

COMPSCI 340/SOFTENG 370

PYTHON TUTORIAL

ABOUT US

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- WE ARE MASTER OF ENGINEERING STUDIES (SOFTWARE) STUDENTS

OS RECOMMENDATIONS

- FULL INSTALLATION OR VIRTUAL MACHINE
- FOR EXISTING WINDOWS USERS -> UBUNTU OR MINT
- MAC USERS -> ELEMENTARY OS
- LOW SPEC DEVICES -> LXLE*

*Additional packages might be required

IDE RECOMMENDATIONS

- IDLE
- PYTHON PLUGIN FOR ECLIPSE
- PYCHARM
- SUBLIME TEXT

PYTHON

- NOT VERBOSE LIKE JAVA OR C#
- OFFSIDE RULE (IDENTATION FOR SCOPING)
- DYNAMIC VS STATIC TYPED
- WIDE SELECTION OF LIBRARIES FOR PRACTICAL TASKS

RECAP OF BASICS

- `print(<value>, sep=",", end="\n", ..)`

- String formatting using %

- Raw string using prefix r

- Triple quotes

- `input(<prompt text>)`

#displays the prompt and returns the keyboard input as a string

- `str(obj)`

#gets the string value of an object

RECAP OF BASICS

- `int(obj)`

`#int value of an object`

- `len(obj)`

`#length of an object`

`m = 'mel'`

`m = 123`

`#allowed`

RECAP OF BASICS

```
if num == 5:  
    print('Five')  
elif num == 6:  
    print('Six')  
else:  
    print('Something else')
```

#Loops are similar to other languages but remember the indentation and colon!

RECAP OF BASICS

Exercise – Write a Python program to sum the first 100 integers

```
public class Summation {
    public static void main( String[] args ) {
        final int NUM_VALUES = 100;
        int summation = 0;
        int i = 0;

        while( i <= NUM_VALUES ) {
            summation = summation + 1;
            i = i + 1;
        }

        System.out.println( "The sum of the first " + NUM_VALUES
            + " integers is " + summation );
    }
}
```

RECAP OF BASICS

A possible solution in Python

```
NUM_VALUES = 100
```

```
summation = 0
```

```
i = 1
```

```
while i <= NUM_VALUES:
```

```
    summation = summation + i
```

```
    i = i + 1
```

```
print("The sum of the first %s integers is %s" % (NUM_VALUES,  
summation))
```

RECAP OF BASICS

A possible solution in Python using for loop

```
NUM_VALUES = 100
```

```
summation = 0
```

```
for i in range(1, NUM_VALUES + 1): #be careful about the upper index
```

```
    summation = summation + i
```

```
print("The sum of the first %s integers is %s" % (NUM_VALUES,  
summation))
```

RECAP OF BASICS

```
def hello():  
    return "Hello"
```

```
h = hello()  
print(h)
```

- pass `#keyword` is similar to `continue`
- `None` `#similar` to `null`

RECAP OF BASICS

```
def divideBy(num):  
    try:  
        return 20/num  
    except ZeroDivisionError:  
        print('Can\'t divide by 0')
```

Generic exceptions can be caught by –

```
except Exception, e:  
    print(e)
```

RECAP OF BASICS

Exercise – Write a program to calculate the age of a person based on the entered birth year. (Write functions and do input validation)

RECAP OF BASICS

Sample Python solution

```
def getAge():  
    try:  
        str_year = input('Please enter your birth year ')  
        int_year = int(str_year)  
        return int_year  
    except ValueError:  
        print('Please enter numeric value')
```

```
def calculateAge():  
    age = 2015 - getAge()  
    return age
```

```
age = calculateAge()  
print('You are ', age)
```

RECAP OF BASICS

- Lists

```
list = [['a', 'b', 'c'], [1, 2, 3], [8, 9, 10]]
```

```
list[0][1] #prints 'b'
```

```
list[-1][2] #prints 10
```

```
list[0:2] #returns [['a', 'b', 'c'], [1,2,3]]
```

```
list[1:] #evaluates from index 1 till the end
```

```
list[:2] #evaluates from index 0 till index 1
```