Assignment - 13

1. Write a program to implement binary search on a sorted list of integers.

Requirements:

1. Accept a sorted list of integers from the user.
2. Accept a target value to search for.
3. Implement binary search to check if the target exists in the list.
4. If found, print its index; otherwise, print "Element not found".
5. Display the number of comparisons made during the search.

2. Modify the binary search algorithm to find both the first and last occurrence of a given target element in a sorted list of integers.

Requirements:

1. Accept a sorted list of integers.
2. Accept a target value to search for.
3. Use binary search to find the first and last occurrence of the target in the list.
4. Print the first and last index where the element appears.
5. If the element is not found, print "Element not found".

3. Use binary search to find the square root of a given positive integer N, rounded to the nearest integer.

Requirements:

1. Accept an integer N from the user.
2. Use binary search to efficiently compute √N (square root of N).
3. If N is a perfect square, return the exact value. Otherwise, return the nearest integer value.
4. Do not use built-in square root functions like `sqrt()`.