**Exercise 3**

**Aim**

To develop a program that demonstrates the use of List, Tuple, Set, and Dictionary data structures in Python

**Algorithm**

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| Step 1 | **:** | Start the Program. |
| Step 2 | **:** | Get input from the user for list, tuple, set, and dictionary creation. |
| Step 3 | **:** | Create the list and perform the addition operation. |
| Step 4 | **:** | Create the tuple and access the elements in the tuple. |
| Step 5 | **:** | Create the set and perform the intersection and union operations. |
| Step 6 | **:** | Create the dictionary and check for an email in the dictionary. |
| Step 7 | **:** | Display the results |
| Step 8 | **:** | Stop the Program. |

**Program:**

# 1. List: Create a list of numbers and find the sum

numbers = input("Enter values for List separated by commas (e.g., 1,2): ")

numbers\_list = [int(num) for num in numbers.split(',')]

sum\_of\_numbers = sum(numbers\_list)

# 2. Tuple: Create a tuple of student information

student\_name = input("\nEnter student's name: ")

student\_age = int(input("Enter student's age: "))

student\_major = input("Enter student's major: ")

student\_info = (student\_name, student\_age, student\_major)

# 3. Set: Perform set operations

set1\_values = input("\nEnter values for Set 1 separated by commas: ")

set1 = {int(x) for x in set1\_values.split(',')}

set2\_values = input("Enter values for Set 2 separated by commas: ")

set2 = {int(x) for x in set2\_values.split(',')}

intersection = set1.intersection(set2)

union = set1.union(set2)

# 4. Dictionary: Create a dictionary of contact information

contact\_info = {}

num\_contacts = int(input("\nHow many contacts do you want to add? "))

for \_ in range(num\_contacts):

name = input("Enter name: ")

email = input("Enter email: ")

contact\_info[name] = email

# Display Results

print("\n--- Results ---")

# List Results

print("\nList\n")

print("numbers\_list =", numbers\_list)

print("Sum of numbers:", sum\_of\_numbers)

# Tuple Results

print("\nTuple\n")

print("student\_info =", student\_info)

print("Name:", student\_info[0])

print("Age:", student\_info[1])

print("Major:", student\_info[2])

# Set Results

print("\nSet\n")

print("Set 1 =", set1)

print("Set 2 =", set2)

print("Intersection:", intersection)

print("Union:", union)

# Dictionary Results

print("\nDictionary\n")

print("Contact Information =",contact\_info) # Display the dictionary as is

for name, email in contact\_info.items():

print("Key =", name) # Print key

print("Value =", email) # Print value

# Lookup for a specific name

name\_to\_lookup = input("\nEnter a name to look up their email: ")

if name\_to\_lookup in contact\_info:

email = contact\_info[name\_to\_lookup]

print(f"{name\_to\_lookup}'s email is {email}")

else:

print(f"{name\_to\_lookup} is not in the contact list.")

**Output**

**Result:**The Python program to demonstrate List, Tuple, Set, and Dictionary data structures was successfully implemented and executed.