SOMAIYA VIDYAVIHAR UNIVERSITY

K J Somaiya Institute of Management

Department of Data Science and Technology

Practical No: 01

Subject: Python Programming Lab

MCA / Sem I / Python Programming [Course Code : 217P09L102]

ROLL No: 09 **DATE: 28/08/2023**

FULL NAME: Atharv Ankush Desai

Aim:	Simple basic Commands
Topics Covered:	Python Installation, basic Python Commands, type() and range() built-in function, Simple Python Functions,Assignment Operators, Arithmetic Operators/Operations
Problem Statement:	**1. Simple Commands:** a. Write a program that prints your name. b. Create a program that displays "Hello, World!" on the screen. c. Write a program that asks the user for their age and then prints it. d. Write a Python program to add odd numbers from 1-10 e. Write a Python program to get the Fibonacci series between 0 to 50. **2. Mathematical Operators:** a. Create a program to calculate the area of a rectangle given its length and width. b. Write a program that calculates the volume of a cube using its side length. c. Create a simple calculator program that can perform addition, subtraction, multiplication, and division. **3. Range:** a. Write a program that prints all even numbers between 1 and 50. b. Create a program that generates a list of squares of numbers from 1 to 10 using a loop. c. Write a program to calculate the sum of all numbers between 1 and 100.

Theory:	1. Installation: Visit the official Python website, select the right version for your operating system, and then follow the installation instructions to install Python 2. print(),input() : for e.g "print('Hello, World!')" prints the string "Hello, World!". The "print()" command is used for showing output on the console. Using the "input()" command, you can ask the user for input. For instance, "name = input('Enter your name: ')" will ask them to enter their name and store it in the variable "name". 3. type(): The "type()" function is used to find out a variable's or value's data type. For instance, "type(5)" will return "class 'int'>," indicating that 5 is an integer, as an example. 4. range() : A range class is instantiated by the "range()" function. For instance, the expression "range(1, 5)" results in the sequence [1, 2, 3, 4], with the endpoint removed. 5. assignment operators: The "=" operator is used for easy assignment, such as assigning a value to a variable like "x = 5". The "+=" operator is used to add a value to an existing variable and then reassign the result, for example, "x += 3" is equivalent to "x = x + 3." 6. arithmetic operators: "+" operator is used for addition, e.g., "2 + 3" results in 5. "*" operator is used for multiplication, e.g., "4 * 5" results in 20. "-" operator is used for subtraction, e.g., "7 - 3" results in 4. "/" operator is used for division, e.g., "10 / 2" results in 5.0. "%" operator is used for modulus (remainder), e.g., "9 % 2" results in 1. "//" operator is used for integer division (floor division), e.g., "9 // 2" results in 4. "**" operator is used for exponentiation, e.g., "2 ** 3" results in 8.
Code:	**1. Simple Commands** a) Write a program that prints your name. Code:

```
print(f"Atharv Desai")
```

b) Create a program that displays "Hello, World!" on the screen.

Code:

```
print(f"Hello, World!")
```

c) Write a program that asks the user for their age and then prints it.

Code:

```
try:
  age = int(input("Your Age => : "))
  print(f"{age} is your Age")
except Exception as e:
  print(f"Exception : {e}")
finally:
  print(f"Finished")
```

d)Write a Python program to add odd numbers from 1-10

Code:

```
total = 0
for i in range(1,11,2) : total += i
print(f"{total} is the sum of odd numbers from 1-10")
```

e) Write a Python program to get the Fibonacci series between 0 to 50

Code:

```
ptr1,ptr2 = 0,1
print(ptr1,ptr2,sep=",",end=',')
for i in range(2,51):
  print(ptr1+ptr2,end=",")
  ptr1, ptr2 = ptr2, ptr1 + ptr2
```

2. Simple Commands

a) Create a program to calculate the area of a rectangle given its length and width.

Code:

```
try:
  length = float(input(f"Rectangle Length => :"))
  breadth = float(input(f"Rectangle Breadth => :"))
  area = length * breadth
  print(f"{area} units is the Area of the Rectangle")
except Exception as e:
  print(f"Exception : {e}")
```

b) Write a program that calculates the volume of a cube using its side length.

Code:

```
try:
  length = float(input(f"Cube Length => :"))
  area = length ** 3
  print(f"{area} units is the Volume of the Cube")
except Exception as e:
  print(f"Exception : {e}")
```

c) Create a simple calculator program that can perform addition, subtraction, multiplication, and division.

