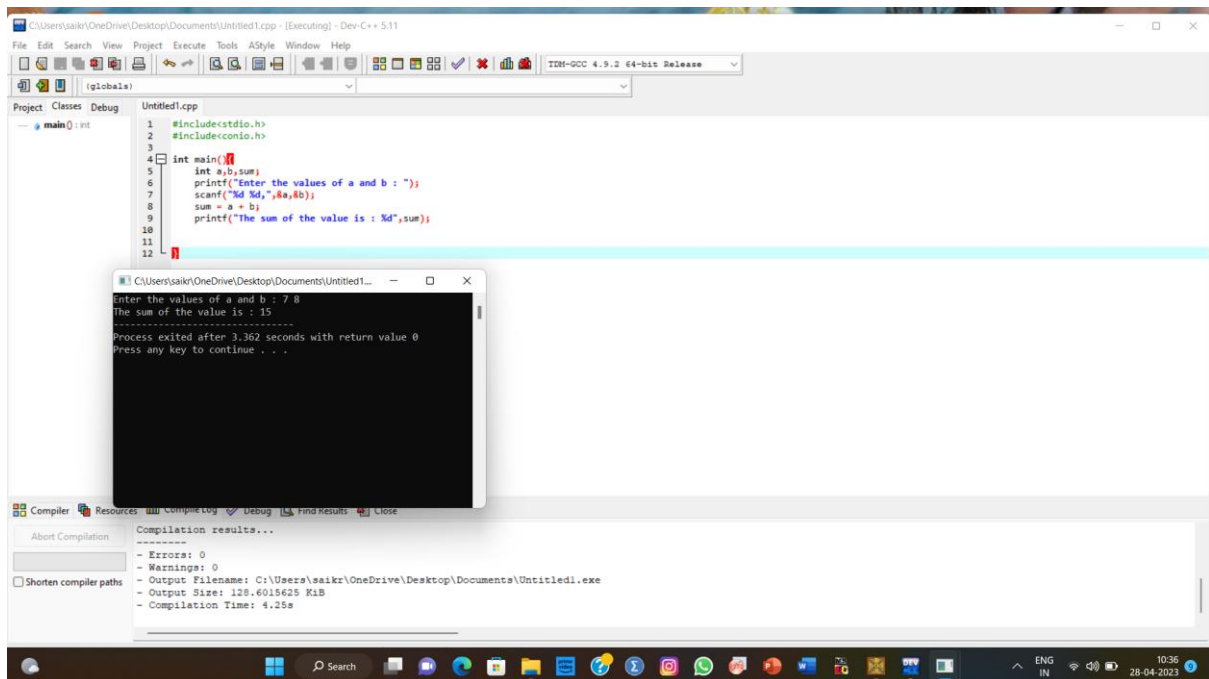


Name : T. Sai krishna

Reg: 192211870

# DATA STRUCTURES

## 1)Addition C

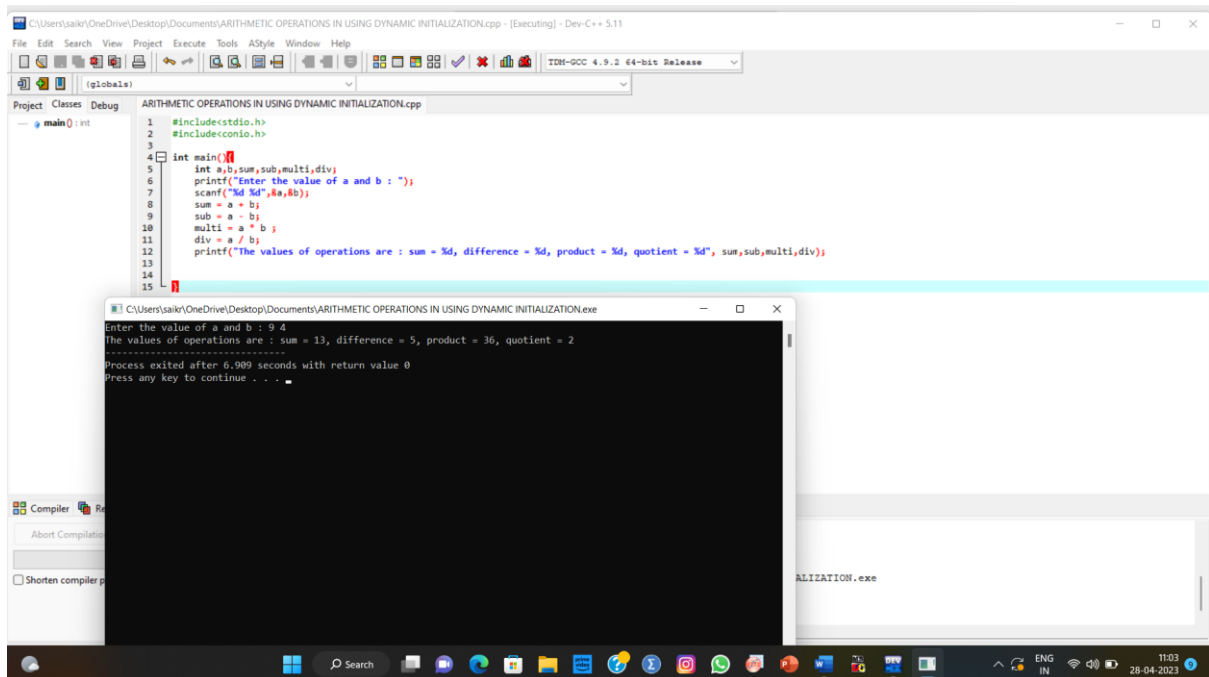


```
1 #include<stdio.h>
2 #include<conio.h>
3
4 int main()
5 {
6     int a,b,sum;
7     printf("Enter the values of a and b : ");
8     scanf("%d %d",&a,&b);
9     sum = a + b;
10    printf("The sum of the value is : %d",sum);
11
12 }
```

```
Enter the values of a and b : 7 8
The sum of the value is : 15
.....
Process exited after 3.362 seconds with return value 0
Press any key to continue . . .
```

```
Compilation results...
-----
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\saiKr\OneDrive\Desktop\Documents\Untitled1.exe
- Output Size: 128.6015625 KiB
- Compilation Time: 4.25s
```

