**LAB CYCLE - 1**

**Experiment No :1**

**Date :26/09/2024**

**Aim :**

Write a program that prompts the user to enter his first name and last name and then displays a message “Greetings!!! First name Last name”.

**Pseudocode :**

DISPLAY "Enter the First Name: "

GET fn

DISPLAY "Enter the Last Name: "

GET ln

DISPLAY "Greetings!!!", fn, " ", ln

**Method :**

|  |  |  |
| --- | --- | --- |
| Functions | Description | Syntax |
| input() | Read the input from the user as a string | variable\_name= input(prompt\_string) |
| print() | Display the output as message or variable to the console | print(object) |

**Source Code :**

fn=input("Enter the First Name:")

ln=input("Enter the Last Name:")

print("Greetings!!!",fn,ln)

**Output :**

Enter the First name: Harinarayanan

Enter the Last Name: G

Greetings!!! Harinarayanan G

**Result :** The experiment is successfully executed and the output is verified.

**Experiment No :2**

**Date :26/09/2024**

**Aim :**

Write a program to demonstrate the different number data type in python.

**Pseudocode :**

DISPLAY "Enter an integer value: "

GET i

DISPLAY "Enter a float value: "

GET f

DISPLAY "Enter the complex number: "

GET co

DISPLAY "Float value ", f

DISPLAY "Integer value ", i

DISPLAY "Complex number ", co

**Method :**

|  |  |  |
| --- | --- | --- |
| Functions | Description | Syntax |
| f-string | Embeds expression inside the string literals | f”string {expression}” |

**Source Code :**

i=int(input("Enter an integer value:"))

f=float(input("Enter a float value:"))

co=complex(input("Enter the complex number:"))

print(f"Float value {f} \nInteger value {i}\nComplex number{co}")

**Output :**

Enter an integer value:23

Enter a float value:22.2

Enter the complex number:10+8j

Float value 22.2

Integer value 23

Complex number (10+8j)

**Result :** The program is successfully executed and the output is verified.

**Experiment No :3**

**Date :26/09/2024**

**Aim :**

Write a program to calculate the area of the circle by Reading input from the user.

**Pseudocode :**

DISPLAY "Enter the radius of circle: "

GET r

SET pi = 3.14

SET ar = pi \* r^2

DISPLAY "Area is: ", ar

**Source Code :**

r=float(input("Enter the radius of circle:"))

pi=3.14

ar=pi\*r\*\*2

print("Area is:",ar)

**Output :**

Enter the Radius of the Circle: 20

Area is: 1256

**Result :** The program is successfully executed and the output is verified.

**Experiment No :4**

**Date :26/09/2024**

**Aim :**

Write a program to calculate the salary of an employee given his basic pay HRA = 10 percent of the basic pay, TA = 5 percent of the basic pay.

**Pseudocode :**

DISPLAY "Enter the basic pay: "

GET p

SET hra = 10/100 \* p

SET ta = 5/100 \* p

SET sal = hra + p + ta

DISPLAY "Salary is: ", sal

**Source Code :**

p=float(input("Enter the basic pay:"))

hra=10/100\*bp

ta=5/100\*bp

sal=hra+bp+ta

print("Salary is:",sal)

**Output :**

Enter the basic pay:20000

Salary is: 23000.0

**Result :** The program is successfully executed and the output is verified.

**Experiment No :5**

**Date :26/09/2024**

**Aim :**

Write a program to perform arithmetic operations on two integer numbers.

**Pseudocode :**

DISPLAY "Enter first number: "

GET n1

DISPLAY "Enter second number: "

GET n2

DISPLAY "Sum: ", n1 + n2

DISPLAY "Difference: ", n1 - n2

DISPLAY "Product: ", n1 \* n2

DISPLAY "Division: ", n1 / n2

**Source Code :**

n1=float(input("Enter first number:"))

n2=float(input("Enter second number:"))

print(f"Sum:{n1+n2}\nDifference:{n1-n2}\nProduct:{n1\*n2}\nDivision:{n1/n2}")

**Output :**

Enter first number: 20

Enter second number: 2

Sum: 22.0

Difference: 18.0

Product: 40.0

Division: 5.0

**Result :** The program is successfully executed and the output is verified.

**Experiment No :6**

**Date :26/09/2024**

**Aim :**

Write a program to get string which is n copies of a given string.

**Pseudocode :**

DISPLAY "Enter a string: "

GET s

DISPLAY "Enter the number of repetitions needed: "

GET r

DISPLAY s repeated r times

**Source Code :**

s=input("Enter a string:")

r=int(input("Enter the number of repetitions needed:"))

print(s\*r)

**Output :**

Enter a String: hello

Enter the number of repetitions needed: 2

hello hello

**Result :** The program is successfully executed and the output is verified.

**Experiment No :7**

**Date :26/09/2024**

**Aim :**

Write a program to accept an integer ‘n’ and compute n+nn+nnn and find its sum.

**Pseudocode :**

DISPLAY "Enter an integer: "

GET n

DISPLAY n, " + ", n\*2, " + ", n\*3

SET sum = n + (n\*2) + (n\*3)

DISPLAY "sum is ", sum

**Source Code :**

n=input("Enter a integer:")

print(n,'+',n\*2,'+',n\*3)

sum=int(n)+int(n\*2)+int(n\*3)

print("sum is",sum)

**Output :**

Enter a integer: 20

20 + 2020 + 202020

Sum is 20460

**Result:** The program is successfully executed and the output is verified.

**Experiment No :8**

**Date :26/09/2024**

**Aim :**   
  
Write a program to find the largest among 3 numbers.

