## PROGRAM No. 2

## Aim:

Write a program to demonstrate different number data types in Python.

## Theory:

Python is a high level language which is trending in recent past. To make it more user friendly developers of Python made sure that it can have two modes Viz. Interactive mode and Script Mode. The Script mode is also known as normal mode and uses scripted and finished .py files which are run on interpreter whereas interactive mode supports command line shells. Students will able to understand how to run programs using Interactive and Script mode.

PROGRAM:

a=10; #Integer Datatype

b=11.5; #Float Datatype

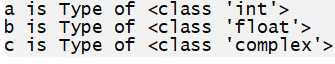
c=2.05j; #Complex Number

print("a is Type of",type(a)); #prints type of variable a

print("b is Type of",type(b)); #prints type of variable b

print("c is Type of",type(c)); #prints type of variable c

## Output:



## Relevant Program Outcomes(POs):

* + **Engineering knowledge:** Apply knowledge of basic mathematics, sciences and basic engineering to solve the broad-based Computer engineering problem.
  + **Problem analysis:** Apply Computer engineering discipline - specific knowledge to solve core computer engineering related problems
  + **Design/development of solutions:** Plan to perform experiments and practices to use the results to solve broad-based Computer engineering problems.
  + **Modern tool usage:** Apply relevant Computer technologies and tools with an understanding of the limitations.
  + **Life-long learning:** Engage in independent and life-long learning activities in the context of technological changes in the Computer engineering field and allied industry.

**CONCLUSION:**

|  |  |
| --- | --- |
| **COURSE OUTCOME** | **PROGRAM OUTCOME Attained** |
| **CO1** | **PO(1,2,3,5,12)** |

## Practical related Questions:

1. List different modes of Programming in Python
2. Describe procedure to execute program using Interactive Mode
3. State the steps involved in executing the program using Script Mode
4. State the procedure to make file executable

## PROGRAM No. 3

## Aim:

Write a program to perform different Arithmetic Operations on numbers in Python.

## Theory:

Operators are used to perform operations on values and variables. Operators can manipulate individual items and returns a result. The data items are referred as operands or arguments. Operators are either represented by keywords or special characters. Here are the types of operators supported by Python:

* + Arithmetic Operators
  + Assignment Operators
  + Relational or Comparison Operators
  + Logical Operators
  + Bitwise Operators
  + Identity Operators
  + Membership Operators

Students will be able to use various operators to check the condition and get appropriate result by performing different operation with the help of supported operators.

## Source Code:

a=int(input("Enter a value")); #input() takes data from console at runtime as string.

b=int(input("Enter b value")); #typecast the input string to int.

print("Addition of a and b ",a+b);

print("Subtraction of a and b ",a-b);

print("Multiplication of a and b ",a\*b);

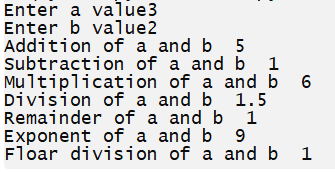
print("Division of a and b ",a/b);

print("Remainder of a and b ",a%b);

print("Exponent of a and b ",a\*\*b); #exponent operator (a^b)

print("Floar division of a and b ",a//b); # floar division

## Output:



## Relevant Program Outcomes(POs):

* + **Engineering knowledge:** Apply knowledge of basic mathematics, sciences and basic engineering to solve the broad-based Computer engineering problem.
  + **Problem analysis:** Apply Computer engineering discipline- specific knowledge to solve core computer engineering related problems
  + **Design/development of solutions:** Plan to perform experiments and practices to use the results to solve broad-based Computer engineering problems.
  + **Individual and team work:** Function effectively as a leader and team member in diverse/ multidisciplinary teams.
  + **Life-long learning:** Engage in independent and life-long learning activities in the context of technological changes in the Computer engineering field and allied industry.

