**ASSIGNMENT -1**

1. **Understanding Variables**

**a. Define a variable in Python. Provide an example of how to create a variable that stores your name.**

A variable holds the assigned value. Once the value assigned to a variable you can use it to refer that value.

**EXAMPLE:**

name = “nakul karsandas malik”

print(name)

**b. What is the difference between a variable and a constant? Can we have constants in Python?**

Variable is mutable and constant is immutable. Python doesn’t have built in function for constant.

1. **Working with Different Data Types**
2. **Create variables of the following types in Python:**
3. **Integer**

age = input("any age you wanrt to give") e.g 30

print(age)

1. **Float**

Height = input("Height in feet") e.g 5.9

print(height)

1. **String**

name = input(“any name”)

print(name)

1. **Boolean**

gender = input("Enter your gender (male/female): ")

if gender.lower() == "male":

print("You are male.")

else:

print("You are female.")

1. **Write a Python script to display the type of each variable you created.**

age = input("any age you wanrt to give") e.g 30

Height = input("Height in feet") e.g 5.9

name = input(“any name”)

gender = input("Enter your gender (male/female): ")

if gender.lower() == "male":

print("You are male.")

else:

print("You are female.")

print(age)

print(height)

print(name)

1. **Arithmetic Operators**

**a. Explain the following arithmetic operators with examples:**

1. Addition (`+`)

It is used for addition and concatenate.

A = 5

B = 3

Print(a+b)

8

A = “5ac”

B = “3”

Print(a+b)

5ac3

1. Subtraction (`-`)

It is used for subtraction

A = 5

B = 3

Print(a-b)

2

1. Multiplication (``)

It is used for multiplication

A = 5

B = 3

Print(a\*b)

15

1. Division (`/`)

A = 5

B = 3

Print(a/b)

1.6666666

1. Floor Division (`//`)

A = 5

B = 3

Print(a//)

1

1. Modulus (`%`)

A = 5

B = 3

Print(a%b)

2

**b. Write a Python script to calculate the area of a rectangle using variables `length` and `width` with values 5 and 10, respectively. Use the multiplication operator.**

l = 5

w = 10

area\_of\_rectangle = l \* w

print(area\_of\_rectangle)

**4. Comparison and Logical Operators**

**a. Explain the following comparison operators with examples:**

**1. Equal to (`==`)**

x = input("first number")

y = input ("second number")

if x == y:

print("number are equal")

else:

print("not equal")

**2. Not equal to (`!=`)**

x = input("first number")

y = input ("second number")

if x != y:

print("number are not equal")

else:

print(“equal")

**3. Greater than (`>`)**

x = input("first number")

y = input ("second number")

if x > y:

print(“ x is greatrer than y l")

else:

print(“x is smaller than y")

**4. Less than (`<`)**

x = input("first number")

y = input ("second number")

if x < y:

print(“ y is greatrer than x")

else:

print(“y is smaller than x")

**5. Greater than or equal to (`>=`)**

x = input("first number")

y = input ("second number")

if x >= y:

print(“ x is greater than or equal to y")

else:

print(“ x is smaller than or equal to y")

**6. Less than or equal to (`<=`)**

x = input("first number")

y = input ("second number")

if x =< y:

print(“ y is greater than or equal to x")

else:

print(“ y is smaller than or equal to x")

**b. Using logical operators (`and`, `or`, `not`), write a Python script that checks if a number is positive and even**

x = input("enter first number")

y = input("enter second number")

z = input("enter third number")

if x < y and y < z:

print("Both conditions are true")

if x > y or y < z:

print("At least one condition is true")

if not x > y:

print("x is not greater than y")

**5. Type Casting in Python a. What is type casting? Explain the difference between implicit and explicit type casting with examples.**

Typecasting means converting the type of variable from one data type to another. Like from int to string

**b. Write a Python script that:**

**1. Converts a float to an integer.**

a = 5.9

b = int(a)

output = 5

**2. Converts an integer to a string.**

a = 5

b = str(a)

output = 5

**3. Converts a string to a float.**

a = "5"

b = float(a)

output = 5.0

**6. Write a Python script that asks the user to input two numbers and then:**

**1. Adds the two numbers and prints the result.**

**2. Subtracts the second number from the first and prints the result.**

**3. Multiplies the two numbers and prints the result.**

**4. Divides the first number by the second and prints the result (handle division by zero).**

**5. Converts the sum of the numbers to a string and prints the type of the result.**

x = int(input("Enter the first number"))

y = int(input("Enter the second number"))

print("Sum of 2 numbers:", x + y)

print("Difference of 2 numbers:", x - y)

print("Multiplication of 2 numbers:", x \* y)

print("Division of 2 numbers:", x / y)