

## QUESTION 1

```
#include <stdio.h>
```

```
int linearSearch(int arr[], int n, int key) {  
    for (int i = 0; i < n; i++) {  
        if (arr[i] == key) {  
            return i;  
        }  
    }  
    return -1;  
}
```

```
int main() {  
    int arr[] = {12, 45, 67, 89, 34, 22};  
    int n = sizeof(arr) / sizeof(arr[0]);  
    int key = 34;  
  
    int result = linearSearch(arr, n, key);  
    if (result != -1) {  
        printf("Element found at index: %d\n", result);  
    } else {  
        printf("Element not found in the array\n");  
    }  
    return 0;  
}
```

```
1 #include <stdio.h>
2
3 int linearSearch(int arr[], int n, int key) {
4     for (int i = 0; i < n; i++) {
5         if (arr[i] == key) {
6             return i;
7         }
8     }
9     return -1;
10 }
11
12 int main() {
13     int arr[] = {12, 45, 67, 89, 34, 22};
14     int n = sizeof(arr) / sizeof(arr[0]);
15     int key = 34;
16
17     int result = linearSearch(arr, n, key);
18     if (result != -1) {
19         printf("Element found at index: %d\n", result);
20     } else {
21         printf("Element not found in the array\n");
22     }
23     return 0;
24 }
```

/tmp/x4bq7780Yw.o  
Element found at index: 4

## QUESTION 2

```
#include <stdio.h>
```

```
int binarySearch(int arr[], int l, int r, int x) {
```

```
    while (l <= r) {
```

```
        int mid = l + (r - l) / 2;
```

```
        if (arr[mid] == x)
```

```
            return mid;
```

```
        if (arr[mid] < x)
```

```
            l = mid + 1;
```

```
        else
```

```
            r = mid - 1;
```

```
    }
```

```
    return -1;
```

```
}
```

```
int main() {
```

```
    int arr[] = {6, 80, 57, 78, 7};
```

```
    int n = sizeof(arr) / sizeof(arr[0]);
```

```
    int x;
```

```
    printf("Enter the element to search: ");
```

```
    scanf("%d", &x);
```

```
    int result = binarySearch(arr, 0, n - 1, x);
```

```
    if (result == -1)
```

```
    printf("Element is not present in array\n");  
else  
    printf("Element is present at index %d\n", result);  
return 0;  
}
```

<pre>1 #include &lt;stdio.h&gt; 2 3 int binarySearch(int arr[], int l, int r, int x) { 4     while (l &lt;= r) { 5         int mid = l + (r - l) / 2; 6 7         if (arr[mid] == x) 8             return mid; 9 10        if (arr[mid] &lt; x) 11            l = mid + 1; 12 13        else 14            r = mid - 1; 15    } 16 17    return -1; 18 } 19 20 int main() { 21     int arr[] = {6,80,57,78,7}; 22     int n = sizeof(arr) / sizeof(arr[0]); 23     int x; 24 }</pre>	<pre>/tmp/x4bq7780Yw.o Enter the element to search: 78 Element is present at index 3</pre>
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