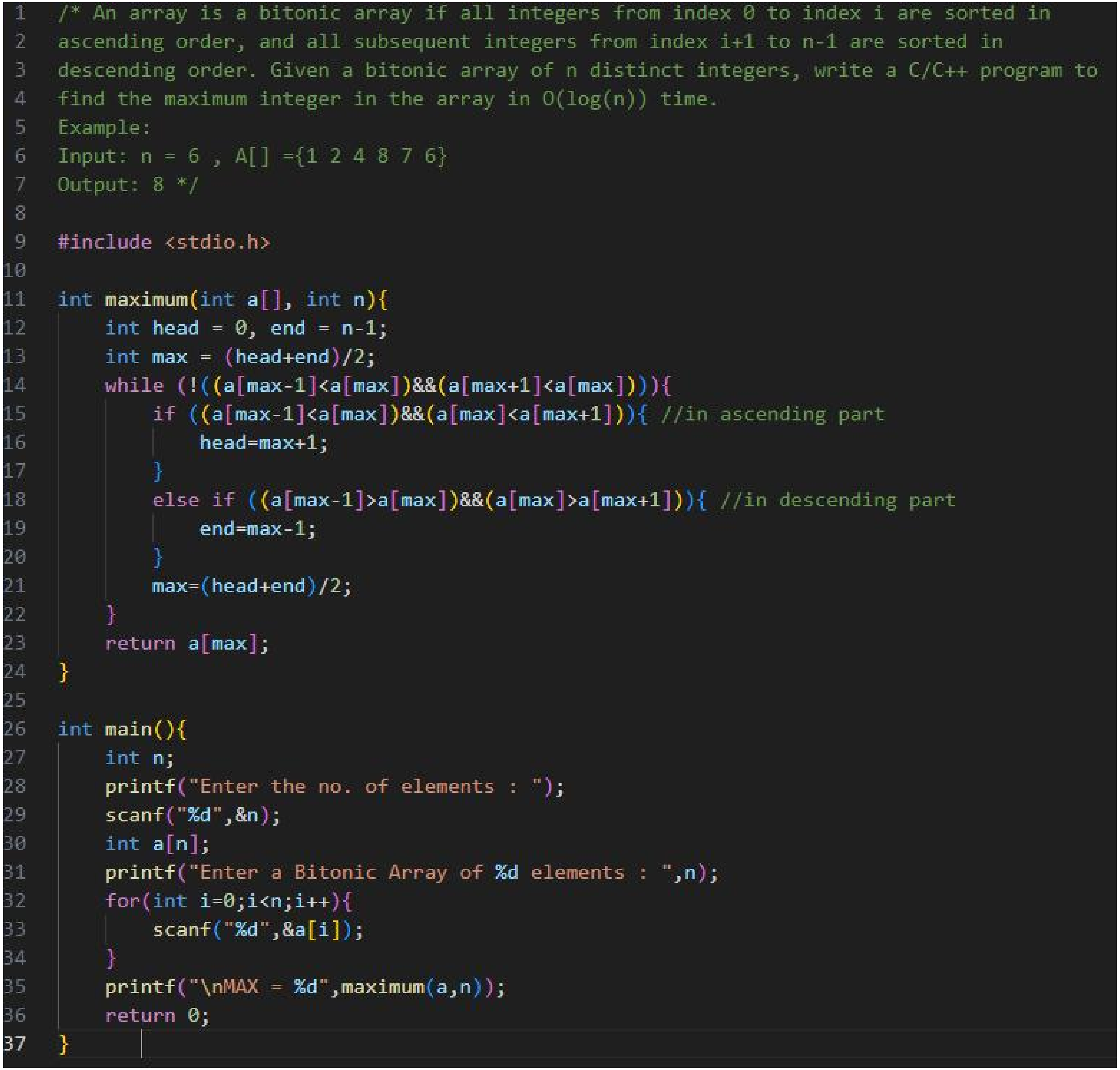
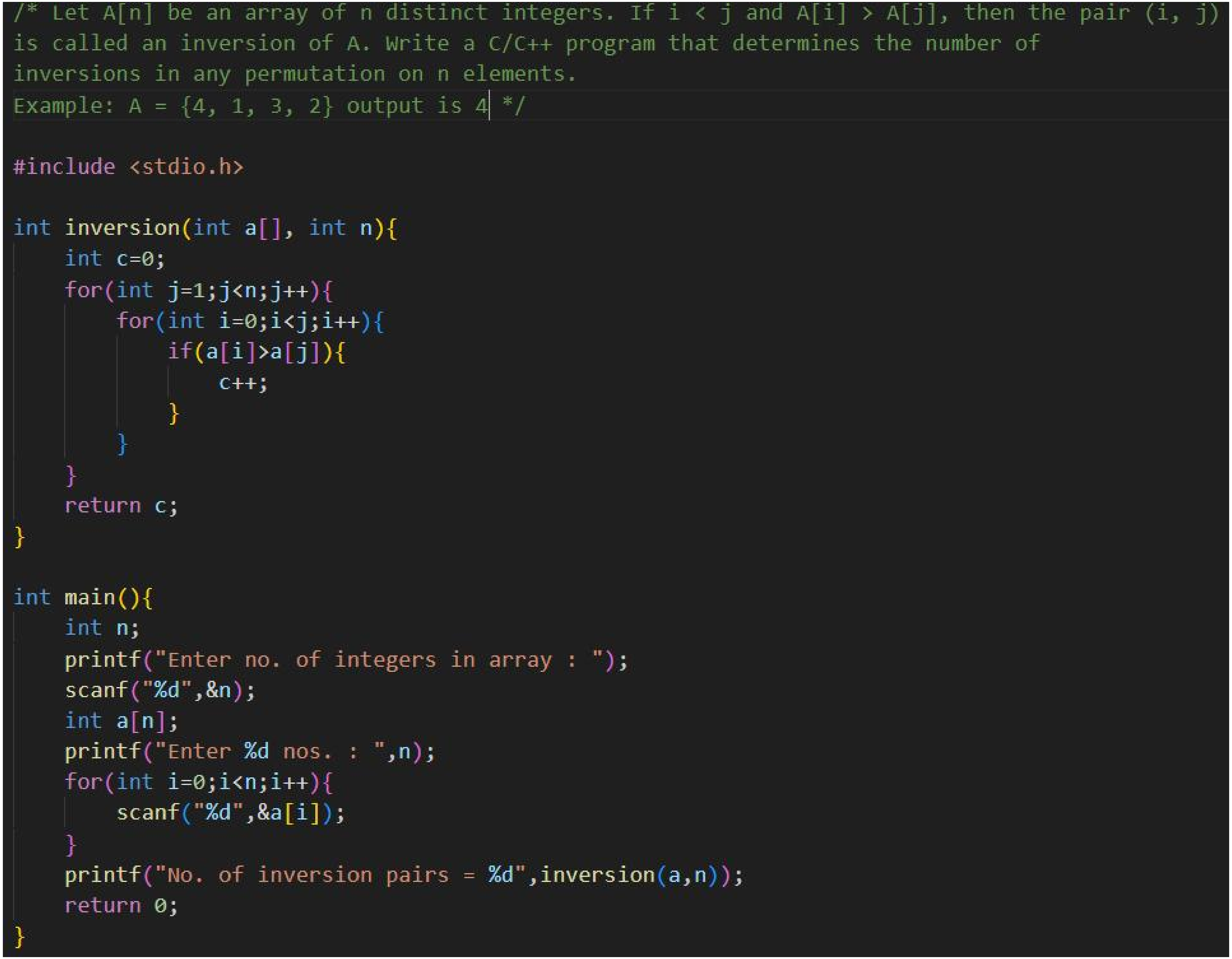


```c
/* An array is a bitonic array if all integers from index 0 to index i are sorted in
ascending order, and all subsequent integers from index i+1 to n-1 are sorted in
descending order. Given a bitonic array of n distinct integers, write a C/C++ program to
find the maximum integer in the array in O(log(n)) time.
Example:
Input: n = 6 , A[] ={1 2 4 8 7 6}
Output: 8 */

#include <stdio.h>

int maximum(int a[], int n){
    int head = 0, end = n-1;
    int max = (head+end)/2;
    while (!((a[max-1]<a[max])&&(a[max+1]<a[max]))){
        if ((a[max-1]<a[max])&&(a[max]<a[max+1])){ //in ascending part
            head=max+1;
        }
        else if ((a[max-1]>a[max])&&(a[max]>a[max+1])){ //in descending part
            end=max-1;
        }
        max=(head+end)/2;
    }
    return a[max];
}

int main(){
    int n;
    printf("Enter the no. of elements : ");
    scanf("%d",&n);
    int a[n];
    printf("Enter a Bitonic Array of %d elements : ",n);
