

Practical No: 1

Aim: To write a Python program demonstrating the use of basic syntax, comments, data types, and operators.

Theory:

Python is a high-level, interpreted programming language known for its simplicity and readability. Understanding the basic syntax, data types, comments, and operators is essential for writing effective programs.

- **Syntax:** Python uses indentation instead of braces to define blocks of code.
- **Comments:** Single-line comments start with #; multi-line comments can be written using triple quotes `'''...'''`.
- **Data Types:** Python supports various built-in data types like `int`, `float`, `str`, `bool`.
- **Operators:** Python supports arithmetic (+, -, *, /, //, %, **), comparison (==, !=, >, <, >=, <=), logical (and, or, not) and assignment (=, +=, -=) operators.

Program:

```
# This is a single-line comment

'''
This is a multi-line comment
demonstrating Python basics.
'''

# Variable declaration and initialization
name = "Alice"
age = 25
height = 5.6
is_student = True

# Displaying data types
print("Name:", name, "| Type:", type(name))
print("Age:", age, "| Type:", type(age))
print("Height:", height, "| Type:", type(height))
print("Is Student:", is_student, "| Type:", type(is_student))

# Arithmetic operations
a = 10
b = 3

print("\nArithmetic Operations:")
print("Addition (a + b):", a + b)
print("Subtraction (a - b):", a - b)
print("Multiplication (a * b):", a * b)
print("Division (a / b):", a / b)
print("Floor Division (a // b):", a // b)
print("Modulus (a % b):", a % b)
print("Exponentiation (a ** b):", a ** b)
```

```
# Logical Operators Example

# Variable declarations
age = 20
has_id = True
is_student = False

# Logical AND
print("Eligible to vote and has ID:", age >= 18 and has_id)

# Logical OR
print("Eligible for discount (student or underage):", is_student or age < 18)

# Logical NOT
print("Is NOT a student:", not is_student)
```

Problem statements:

Develop a python program to read the marks of a student in four subjects and find the average marks scored by the student.

```
sub1 = float(input("Enter marks for Subject 1: "))
sub2 = float(input("Enter marks for Subject 2: "))
sub3 = float(input("Enter marks for Subject 3: "))
sub4 = float(input("Enter marks for Subject 4: "))

total = sub1 + sub2 + sub3 + sub4

average = total / 4

print("Average marks scored by the student:", average)
```

Output:

```
PS C:\Users\ASUS\OneDrive\Desktop\python practicals\programs> python -u "c:\Users\ASUS\OneDrive\Desktop\python practicals\programs\p21.py"
Enter marks for Subject 1: 65
Enter marks for Subject 2: 84
Enter marks for Subject 3: 96
Enter marks for Subject 4: 85
Average marks scored by the student: 82.5
PS C:\Users\ASUS\OneDrive\Desktop\python practicals\programs>
```

Write a python program to find the area of (Rectangle & Circle):

- Declare variables for length, breadth, and radius.
- Calculate area of a rectangle and a circle using formulas:
 - Rectangle: $\text{length} * \text{breadth}$
 - Circle: $3.14 * \text{radius} * \text{radius}$
- Show use of arithmetic operators and comments.

```
length = float(input("Enter the length of the rectangle: "))
breadth = float(input("Enter the breadth of the rectangle: "))
radius = float(input("Enter the radius of the circle: "))

area_rectangle = length * breadth
area_circle = 3.14 * radius * radius

print("Area of the Rectangle =", area_rectangle)
print("Area of the Circle =", area_circle)
```

```
PS C:\Users\ASUS\OneDrive\Desktop\python practicals\programs> python -u "c:\Users\ASUS\OneDrive\Desktop\python practicals\programs\p21.py"
Enter the length of the rectangle: 95.2
Enter the breadth of the rectangle: 65.2
Enter the radius of the circle: 85.5
Area of the Rectangle = 6207.040000000001
Area of the Circle = 22954.185
PS C:\Users\ASUS\OneDrive\Desktop\python practicals\programs> █
```

Develop a python program to perform four basic function of Simple Calculator (Two Numbers):

- Declares two numeric variables.
- Performs and displays results for addition, subtraction, multiplication, division, modulus, floor division, and exponentiation using operators.
- Use comments to describe each operation.

```
num1 = 15

num2 = 4

add = num1 + num2

print("Addition:", add)

sub = num1 - num2

print("Subtraction:", sub)

mul = num1 * num2

print("Multiplication:", mul)

div = num1 / num2

print("Division:", div)

mod = num1 % num2

print("Modulus:", mod)

floordiv = num1 // num2

print("Floor Division:", floordiv)

exp = num1 ** num2

print("Exponentiation:", exp)
```

output:

```
PS C:\Users\ASUS\OneDrive\Desktop\python practicals\programs> python practicals\programs\p21.py
Addition: 19
Subtraction: 11
Multiplication: 60
Division: 3.75
Modulus: 3
Floor Division: 3
Exponentiation: 50625
PS C:\Users\ASUS\OneDrive\Desktop\python practicals\programs> █
```

conclusion:

the program for implementation of program demonstrating the use of basic syntax, comments, data types, and operators execute successfully.