**CONCLUSION:**

|  |  |
| --- | --- |
| **COURSE OUTCOME** | **PROGRAM OUTCOME Attained** |
| **CO1** | **PO(1,2,3,9,12)** |

## Practical related Questions:

1. Mention the use of //, \*\*, % operator in Python
2. Describe ternary operator in Python
3. Describe about different Logical operators in Python with appropriate examples.
4. Describe about different Arithmetic operators in Python with appropriate examples.

## PROGRAM No. 4

## Aim:

# Write simple Python program to demonstrate use of conditional statements: if’ statement, ‘if … else’ statement, Nested ‘if’ statement

## Theory:

Decision making is anticipation of conditions occurring while execution of the program and specifying actions taken according to the conditions. Decision structures evaluate multiple expressions which produce TRUE or FALSE as outcome. You need to determine which action to take and which statements to execute if outcome is TRUE or FALSE otherwise

1. **IF Statement**: if statement is the simplest decision making statement. It is used to decide whether a certain statement or block of statements will be executed or not i.e if a certain condition is true then a block of statement is executed otherwise not.

## Syntax:

If condition:

Statement(s)

## Example:

i=10

if(i > 20):

print ("10 is less than 20") print ("We are Not in if ")

Output: We are Not in if

1. **If-else Statement**: The if statement alone tells us that if a condition is true it will execute a block of statements and if the condition is false it won’t. But what if we want to do something else if the condition is false. Here comes the else statement. We can use the else statement with if statement to execute a block of code when the condition is false.

## Syntax:

if (condition):

# if Condition is true, Executes this block else:

# if condition is false, Executes this block

## Example:

i=10;

if(i<20):

print ("i is smaller than 20") else:

print ("i is greater than 25")

## Output:

i is smaller than 20

## Nested-if Statement:

A nested if is an if statement that is the target of another if statement. Nested if statements means an if statement inside another if statement. Yes, Python allows us to nest if statements within if statements. i.e, we can place an if statement inside another if statement.

## Syntax:

if (condition1):

# Executes when condition1 is true

if (condition2):

# Executes when condition2 is true

# i true f Block is end here

# if Block is end here

## Example:

i =10

if(i ==10):

# First if statement

if(i < 20):

print ("i is smaller than 20")

# Nested - if statement will only be executed if statement above is true

if (i < 15):

print ("i is smaller than 15 too")

else:

print ("i is greater than 15")

## Output:

i is smaller than 20

i is smaller than 15 too

### Write a Program Program to print the largest of the three numbers.

a = int(input("Enter a? "));

b = int(input("Enter b? "));

c = int(input("Enter c? "));

**if** a>b **and** a>c:

**print**("a is largest");

**if** b>a **and** b>c:

**print**("b is largest");

**if** c>a **and** c>b:

**print**("c is largest");

Enter a? 100

### Python Nested if Example

Write a program to check no is positive or negative

num = float(input("Enter a number: "))

if num >= 0:

if num == 0:

print("Zero")

else:

print("Positive number")

else:

print("Negative number")

1. Write a program to check no is even or odd

## Relevant Program Outcomes(POs):

* + **Engineering knowledge:** Apply knowledge of basic mathematics, sciences and basic engineering to solve the broad-based Computer engineering problem.
  + **Problem analysis:** Apply Computer engineering discipline - specific knowledge to solve core computer engineering related problems
  + **Design/development of solutions:** Plan to perform experiments and practices to use the results to solve broad-based Computer engineering problems.
  + **Individual and team work:** Function effectively as a leader and team member in diverse/ multidisciplinary teams.
  + **Life-long learning:** Engage in independent and life-long learning activities in the context of technological changes in the Computer engineering field and allied industry.

**CONCLUSION:**

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| --- | --- |
| **COURSE OUTCOME** | **PROGRAM OUTCOME Attained** |
| **CO2** | **PO(1,2,3,9,12)** |

## Practical related Questions:

1. List operators used in if conditional statement
2. Differentiate between if-else and nested-if statement