**ASSIGNMENT-2**

1. Write a C program and algorithm that uses a linear search strategy to find specific data inside an array.
2. Write a C program and algorithm that uses a recursive binary search technique to find specific data inside an array.
   1. **Code-**

**#include <stdio.h>**

**int main()**

**{**

**int a[10],size,i,val;**

**printf("Enter the size of array-");**

**scanf("%d",&size);**

**if(size>10)**

**{**

**printf("Array overflows");**

**}**

**else**

**{**

**printf("The the size of array-%d",size);**

**printf("\nEnter the elements of the array-");**

**for(i=0; i<size; i++)**

**{**

**scanf("%d",&a[i]);**

**}**

**printf("\nThe elements of the array\n");**

**for(i=0;i<size;i++)**

**{**

**printf("[%d]",a[i]);**

**}**

**printf("\nEnter the value you want to search:");**

**scanf("%d",&val);**

**for(i=0;i<size;i++)**

**{**

**if(a[i]==val)**

**{**

**printf("Element found at index:-%d",i);**

**printf("\nElement found at position:-%d",i+1);**

**break;**

**}**

**}**

**if(i==size)**

**{**

**printf("Element not found in array");**

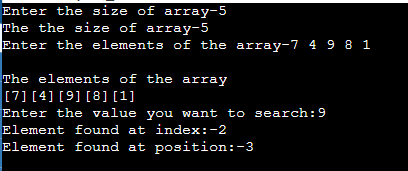
**}**

**}**

**return 0;**

**}**

**OUTPUT –**



**b. Code**

**#include <stdio.h>**

**int binarySearch(int a[], int l, int h, int x)**

**{**

**if (h >= l)**

**{**

**int mid = (l+h)/ 2;**

**if (a[mid] == x)**

**return mid;**

**if (a[mid] > x)**

**return binarySearch(a, l, mid - 1, x);**

**return binarySearch(a, mid + 1, h, x);**

**}**

**return -1;**

**}**

**int main()**

**{**

**int a[10],size,i,val;**

**printf("Enter the size of array-");**

**scanf("%d",&size);**

**if(size>10)**

**{**

**printf("Array overflows");**

**}**

**else**

**{**

**printf("The the size of array-%d",size);**

**printf("\nEnter the elements of the array in sorted order-");**

**for(i=0; i<size; i++)**

**{**

**scanf("%d",&a[i]);**

**}**

**printf("\nThe elements of the array\n");**

**for(i=0;i<size;i++)**

**{**

**printf("[%d]",a[i]);**

**}**

**printf("\nEnter the value you want to search:");**

**scanf("%d",&val);**

**int result = binarySearch(a, 0, size - 1, val);**

**if(result == -1)**

**printf("\nElement is not present in array");**

**else**

**{**

**printf("Element is present at index %d", result);**

**printf("\nElement is present at position %d", result+1);**

**}**

**}**

**return 0;**

**}**

**OUTPUT**