Code:

```
def add(x, y):
    try:
        return x + y
    except Exception as e:
        return e

def subtract(x, y):
    try:
        return x - y
    except Exception as e:
        return e

def multiply(x, y):
    try:
        return x * y
    except Exception as e:
        return e

def divide(x, y):
    try:
        return x / y
    except Exception as e:
        # ZeroDivisionError class return
        return e

def invalid_choice():
    return "Invalid"


print("Operation:")
print("1. Addition")
print("2. Subtraction")
print("3. Multiplication")
print("4. Division")

operation_dict = {
    '1': add,
    '2': subtract,
    '3': multiply,
    '4': divide
}

while True:
    try:
        choice = input("Enter choice 1,2,3,4 : ")
        num1 = float(input("Enter first number: "))
        num2 = float(input("Enter second number: "))

        operation = operation_dict.get(choice, invalid_choice)
        result = operation(num1, num2)
        print("Result:", result)

        retry = input("Do you want to perform another calculation? (yes/no): ")
        if retry.lower() != 'yes':
            # exit
            break

    except Exception as e:
        print(f"Exception : {e}")
```

3. Range

a) Write a program that prints all even numbers between 1 and 50.

Code:

```
for i in range(0,51,2):
    print(f"{i}",end=",")
```

b) Create a program that generates a list of squares of numbers from 1 to 10 using a loop.

Code:

```
vals=[]
for i in range(1,11):
    vals.append(i*2)

# prints list
print(vals)
```

c) Write a program to calculate the sum of all numbers between 1 and 100.

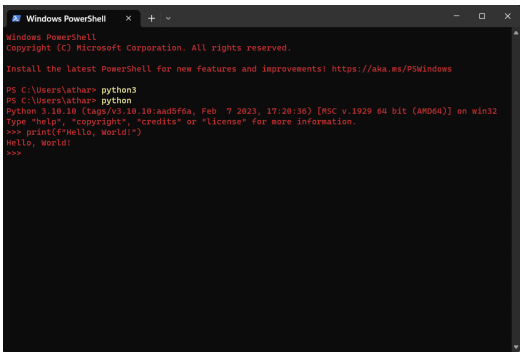
Code:

```
'''
Ez
res = sum([i for i in range(101)])
print(res)
'''
result = 0
for i in range(1, 101):
    result += i
print(f"Sum of Nums is {result}")
```

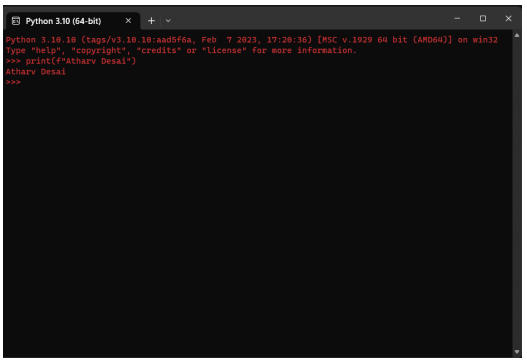
Screenshot of Output:

1.Basic Commands

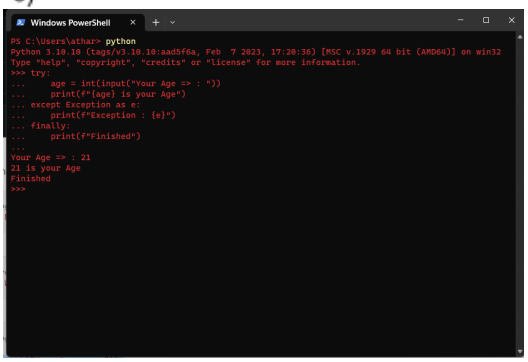
a)



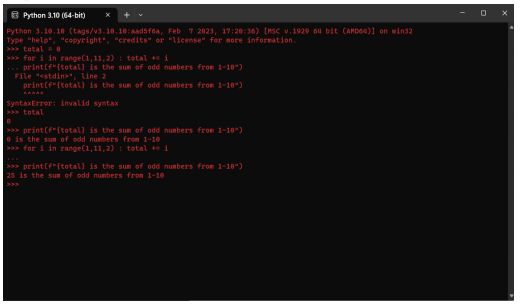
b)



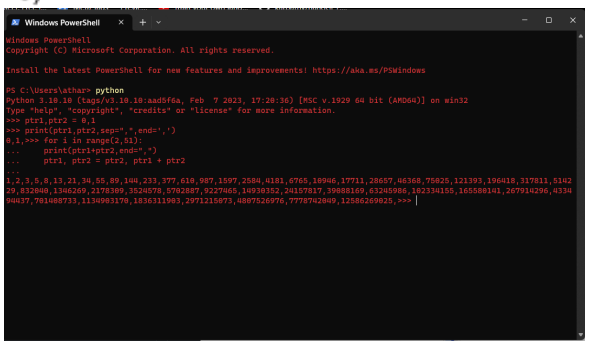
c)



d)

