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;
}
```

```c
#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;
}
```

```
/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;
}
```

```c
#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;

```

```
/tmp/x4bq7780Yw.o
Enter the element to search: 78
Element is present at index 3
```