SLIIT
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BSc (Hons) in Information Technology
Year 2
Data Structures and Algorithms – IT2070

Lab Exercise 8 – Binary Search Algorithm 2020

Question 1

Binary search algorithm finds the position of a target value within a **sorted** array. It is a divide and conquer search algorithm.

Algorithms compares the target value with the value of the middle element of the array. If they are equal, algorithm returns the middle position and search ends. If the target value is less than the middle element value, search continues on the lower half of the array. If the target value is greater than the middle element value, search continues on the upper half of the array. This process continues, eliminating half of the elements until the value is found or the array is exhausted.

BINARY-SEARCH*(A, min, max, key)*

```
1.  if max < min
2.          return false
3.  else
4.          mid = ⌊ (min + max)/2 ⌋
5.          if A[mid] > key
6.                  return BINARY-SEARCH(A, min, mid-1, key)
7.          else if A[mid] < key
8.                  return BINARY-SEARCH(A, mid+1, max, key)
9.          else
10.                 return mid
```

Write a program to read sorted numbers and store them in an array. Search a given numbers using binary search algorithm.