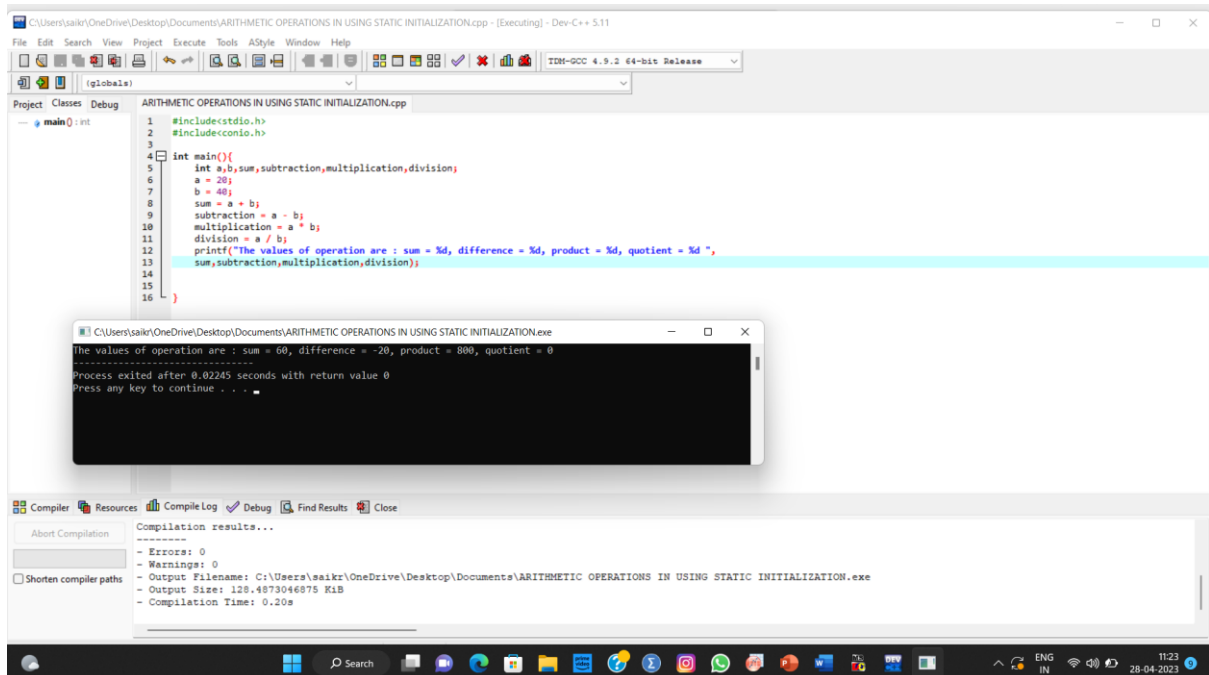
## 2) ARITHMETIC OPERATIONS IN USING DYNAMIC INITIALIZATION



```
1 #include<stdio.h>
2 #include<conio.h>
3
4 int main()
5 {
6     int a,b,sum,sub,multi,div;
7     printf("Enter the value of a and b : ");
8     scanf("%d %d",&a,&b);
9     sum = a + b;
10    sub = a - b;
11    multi = a * b;
12    div = a / b;
13    printf("The values of operations are : sum = %d, difference = %d, product = %d, quotient = %d", sum,sub,multi,div);
14
15 }
```

Enter the value of a and b : 9 4  
The values of operations are : sum = 13, difference = 5, product = 36, quotient = 2  
Process exited after 0.009 seconds with return value 0  
Press any key to continue . . .

