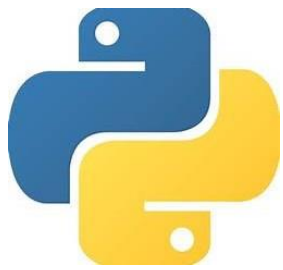
Input



```
print ('Enter a key 1-26: ')
key = input() # input is stored as string
print("The key is: " + key) # key is string variable
print (key * 5) # watch the output

# Need Integer Conversion or int typecasting

key = int(key) # convert key to integer
print("Key multiplication:", key*5) # output string & integer multiply
```



Python Programming

For Loop



```
score = 0
```

```
name = 'alexandria'
```

```
# loop through the string one letter at a time
```

```
for vowel in name:
```

```
    if vowel in ('aeiou'):
```

```
        score += 1
```

```
# display the result
```

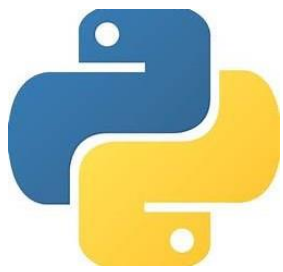
```
print('Your vowel score of: ' + name + ' is ', score)
```

```
# declare and initialize score
```

```
# declare a string to search
```

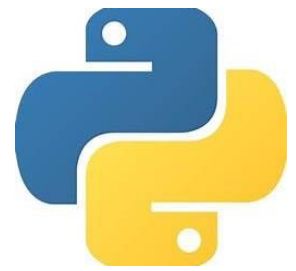
```
# if vowel in 'aeiou': (will work)
```

```
# increment score if the letter is a vowel
```

Python Programming

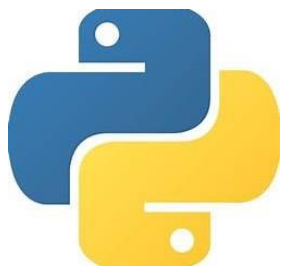
find() function



```
name = 'alexandria'
```

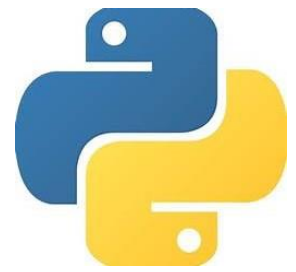
```
position = name.find('x')
```

```
print('Position of the letter is: ', position) # the result is 4 since  
# A=0, l=1, e=2, x=4
```



Python Programming

Random Number Generator



```
import random
```

```
# import random library
```

```
print ('Print five random numbers between 0 and 99 inclusive ', )
```

```
# use randint(0, 100) to get a random number between 1 and 99 inclusive
```

```
for x in [1, 2, 3, 4, 5]:
```

```
    print (random.randint (0, 100))    # display the result
```

```
# use randrange (0, 100) to get a random number between 1 and 99
```

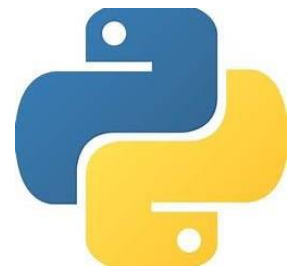
```
for x in [1, 2, 3, 4, 5]:
```

```
    print (random.randrange (0, 100)) # display the result
```



Python Programming

Using repl.it



Google search: **repl.it python 3**

Select: **Python 3 - Repl.it**

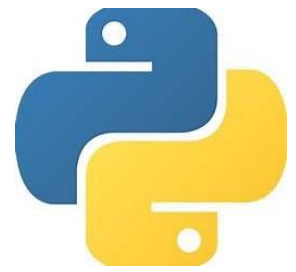
It will open Python at: <https://repl.it/@enaard/Python-3#main.py>

Run the pre-written program in the **CODE** window

See the result in the **OUTPUT** Window



Exercise



Read and Add Two Numbers

1. Ask the user to input first integer and store it in fnum
2. Ask the user to input second integer and store it in snum
3. Add the two integers and store it in variable sum
4. Print the value of sum

NOTE: Don't forget to convert the input string to integer by typecasting
`int(input())`