    for(int i=0;i<n;i++){
        scanf("%d",&a[i]);
    }
    printf("\nMAX = %d",maximum(a,n));
    return 0;
}
```

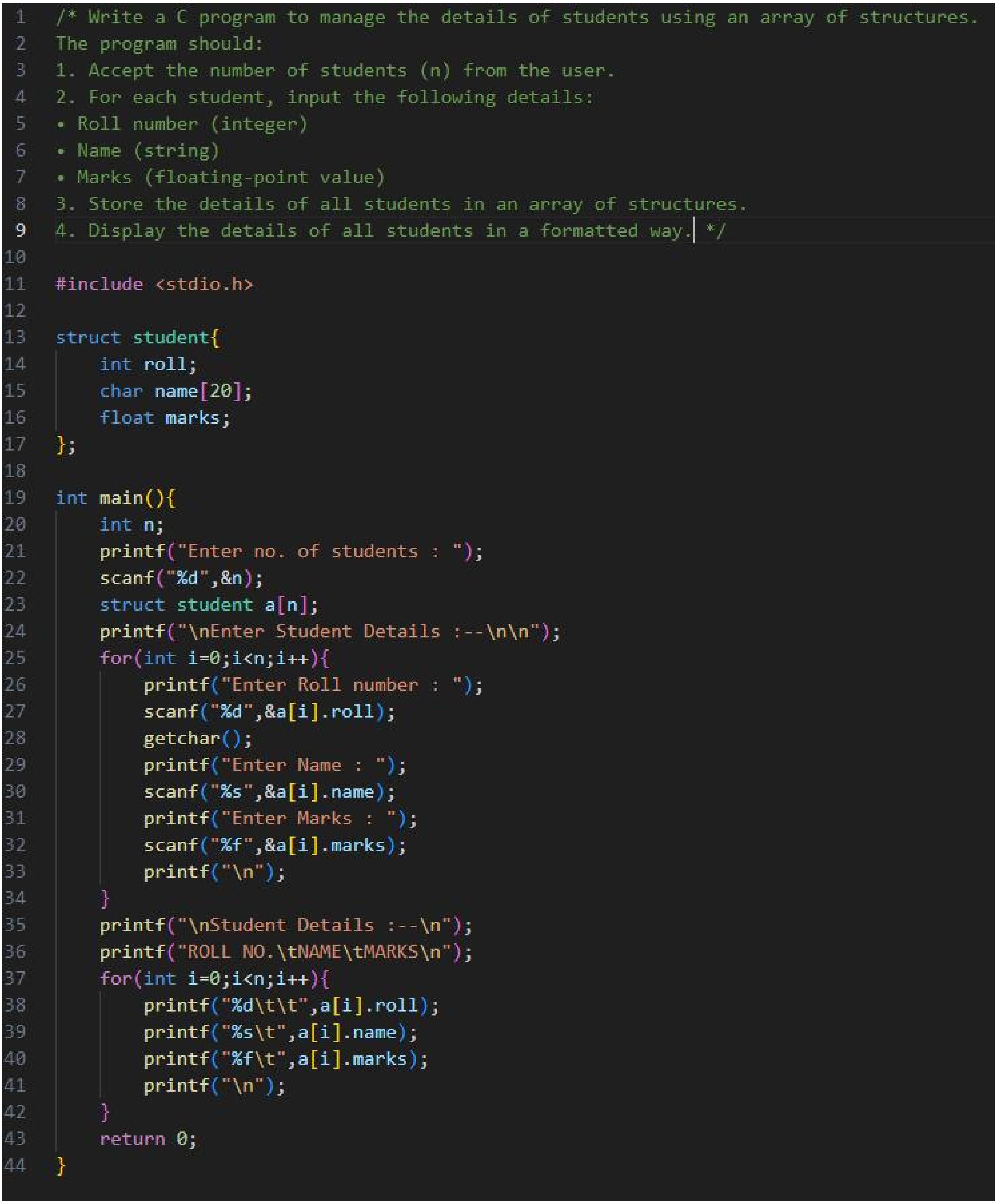


```
/* Let A[n] be an array of n distinct integers. If i < j and A[i] > A[j], then the pair (i, j)
is called an inversion of A. Write a C/C++ program that determines the number of
inversions in any permutation on n elements.
Example: A = {4, 1, 3, 2} output is 4 */

#include <stdio.h>

int inversion(int a[], int n){
    int c=0;
    for(int j=1;j<n;j++){
        for(int i=0;i<j;i++){
            if(a[i]>a[j]){
                c++;
            }
        }
    }
    return c;
}

int main(){
    int n;
    printf("Enter no. of integers in array : ");
    scanf("%d",&n);
    int a[n];
    printf("Enter %d nos. : ",n);
    for(int i=0;i<n;i++){
        scanf("%d",&a[i]);
    }
    printf("No. of inversion pairs = %d",inversion(a,n));
    return 0;
}
```



```c
/* Write a C program to manage the details of students using an array of structures.
The program should:
1. Accept the number of students (n) from the user.
2. For each student, input the following details:
• Roll number (integer)
• Name (string)
• Marks (floating-point value)
3. Store the details of all students in an array of structures.
4. Display the details of all students in a formatted way. */

#include <stdio.h>

struct student{
    int roll;
    char name[20];
    float marks;
};

int main(){
    int n;
    printf("Enter no. of students : ");
    scanf("%d",&n);
    struct student a[n];
    printf("\nEnter Student Details :--\n\n");
    for(int i=0;i<n;i++){
        printf("Enter Roll number : ");
        scanf("%d",&a[i].roll);
        getchar();
        printf("Enter Name : ");
        scanf("%s",&a[i].name);
        printf("Enter Marks : ");
        scanf("%f",&a[i].marks);
        printf("\n");
    }
    printf("\nStudent Details :--\n");
    printf("ROLL NO.\tNAME\tMARKS\n");
    for(int i=0;i<n;i++){
        printf("%d\t\t",a[i].roll);
        printf("%s\t",a[i].name);
        printf("%f\t",a[i].marks);
        printf("\n");
    }
    return 0;
}
```