## 3) ARITHMETIC OPERATIONS IN USING STATIC INITIALIZATION

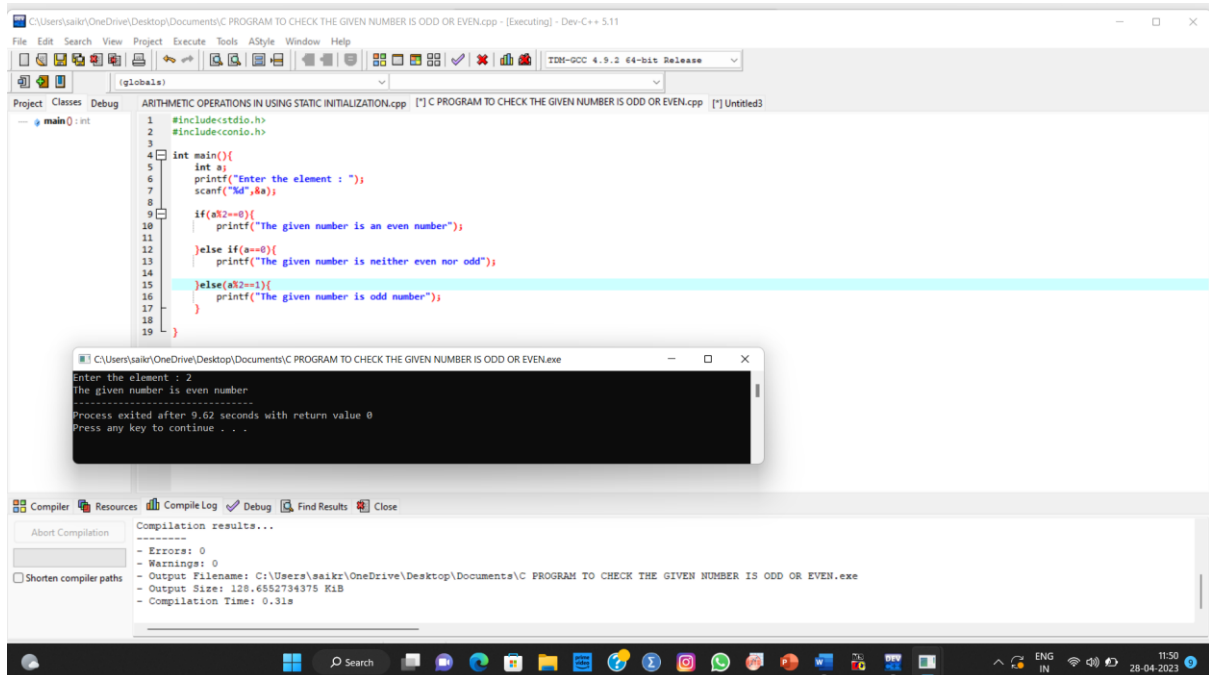


```
1 #include<stdio.h>
2 #include<conio.h>
3
4 int main()
5 {
6     static int a,b,sum,subtraction,multiplication,division;
7     a = 20;
8     b = 40;
9     sum = a + b;
10    subtraction = a - b;
11    multiplication = a * b;
12    division = a / b;
13    printf("The values of operation are : sum = %d, difference = %d, product = %d, quotient = %d ",
14          sum,subtraction,multiplication,division);
15
16 }
```

The values of operation are : sum = 60, difference = -20, product = 800, quotient = 0  
Process exited after 0.02245 seconds with return value 0  
Press any key to continue . . .

Compilation results...  
-----  
- Errors: 0  
- Warnings: 0  
- Output Filename: C:\Users\saiKr\OneDrive\Desktop\Documents\ARITHMETIC OPERATIONS IN USING STATIC INITIALIZATION.exe  
- Output Size: 128.4873046875 KiB  
- Compilation Time: 0.20s

## 4) C PROGRAM TO CHECK THE GIVEN NUMBER IS ODD OR EVEN



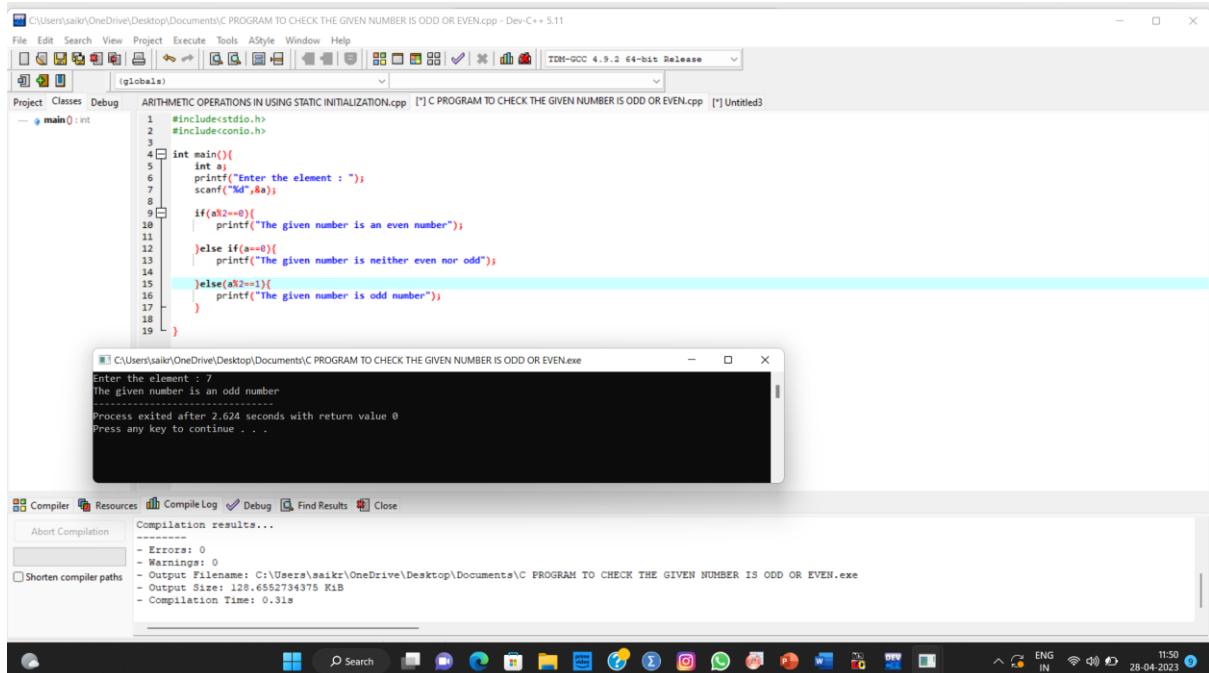
The screenshot shows the Dev-C++ IDE with a C program titled "C PROGRAM TO CHECK THE GIVEN NUMBER IS ODD OR EVEN.cpp". The code is as follows:

```
1 #include<stdio.h>
2 #include<conio.h>
3
4 int main(){
5     int a;
6     printf("Enter the element : ");
7     scanf("%d",&a);
8
9     if(a%2==0){
10        printf("The given number is an even number");
11    }
12    else if(a%2!=0){
13        printf("The given number is neither even nor odd");
14    }
15    else(a%2==1){
16        printf("The given number is odd number");
17    }
18 }
19
```

