Searching in an array- Linear & Binary Search

Assignment Questions

PW SKILLS

Q1. Given an array. FInd the number X in the array. If the element is present, return the index of the element, else print "Element not found in array". Input the size of array, array from user and the element X from user. Use Linear Search to find the element.

Example1

```
Enter the number of elements you want to add : 5
Enter the elements of the array: 6
2
3
1
7
Enter the elements to be searched in array2
1
```

Example 2

```
Enter the number of elements you want to add : 5
Enter the elements of the array: 6
2
3
1
7
Enter the elements to be searched in array5
Element not found in array
```

Q2. Given an array and an integer "target", return the last occurrence of "target" in the array. If the target is not present return -1.
Input 1: arr = [1 1 1 2 3 4 4 5 6 6 6 6] , target = 4
Output 1: 6
Input 2: arr = [2 2 2 6 6 18 29 30 30 30] , target = 15
Output 2: -1

Q3. Given a sorted binary array, efficiently count the total number of 1's in it.
Input 1: arr = [0 0 0 0 1 1 1 1 1 1]
Output 1: 6
Input 2: arr = [0 0 0 0 0 1 1]
Output 2: 2

Q4. Given a sorted integer array containing duplicates, count occurrences of a given number. If the element is not found in the array, report that as well.
Input: nums[] = [2, 5, 5, 5, 6, 6, 8, 9, 9, 9]
target = 5
Output: Target 5 occurs 3 times
Input: nums[] = [2, 5, 5, 5, 6, 6, 8, 9, 9, 9]
target = 6
Output: Target 6 occurs 2 times

Q5: Given a positive integer num, return true if num is a perfect square or false otherwise.
A perfect square is an integer that is the square of an integer. In other words, it is the product of some integer with itself.
Example 1:
Input: num = 16
Output: true
Explanation: We return true because 4 * 4 = 16 and 4 is an integer.
Example 2:
Input: num = 14
Output: false
Explanation: We return false because 3.742 * 3.742 = 14 and 3.742 is not an integer.