1.

```
#include <stdio.h>

void findSecondLargest(int arr[], int n) {
    int firstLargest = arr[0];
    int secondLargest = -1;

    for (int i = 1; i < n; i++) {
        if (arr[i] > firstLargest) {
            secondLargest = firstLargest;
            firstLargest = arr[i];
        } else if (arr[i] < firstLargest && (secondLargest == -1 || arr[i] > secondLargest)) {
            secondLargest = arr[i];
        }
    }

    if (secondLargest != -1) {
        printf("Second largest distinct element: %d\n", secondLargest);
    } else {
        printf("No second largest distinct element found.\n");
    }
}

int main() {
    int N;


    printf("Enter the size of the array: ");
    scanf("%d", &N);

    int Arr[N];


    printf("Enter the elements of the array:\n");
    for (int i = 0; i < N; i++) {
        scanf("%d", &Arr[i]);
    }


    findSecondLargest(Arr, N);

    return 0;
}
```

2.

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

```
int hasPairWithSum(int arr[], int n, int X) {

    int visited[100000] = {0};


    for (int i = 0; i < n; i++) {
        int complement = X - arr[i];


        if (visited[complement]) {
            return 1; // Pair found
        }


        visited[arr[i]] = 1;
    }

    return 0;
}

int main() {
    int N, X;


    printf("Enter the size of the array: ");
    scanf("%d", &N);

    printf("Enter the target sum X: ");
    scanf("%d", &X);

    int Arr[N];


    printf("Enter the elements of the array:\n");
    for (int i = 0; i < N; i++) {
        scanf("%d", &Arr[i]);
    }


    if (hasPairWithSum(Arr, N, X)) {
        printf("Yes, there exist two elements in the array whose sum is %d\n", X);
    } else {
        printf("No, there are no two elements in the array whose sum is %d\n", X);
    }

    return 0;
}
```

3.

```
#include <stdio.h>

void findFirstAndLastOccurrence(int arr[], int n, int x) {
    int first = -1, last = -1;


    for (int i = 0; i < n; i++) {
        if (arr[i] == x) {
            first = i;
            break;
        }
    }


    if (first == -1) {
        printf("-1 -1\n");
        return;
    }


    for (int i = n - 1; i >= 0; i--) {
        if (arr[i] == x) {
            last = i;
            break;
        }
    }

    printf("%d %d\n", first, last);
}

int main() {
    int n, x;


    printf("Enter the size of the array: ");
    scanf("%d", &n);

    printf("Enter the element to find: ");
    scanf("%d", &x);

    int arr[n];


    printf("Enter the sorted array elements:\n");
    for (int i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
```

```
    }

    findFirstAndLastOccurrence(arr, n, x);

    return 0;
}
```