The output window shows the execution results for the input 2:

```
Enter the element : 2
The given number is an even number
-----
Process exited after 9.62 seconds with return value 0
Press any key to continue . . .
```

The compilation results show 0 errors and 0 warnings, with the output file named "C:\Users\sakir\OneDrive\Desktop\Documents\C PROGRAM TO CHECK THE GIVEN NUMBER IS ODD OR EVEN.exe".

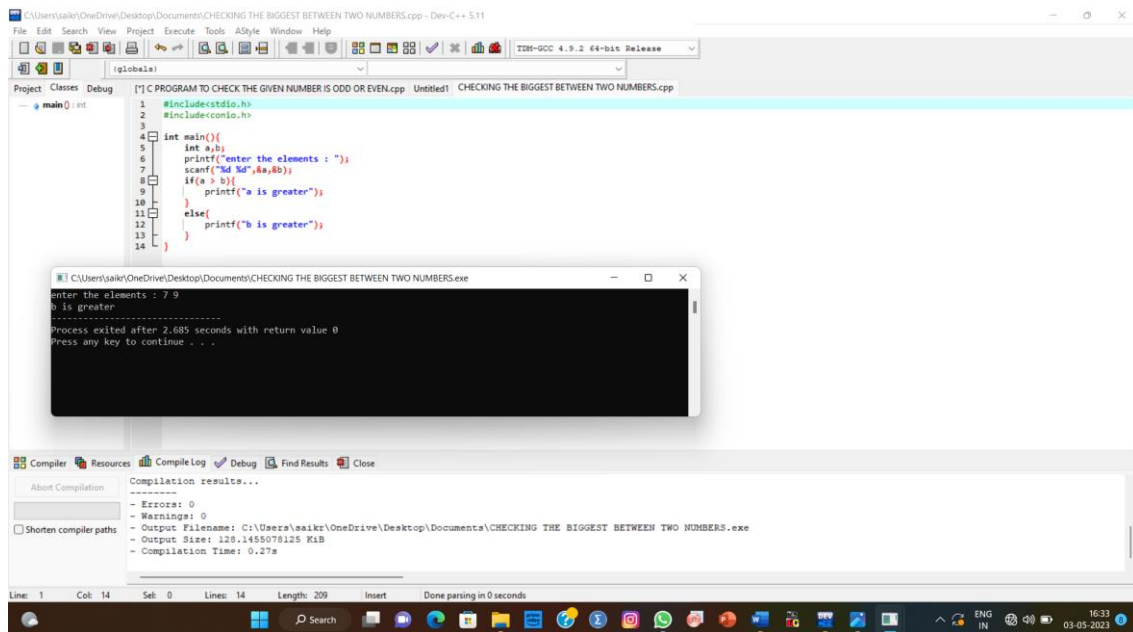


The screenshot shows the same Dev-C++ IDE with the same C program. The output window shows the execution results for the input 7:

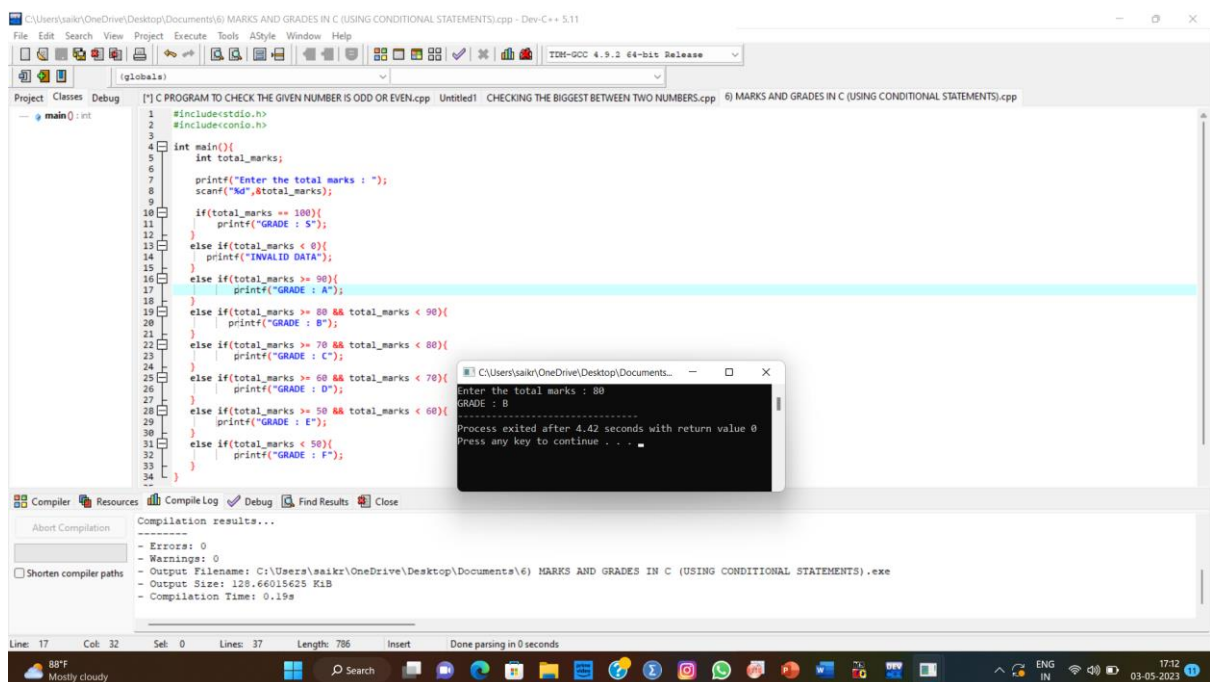
```
Enter the element : 7
The given number is an odd number
-----
Process exited after 2.624 seconds with return value 0
Press any key to continue . . .
```

