1.Given an array Arr of size N, print second largest distinct element from an array. **Find the second largest without sorting.**

#include <stdio.h>

int findSecondLargest(int Arr[], int N) {

int i;

int firstLargest = Arr[0];

int secondLargest = Arr[1];

if (firstLargest < secondLargest) {

int temp = firstLargest;

firstLargest = secondLargest;

secondLargest = temp;

}

for (i = 2; i < N; i++) {

if (Arr[i] > firstLargest) {

secondLargest = firstLargest;

firstLargest = Arr[i];

} else if (Arr[i] > secondLargest && Arr[i] < firstLargest) {

secondLargest = Arr[i];

}

}

return secondLargest;

}

int main() {

int i, N;

printf("Enter size of array: ");

scanf("%d", &N);

int Arr[N];

printf("Enter elements of array:\n", N);

for (i = 0; i < N; i++) {

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

}

int secondLargest = findSecondLargest(Arr, N);

printf("The second largest element is: %d\n", secondLargest);

return 0;

}

2.Given an array Arr of N positive integers and another number X. **Determine whether or not there exist two elements in Arr whose sum is exactly X.**[Without Sorting]

#include <stdio.h>

int i,j;

int hasPairWithSum(int Arr[], int N, int X) {

for (i = 0; i < N - 1; i++) {

for (j = i + 1; j < N; j++) {

if (Arr[i] + Arr[j] == X) {

return 1;

}

}

}

return 0;

}

int main() {

int N, X,i;

printf("Enter size of array: ");

scanf("%d", &N);

int Arr[N];

printf("Enter integers of the array:\n");

for (i = 0; i < N; i++) {

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

}

printf("Enter the sum (X): ");

scanf("%d", &X);

if (hasPairWithSum(Arr, N, X)) {

printf("Yes\n", X);

} else {

printf("No\n", X);

}

return 0;

}

**3.First and last occurrences of x**

Given a sorted array arr containing n elements with possibly some duplicate, the task is to find the first and last occurrences of an element x in the given array.

Note: If the number x is not found in the array then return both the indices as -1.

#include <stdio.h>

int i;

int findFirstOccurrence(int arr[], int n, int x) {

for (i = 0; i < n; i++) {

if (arr[i] == x) {

return i;

}

}

return -1;

}

int findLastOccurrence(int arr[], int n, int x)

{

for (i = n - 1; i >= 0; i--) {

if (arr[i] == x) {

return i;

}

}

return -1;

}

int main() {

int n, x,i;

printf("Enter the size of array: ");

scanf("%d", &n);

int arr[n];

printf("Enter elements of array:\n", n);

for (i = 0; i < n; i++) {

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

}

printf("Enter the element to find its occurrences: ");

scanf("%d", &x);

int firstOccurrence = findFirstOccurrence(arr, n, x);

int lastOccurrence = findLastOccurrence(arr, n, x);

if (firstOccurrence != -1 && lastOccurrence != -1) {

printf("First occurrence of %d is at index %d\n", x, firstOccurrence);

printf("Last occurrence of %d is at index %d\n", x, lastOccurrence);

} else {

printf("%d is not found in the array.\n", x);

}

return 0;

}