**Pseudocode :**

DISPLAY "Enter the first number: "

GET n1

DISPLAY "Enter the second number: "

GET n2

DISPLAY "Enter the third number: "

GET n3

IF n1 > n2 AND n1 > n3 THEN

DISPLAY n1, " is the biggest"

ELSE IF n2 > n3 THEN

DISPLAY n2, " is the biggest"

ELSE

DISPLAY n3, " is the biggest"

**Source Code :**

n1=int(input("Enter the first number:"))

n2=int(input("Enter the second number:"))

n3=int(input("Enter the third number:"))

if n1>n2 and n1>n3:

print(f"{n1} is the biggest")

elif n2>n3:

  print(f"{n2}is the biggest")

else:

  print(f"{n3} is the biggest")

**Output :**

Enter the first number: 10

Enter the second number:11

Enter the third number: 22

22 is the biggest

**Result :** The program is successfully executed and the output is verified.

**Experiment No :9**

**Date :26/09/2024**

**Aim :**

Write a program to determine a year is a leap year or not.

**Pseudocode :**

DISPLAY "Enter a year: "

GET yr

IF (yr MOD 400 = 0) AND (yr MOD 100 = 0) THEN

DISPLAY yr, " is a leap year"

ELSE IF (yr MOD 4 = 0) AND (yr MOD 100 != 0) THEN

DISPLAY yr, " is a leap year"

ELSE

DISPLAY yr, " is not a leap year"

**Source Code :**

yr=int(input("Enter a year:"))

if (yr%400==0) and (yr%100==0):

print(f"{yr} is a leap year")

elif (yr%4==0) and (yr%100!=0):

  print (f"{yr} is a leap year")

else:

print(f"{yr} is not a leap year")

**Output :**

Enter a year: 2024

2024 is a leap year

Enter a year: 1900

1900 is not a leap year

Enter a year: 48

48 is a leap year

**Result :** The program is successfully executed and the output is verified.

**Experiment No :10**

**Date :03/10/2024**

**Aim :**

Write a program to determine the rate of entry tickets in a trade fair based on ages as follows:

|  |  |
| --- | --- |
| Age < 10 | 7 rupees |
| Age >10 and Age < 60 | 10 rupees |
| Age > 60 | 5 Rupees |

**Pseudocode :**

DISPLAY "Enter the age: "

GET age

IF age < 10 THEN

DISPLAY "Rate is: 7"

ELSE IF age >= 10 AND age < 60 THEN

DISPLAY "Rate is: 10"

ELSE IF age >= 60 THEN

DISPLAY "Rate is: 5"

ELSE

DISPLAY "Invalid age"

**Source Code :**

age=int(input("Enter the age:"))

if age<10:

print("Rate is:7")

elif age>=10 and age<60:

  print("Rate is:10")

elif age>=60:

  print("Rate is:5")

else:

  print("Invalid age")

**OUTPUT :**

Enter the age: 21

Rate is:10

Enter the age: 6

Rate is:7

Enter the age: 64

Rate is:5

**Result :** The program is successfully executed and the output is verified.

**Experiment No :11**

**Date :03/10/2024**

**Aim :**   
  
Write a program to solve a quadratic equation.

**Pseudocode :**

DISPLAY "Enter the first number: "

GET a

DISPLAY "Enter the second number: "

GET b

DISPLAY "Enter the third number: "

GET c

SET d = (b\*b) - (4\*a\*c)

IF d == 0 THEN

SET root = -b / (2 \* a)

DISPLAY "Real and equal roots: ", root

ELSE IF d > 0 THEN

SET ans1 = (-b - sqrt(d)) / (2 \* a)

SET ans2 = (-b + sqrt(d)) / (2 \* a)

DISPLAY "Real and distinct roots: ", ans1, ans2

ELSE

SET re = -b / (2 \* a)

SET img = sqrt(abs(d)) / (2 \* a)

DISPLAY "Complex and distinct roots: ", re, "+", img, "j"

 re=-b/2\*a

 img=math.sqrt(abs(d))/(2\*a)

 print(f"Complex and distinct roots:{re}+{img}j")

**Method :**

|  |  |  |
| --- | --- | --- |
| Functions | Description | Syntax |
| math.sqrt() | It returns the square root of the number | math.sqrt(x) |
| abs() | It returns the Absolute value of the number | abs(x) |

**Source Code :**

import math

a=float(input("Enter the first number:"))

b=float(input("Enter the second number:"))

c=float(input("Enter the third number:"))

d=(b\*b)-(4\*a\*c)

if d==0:

root=-b/2\*a

print(f"Real and equal roots:{root}")

elif d>0:

ans1=(-b-math.sqrt(d))/(2\*a)

  ans2=(-b+math.sqrt(d))/(2\*a)

  print(f"Real and distinct roots:{ans1} {ans2}")   
else:   
  re=-b/2\*a

img=math.sqrt(abs(d))/(2\*a)   
 print(f"Complex and distinct roots:{re}+{img}j")

**Output :**

Enter the first number: 1

Enter the second number: 6

Enter the third number: 8

Real and Distinct roots: -4.0 -2.0

Enter the first number: 1

Enter the second number: -2

Enter the third number: 1

Real and equal roots: 1.0

Enter the first number: 1

Enter the second number: 2

Enter the third number: 5

complex and Distinct roots: -1.0 + 2.0j

**Result :** The program is successfully executed and the output is verified.