The compilation results are identical to the first screenshot, showing 0 errors and 0 warnings, with the output file named "C:\Users\sakir\OneDrive\Desktop\Documents\C PROGRAM TO CHECK THE GIVEN NUMBER IS ODD OR EVEN.exe".

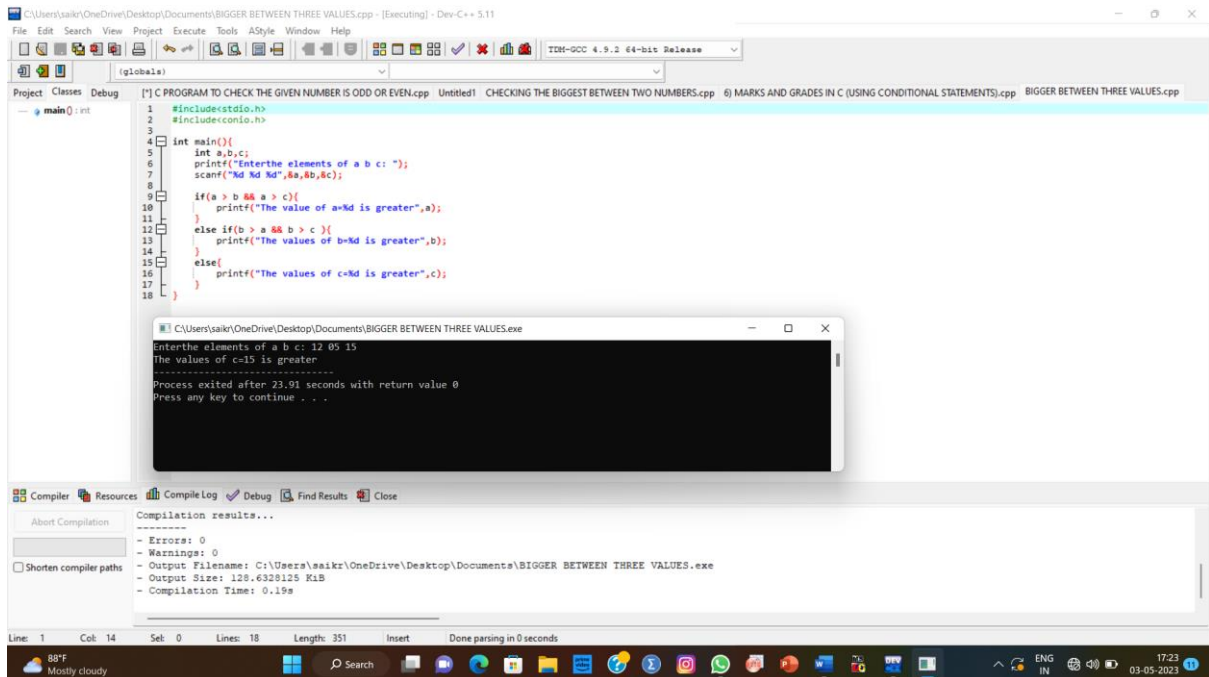
## 5) CHECKING THE BIGGEST BETWEEN TWO NUMBERS



