**Exercise 1**

**Aim:**

To create a Python program that demonstrates the use of basic data types and various operators

**Algorithm**

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| Step 1 | **:** | Start the Program. |
| Step 2 | **:** | Get the Input from the User |
| Step 3 | **:** | Create a list, tuple, set, and dictionary using the provided inputs. |
| Step 4 | **:** | Perform Arithmetic Operation, Comparison Operations, Logical Operations, Bitwise Operations, Membership Check |
| Step 5 | **:** | Display the Results |
| Step 6 | **:** | Stop the Program. |

**Program:**

# Various Data Types in Python

# Integer and Float

num1 = int(input("Enter an integer: "))

num2 = float(input("Enter a float: "))

# String

str1 = input("Enter the first string: ")

str2 = input("Enter the second string: ")

# List

my\_list = [num1, num2, str1, str2]

# Tuple

my\_tuple = (num1, num2)

# Set

my\_set = {num1, num2}

# Dictionary

my\_dict = {

'integer': num1,

'float': num2,

'first\_string': str1,

'second\_string': str2

}

# Boolean

bool1 = True

bool2 = False

# Arithmetic Operations

sum\_result = num1 + num2

difference = num1 - num2

product = num1 \* num2

quotient = num1 / num2 if num2 != 0 else "undefined (cannot divide by zero)"

remainder = num1 % num2

exponentiation = num1 \*\* 2

floor\_division = num1 // 2

# Comparison Operators

is\_equal = num1 == num2

is\_not\_equal = num1 != num2

is\_greater = num1 > num2

is\_less\_or\_equal = num1 <= num2

# Logical Operators

logical\_and = bool1 and bool2

logical\_or = bool1 or bool2

logical\_not = not bool1

# Bitwise Operators

bitwise\_and = num1 & 1

bitwise\_or = num1 | 1

bitwise\_xor = num1 ^ 1

# Membership Operators

is\_in\_list = num1 in my\_list

is\_in\_dict = 'integer' in my\_dict

# Print Results

print(f"\nArithmetic Results:")

print(f"Sum: {sum\_result}")

print(f"Difference: {difference}")

print(f"Product: {product}")

print(f"Quotient: {quotient}")

print(f"Remainder: {remainder}")

print(f"{num1} raised to the power of 2: {exponentiation}")

print(f"Floor division of {num1} by 2: {floor\_division}")

print(f"\nComparison Results:")

print(f"Is {num1} equal to {num2}? : {is\_equal}")

print(f"Is {num1} not equal to {num2}? : {is\_not\_equal}")

print(f"Is {num1} greater than {num2}? : {is\_greater}")

print(f"Is {num1} less than or equal to {num2}? : {is\_less\_or\_equal}")

print(f"\nLogical Results:")

print(f"{bool1} AND {bool2} : {logical\_and}")

print(f"{bool1} OR {bool2} : {logical\_or}")

print(f"NOT {bool1} : {logical\_not}")

print(f"\nBitwise Results:")

print(f"{num1} AND 1: {bitwise\_and}")

print(f"{num1} OR 1: {bitwise\_or}")

print(f"{num1} XOR 1: {bitwise\_xor}")

print(f"\nMembership Results:")

print(f"Is {num1} in the list? : {is\_in\_list}")

print(f"Is 'integer' a key in the dictionary? : {is\_in\_dict}")

print(f"\nData Structures:")

print(f"List: {my\_list}")

print(f"Tuple: {my\_tuple}")

print(f"Set: {my\_set}")

print(f"Dictionary: {my\_dict}")

**Output**

**Result:**  
The Python program was successfully created to demonstrate basic data types and operators, allowing users to perform and view results of various operations.