**AL-2001**

**Programming for AI**

**Lab # 7**

**Objectives**

**Dictionary**

**Note: Carefully read the following instructions (***Each instruction contains a weightage***)**

* First think about statement problems and then write your logic on Copy / Notebook.
* Write **Your Name** and **Roll No** on your Paper/Sheet’s first page.
* Do not copy from any source otherwise you will be penalized with negative marks.
* Complete your lab **within given Time Slot**.
* Do not discuss about your assigned with any one. It will be not evaluate.
* Paste all your codes along with screenshots in a word file and renamed with your roll number.
* Keep all your source files in your computer for verification. Do not overwrite a single source file for all programs.

**[Problems/Task]**

1. Create a dictionary of elements having words and their corresponding meanings. Develop a menu driven program that offers user with the following options:

* Add a new word to the dictionary
* Display the contents of dictionary
* Delete a word from the dictionary
* Search for the meaning of word
* Modify the meaning of word
* Quit

Program should continue to work until User wishes to quit.

1. **Inventory Control System**

**Scenario:** You are tasked with designing an inventory control system for a retail store. Each product is represented as a dictionary with product details (product\_id, product\_name, price, quantity).

**Hints:**

Use a dictionary to store product information (product\_id as the key and product details as the value).

Develop a program that allows users to add new products (using dictionaries), update product information (e.g., price and quantity), and check product availability.

Implement a feature to calculate the total value of the inventory using product prices and quantities.

1. **Student Grade Management**

**Scenario:** You are building a student grade management system for a school. Each student's grades are stored in a dictionary where the student's name is the key, and the value is a list of grades for different subjects.

**Hints:**

Use a dictionary where student names are keys, and the values are lists (representing grades for different subjects).

Create a program that allows users to add new students (using dictionary keys), update grades, and calculate average grades for each student (using lists for grades).

Implement a function to find and display students with the highest and lowest average grades.

Provide a feature to search for a student by name (using dictionary keys) and display their grade details (using lists).

1. **Recipe Book Application**

**Scenario:** You are creating a recipe book application. Each recipe is stored as a dictionary with recipe details (recipe\_id, recipe\_name, ingredients (a list), instructions).

**Hints:**

Use a list of dictionaries to store multiple recipes.

Create a program that allows users to add new recipes (using dictionaries), update existing recipes, and view recipe details.

Implement a feature to search for recipes by ingredient (using lists for ingredients) and display matching recipes.

Provide an option to delete recipes from the recipe book using lists of recipe IDs.

1. **Library Catalog System**

**Scenario:** You are tasked with building a library catalog system. Books are represented as dictionaries with book details (book\_id, title, author, publication\_year).

**Hints:**

Use a dictionary to store book information (book\_id as the key and book details as the value).

Develop a program that allows users to add new books (using dictionaries), update book information, and search for books by title or author.

Implement a feature to keep track of the total number of books in the library (using dictionary keys) and generate a catalog report.

Provide options to borrow and return books, updating their availability status (using dictionary values).

**You need to done with your exercise within given time.**