## 6) MARKS AND GRADES IN C (USING CONDITIONAL STATEMENTS)



## 7) BIGGER BETWEEN THREE VALUES

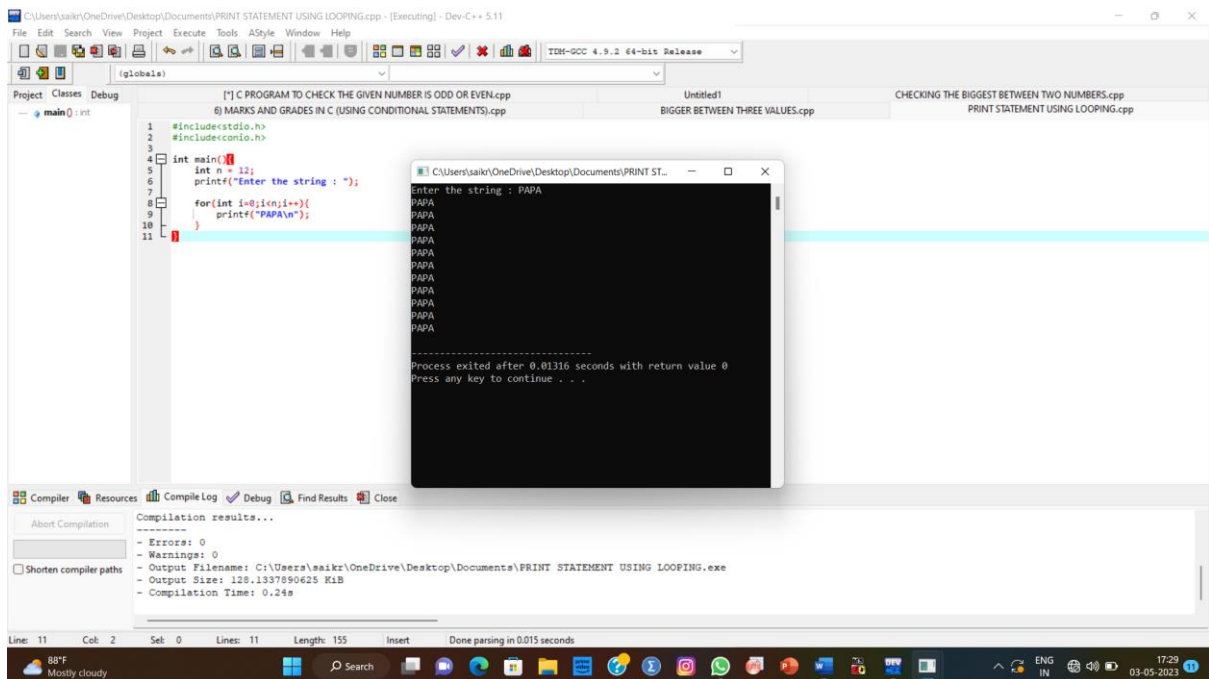


```
1 #include<stdio.h>
2 #include<conio.h>
3
4 int main(){
5     int a,b,c;
6     printf("Enter the elements of a b c: ");
7     scanf("%d %d %d",&a,&b,&c);
8
9     if(a > b && a > c){
10        printf("The value of a=%d is greater",a);
11    }
12    else if(b > a && b > c ){
13        printf("The values of b=%d is greater",b);
14    }
15    else{
16        printf("The values of c=%d is greater",c);
17    }
18 }
```

Enter the elements of a b c: 12 05 15  
The values of c=15 is greater  
.....  
Process exited after 23.91 seconds with return value 0  
Press any key to continue . . .

Compilation results...  
- Errors: 0  
- Warnings: 0  
- Output Filename: C:\Users\sakir\OneDrive\Desktop\Documents\BIGGER BETWEEN THREE VALUES.exe  
- Output Size: 128.6320125 KiB  
- Compilation Time: 0.19s

## 8)PRINT STATEMENT USING LOOPING



```
1 #include<stdio.h>
2 #include<conio.h>
3
4 int main(){
5     int n = 12;
6     printf("Enter the string : ");
7
8     for(int i=0;i<n;i++){
9         printf("PAPA\n");
10    }
11 }
```

Enter the string : PAPA  
PAPA  
PAPA  
PAPA  
PAPA  
PAPA  
PAPA  
PAPA  
PAPA  
PAPA  
PAPA  
PAPA  
.....  
Process exited after 0.01316 seconds with return value 0  
Press any key to continue . . .

Compilation results...  
- Errors: 0  
- Warnings: 0  
- Output Filename: C:\Users\sakir\OneDrive\Desktop\Documents\PRINT STATEMENT USING LOOPING.exe  
- Output Size: 128.1337890625 KiB  
- Compilation Time: 0.24s

## 9)PRINT NUMBERS FROM 1 TO 10

The screenshot shows the Dev-C++ IDE with a C program open. The program is titled "PRINT NUMBERS FROM 1 TO 10.cpp" and is located at "C:\Users\sakir\OneDrive\Desktop\Documents\PRINT NUMBERS FROM 1 TO 10.cpp". The code is as follows:

```
1 #include<stdio.h>
2 #include<conio.h>
3
4 int main(){
5     int i,n;
6
7     n=10;
8
9     for(i=1;i<=n;i++){
10        printf("%d\n",i);
11    }
12 }
```

The program is executed, and the output window shows the numbers 1 through 10, each on a new line. The process exits after 2.32 seconds with a return value of 0. The compilation results show no errors or warnings, and the output file is "PRINT NUMBERS FROM 1 TO 10.exe".

