Lab 2

1.Write a program to find all of the longest word in a given dictionary.

Example:

{ "cat", "dog", "red", "is", "am" }

Expected Output:

"cat", "dog", "red"

2. Write a program that displays the number of occurrences of an element in the array.

Original Array:

[1,1,1,3,3,5]

Sample Output:

3 occurs 2 times

1 occurs 3 times

9 occurs 0 time

3.Write a program to find the k largest elements in a given array. Elements in the array can be in any order.

Original Array:

[1, 4, 17, 7, 25, 3, 100]

Expected Output:

3 largest elements of the said array are:

100 25 17

4. Create a method to reverse an array of integers. Implement the method without creating a new array.

Original Array:

[5,4,3,2,1]

Expected Output:

Reversed Array:

1 2 3 4 5

5. Write a menu driven Java program with following option:

1. Accept elements of an array

2. Display elements of an array

3. Search the element within array

4. Sort the array

5. To Stop

the size of the array should be entered by the user.

6. Create a method that generates a random number within a given range. Allow the user to specify the range and call the method to display random numbers.

Hint: use Random class

Sample Output:

Enter the minimum value of the range: 10

Enter the maximum value of the range: 100

Enter the number of random numbers to generate: 5

Random numbers within the specified range:

71 - 98 - 96 - 71 - 71

7. Write a program that checks the strength of a password. Create a method that evaluates a password based on criteria like length, inclusion of special characters, and uppercase/lowercase letters.

- We have three methods: checkLength, checkSpecialCharacters, and checkUpperCaseLowerCase, each of which assigns a score based on specific criteria.
- The totalScore is calculated by adding the scores from these methods.
- Classify the password as strong (8 or more), moderately strong (5 or more), or weak based on the totalScore.
- The criteria for scoring:
    - Length: 0-5 characters (0 points), 6-7 characters (2 points), 8 or more characters (3 points).
    - Special characters: Absence (0 points), Presence (2 points).
    - Uppercase and lowercase letters: Absence of both (0 points), presence of both (3 points).

Example:

Enter a password: 3456

Expected Output:

Password is weak.

8. Create a method that generates the Fibonacci sequence up to a specified number of terms.

Hint: The Fibonacci sequence is a mathematical sequence of numbers that starts with 0 and 1, and each subsequent number in the sequence is the sum of the two preceding ones.

Example:

Enter the number of Fibonacci terms to generate: 10

Expected Output:

Fibonacci sequence with 10 terms:

0 1 1 2 3 5 8 13 21 34