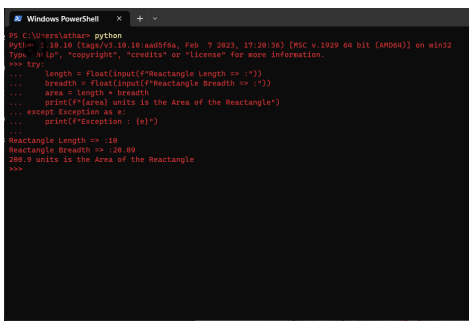


e)

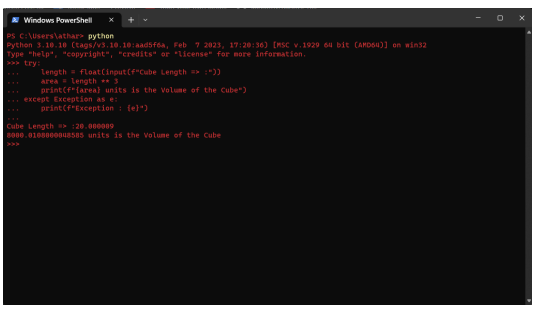


2. Mathematical Operations

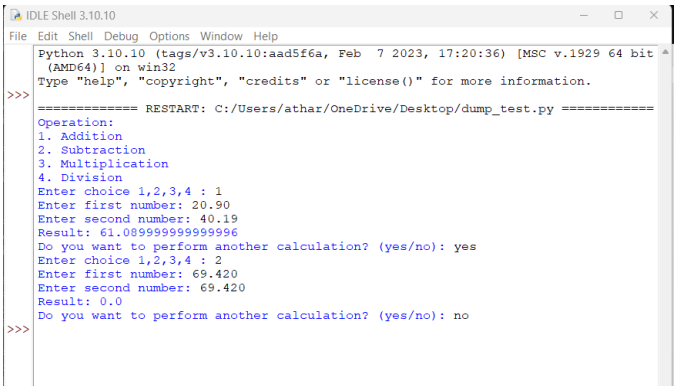
a)



b)

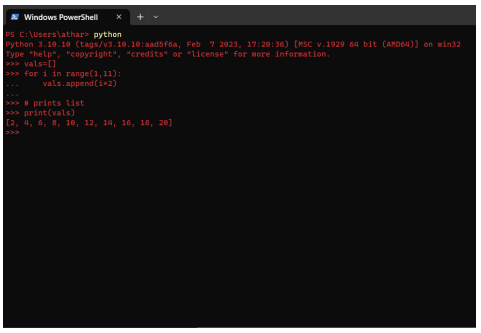


c)

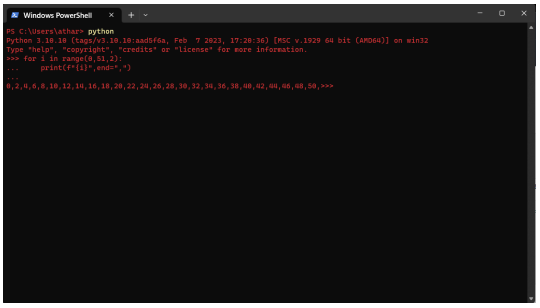


3. Range

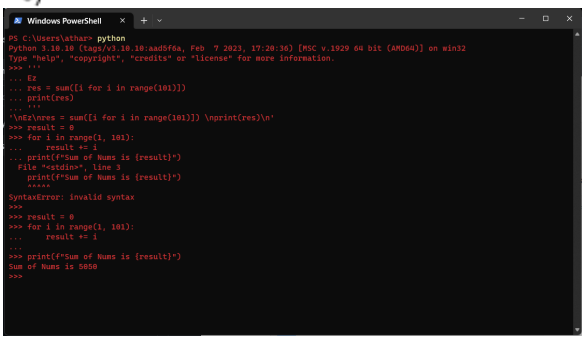
a)



b)



c)



Observation	Installation: Visit the official Python website, select the right version for your operating system, and then follow the installation instructions to install Python. print(), input(): The print() command is used for showing output on the console, and the input() command is used to ask the user for input. type(): The type() function is used to find out the data type of a variable or value. range(): The range() function is used to create a sequence of numbers. Assignment operators: The "=" operator is used for assignment, and the "+=" operator is used to add a value to an existing variable and reassign the result. Arithmetic operators: The "+" operator is used for addition, the "*" operator is used for multiplication, the "-" operator is used for subtraction, the "/" operator is used for division, the "%" operator is used for modulus, the "//" operator is used for integer division, and the "**" operator is used for exponentiation
Conclusion:	Python is a versatile and beginner-friendly programming language widely used for various tasks. In Python, you can use "print()" to show things on the screen and "input()" to ask questions. There are also math tools like "+" (add), "*" (multiply), and more to help you do calculations

	in Python.

Subject-In-Charge:

Sign: _____

Prof. Mayura Nagar