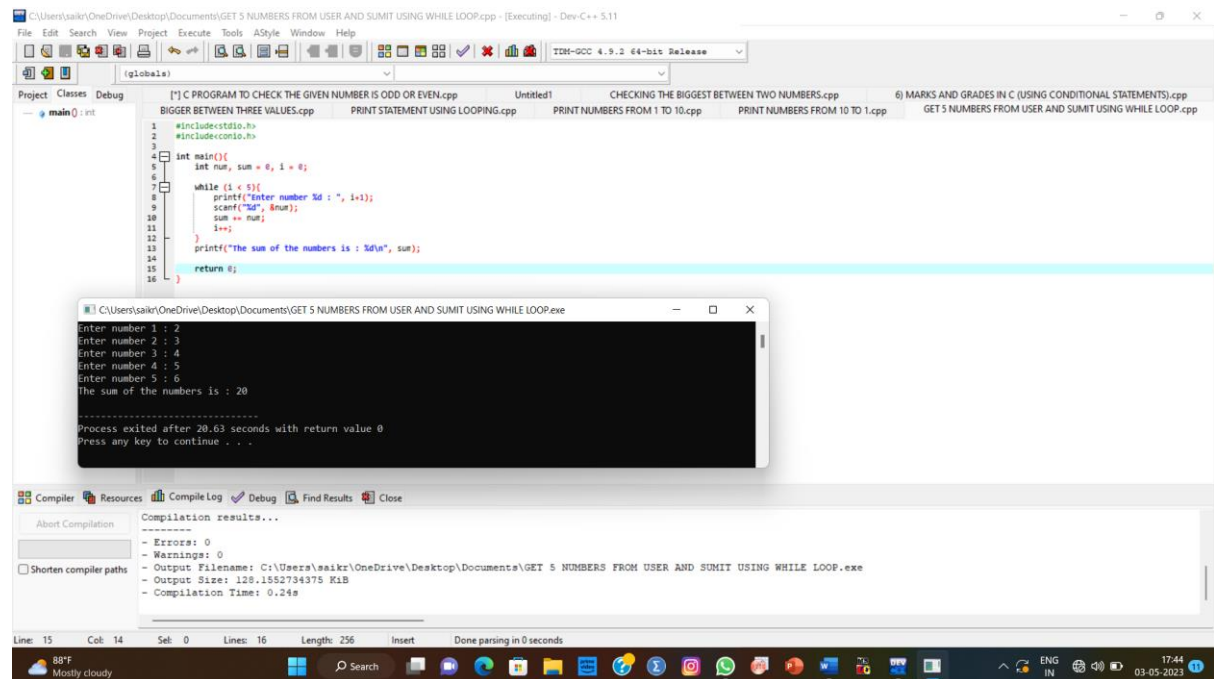
## 10)PRINT NUMBERS FROM 10 TO 1

The screenshot shows the Dev-C++ IDE with a C program open. The program is titled "PRINT NUMBERS FROM 10 TO 1.cpp" and is located at "C:\Users\sakir\OneDrive\Desktop\Documents\PRINT NUMBERS FROM 10 TO 1.cpp". The code is as follows:

```
1 #include<stdio.h>
2 #include<conio.h>
3
4 int main(){
5     int i;
6
7     for(i=10;i>0;i--){
8        printf("%d\n",i);
9    }
10 }
```

The program is executed, and the output window shows the numbers 10 through 1, each on a new line. The process exits after 2.363 seconds with a return value of 0. The compilation results show no errors or warnings, and the output file is "PRINT NUMBERS FROM 10 TO 1.exe".

# 11)GET 5 NUMBERS FROM USER AND SUM IT USING WHILE LOOP



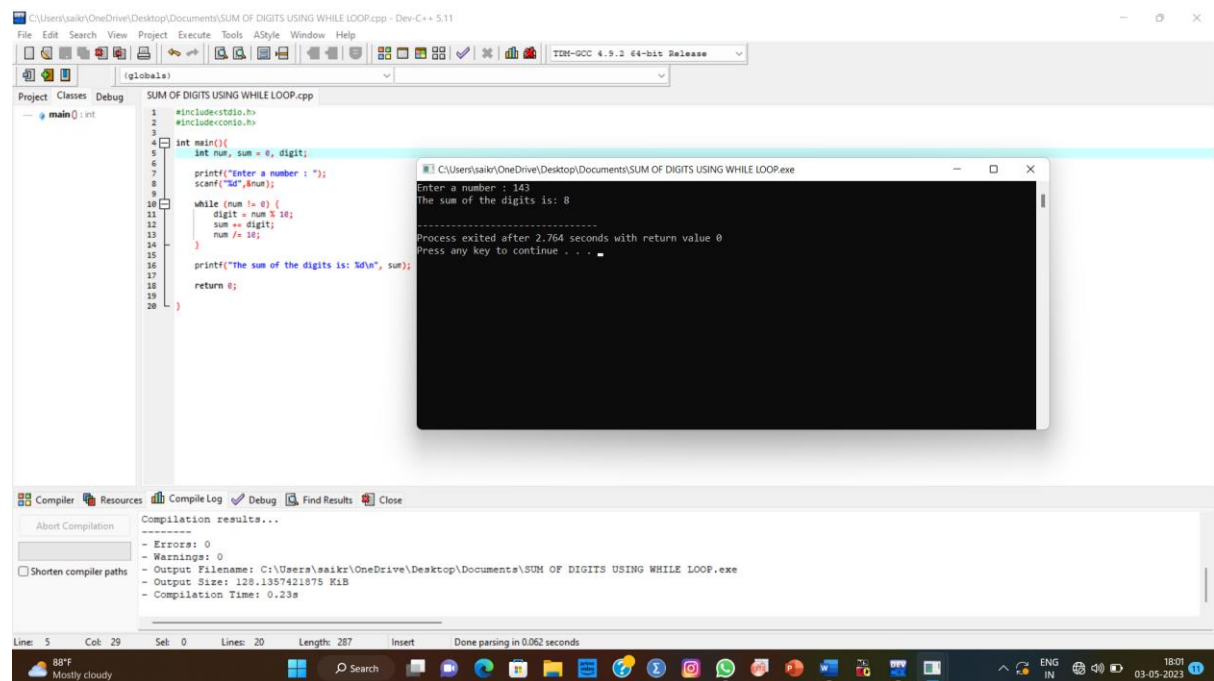
```
[*] C PROGRAM TO CHECK THE GIVEN NUMBER IS ODD OR EVEN.cpp
BIGGER BETWEEN THREE VALUES.cpp
PRINT STATEMENT USING LOOPING.cpp
PRINT NUMBERS FROM 1 TO 10.cpp
PRINT NUMBERS FROM 10 TO 1.cpp
6) MARKS AND GRADES IN C (USING CONDITIONAL STATEMENTS).cpp
GET 5 NUMBERS FROM USER AND SUMIT USING WHILE LOOP.cpp

1 #include<stdio.h>
2 #include<conio.h>
3
4 int main(){
5     int num, sum = 0, i = 0;
6
7     while (i < 5){
8         printf("Enter number %d : ", i+1);
9         scanf("%d", &num);
10        sum += num;
11        i++;
12    }
13    printf("The sum of the numbers is : %d\n", sum);
14
15    return 0;
16 }
```

