Homework Assignment: Utilizing Dictionaries and Sets in Python

Objective: The primary objective of this assignment is to introduce students to the concepts of dictionaries and sets in Python, emphasizing their role in efficient data organization and retrieval.

Problem 1: Dictionary Basics

1. Write a Python script that defines a dictionary representing information about a person. Include the following key-value pairs:
   - Name
   - Age
   - City
   - Occupation

2. Print the entire dictionary and then print each piece of information separately using the respective keys.

3. Update one of the values in the dictionary (e.g., change the person's city) and print the modified dictionary.

Problem 2: Dictionary Operations

4. Create a program that simulates a basic inventory system. Define a dictionary where keys represent items (e.g., 'item1', 'item2') and values represent their quantities.

5. Implement the following operations:
   - Add a new item to the inventory.
   - Remove an item from the inventory.
   - Update the quantity of a specific item.
   - Check if a particular item is present in the inventory.

Problem 3: Set Operations

6. Write a Python script that initializes two sets with numerical values.

7. Perform the following set operations and print the results:
   - Union of the two sets.
   - Intersection of the two sets.
   - Difference between the two sets.

8. Use a set to remove duplicate elements from a list of numbers. Print both the original list and the list after removing duplicates.

Additional Tips:

- Utilize online resources, Python documentation, and course materials to reinforce your understanding.
- Collaborate with classmates to discuss concepts and problem-solving.
- Seek assistance from your instructor or classmates if you encounter difficulties.