python Workshop

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Expression & Basic Syntax

coding *style*

```
#include<stdio.h>
int main() {
  int a = 5;
  if(a > 5) {
    printf("a is greater than 5");
    printf("a = %d", a);
  }
  return 0;
}
```

```
#include<stdio.h>
int main()
{
  int a = 5;
  if(a > 5)
  {
    printf("a is greater than 5");
    printf("a = %d", a);
  }
  return 0;
}
```

print statement

```
>>> print "Hello"

Hello


>>> print 4

4


>>> print 4.5

4.5
```

print statement

```
>>> print 5/2

2



>>> print 5%2

1
```

Identifiers

A Python identifier is a name used to identify a variable, function, class, module or other object.

An identifier starts with a letter A to Z or a to z or an underscore (_) followed by zero or more letters, underscores and digits (0 to 9).

Python does not allow punctuation characters such as @, $, and % within identifiers.

Python is a case sensitive programming language.

Python Reserved Words

- and
- del
- for
- is
- raise
- assert
- elif
- from
- lambda
- return
- break
- else
- global
- not
- try
- class
- except
- if
- or
- while
- continue
- exec
- import
- pass
- yield
- def
- finally
- in
- print
- as
- with

Assignment Statements

```
>>> a = 5

>>> b = 5.6

>>> name = "Rajath"

>>> value = 5 * 4 / 6 + 6
```

Quotation in python

```
>>> name = “Rahul”

>>> name = ‘rahul’

>>> message = “””Hello

This is a test message

I can write this in multiple lines

Without any problem”””
```

Multiple Assignments

Here 3 variables a, b and c are assigned 3 different values.

```
>>> a,b,c = 1,2,3
>>> print a
1
>>> print b
2
>>> print c
3
```

Operators in python

```
+   Addition

-   Subtraction

*   Multiplication

/   Division

**  Power

%   Remainder
```

Operators in python

```
>>> print 5/3

1

>>> print 5%3

2

>>> print 5**3

125
```

Operator Precedence Rules

Parenthesis

Power

Multiplication Division Remainder

Addition Subtraction

Left to Right

Find the answers

```
>>> print ((5 * 4) - 6 / 6)
```

```
>>> print (5 + 6 * 2 ** 2 - 2)
```

What is the type of variable ?

```
>>> type(a)

<type 'int'>

>>> a = 5.0

>>> type (a)

<type 'float'>
```

```
>>> a = "Rahul"

>>> type (a)

<type 'str'>

>>> a = [4,5,6]

>>> type (a)

<type 'list'>
```

Type Conversions. But Why Conversions ?

```
>>> a = 10
>>> b = 3
>>> print a/b
3

>>> text = "Age"
>>> value = 19
>>> print text + value
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
TypeError: cannot concatenate 'str' and 'int' objects
```

Type Conversions

built-in functions

`int()` and `float()`

Type Conversions

```
>>> a = 10
>>> b = 3
>>> print float(a)/float(b)

3.33333333333

>>> print float(a)/b

3.33333333333

>>> print a/float(b)

3.33333333333
```

Type Conversions

```
>>> text = "Age"
>>> value = 19
>>> print text + str(value)

Age19
```

Python Scripts

User input

```
$ python2.7 Basics.py

Enter your name : Rahul Kumar

Hello Rahul Kumar
```

User input

```
name = raw_input("Enter your name : ");

print "Hello " + name;
```

User input. What will be the output ?

```
name = raw_input("Enter your name : ")
print name
print type(name)

age = raw_input("Enter your age : ")
print age
print type(age)

number = raw_input("Enter a floating number : ")
print number
print type(number)
```

User input. What will be the output ?

```
Enter your name : Rahul Kumar
Rahul Kumar
<type 'str'>
Enter your age : 20
20
<type 'str'>
Enter a floating number : 20.32154
20.32154
<type 'str'>
```

User input. What will be the output ?

The

`raw_input()`

function returns a

string

User input. What will be the output ?

```
name = raw_input("Enter your name : ")
print name
print type(name)

age = int(raw_input("Enter your age : "))
print age
print type(age)

number = float(raw_input("Enter a floating number : "))
print number
print type(number)
```

01-01 Basics.py

User input. What will be the output ?

```
Enter your name : Rahul Kumar
Rahul Kumar
<type 'str'>
Enter your age : 20
20
<type 'int'>
Enter a floating number : 20.32154
20.32154
<type 'float'>
```

Comments in python

```
# Accept radius of the circle
radius = raw_input("Enter radius : ")

#Convert radius from string to float
radius = float(radius)

'''
Now to find area we use the given formula
area = pi * radius * radius
'''
area = 3.14 * radius * radius
print "Area of the circle is " + str(area)
```

01-02 Comments.py

String Operation : Basic

+ implies “concatenation”

```
>>> print "Hello " + "Mohan"
Hello Mohan
```

* implies “multiple concatenation”

```
>>> print "BMSCE " * 3
BMSCE BMSCE BMSCE
```

Assignment 1

Write a program to accept base and height of a triangle and print area.

Write a program to SWAP two numbers.

python Magic

```
>>> a = 5
>>> b = 6
>>> a,b = b,a
>>> print a
6
>>> print b
5
```

Thank You

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Assignments & Presentations:

https://github.com/rahulcomp24/Python-Workshop-CS-Dept-BMSCE-May-2016