Enter number 1 : 2  
Enter number 2 : 3  
Enter number 3 : 4  
Enter number 4 : 5  
Enter number 5 : 6  
The sum of the numbers is : 20  
-----  
Process exited after 20.63 seconds with return value 0  
Press any key to continue . . .

Compilation results...  
- Errors: 0  
- Warnings: 0  
- Output Filename: C:\Users\sakir\OneDrive\Desktop\Documents\GET 5 NUMBERS FROM USER AND SUMIT USING WHILE LOOP.exe  
- Output Size: 128.1552734375 KiB  
- Compilation Time: 0.24s

# 12)SUM OF DIGITS USING WHILE LOOP



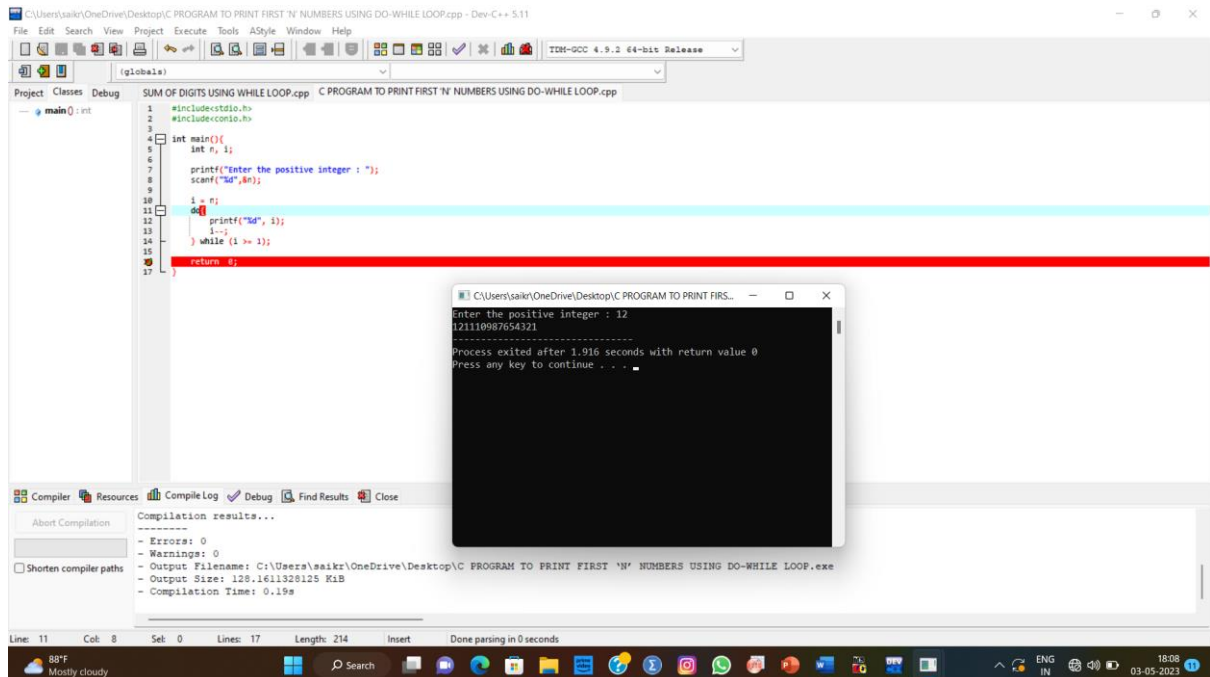
```
1 #include<stdio.h>
2 #include<conio.h>
3
4 int main(){
5     int num, sum = 0, digit;
6
7     printf("Enter a number : ");
8     scanf("%d", &num);
9
10    while (num != 0) {
11        digit = num % 10;
12        sum += digit;
13        num /= 10;
14    }
15
16    printf("The sum of the digits is: %d\n", sum);
17
18    return 0;
19 }
20
```

Enter a number : 143  
The sum of the digits is: 8  
-----  
Process exited after 2.764 seconds with return value 0  
Press any key to continue . . .

Compilation results...  
- Errors: 0  
- Warnings: 0  
- Output Filename: C:\Users\sakir\OneDrive\Desktop\Documents\SUM OF DIGITS USING WHILE LOOP.exe  
- Output Size: 128.1357421875 KiB  
- Compilation Time: 0.23s



## 13) C PROGRAM TO PRINT FIRST 'N' NUMBERS USING DO-WHILE LOOP



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

int main(){
    int n, i;

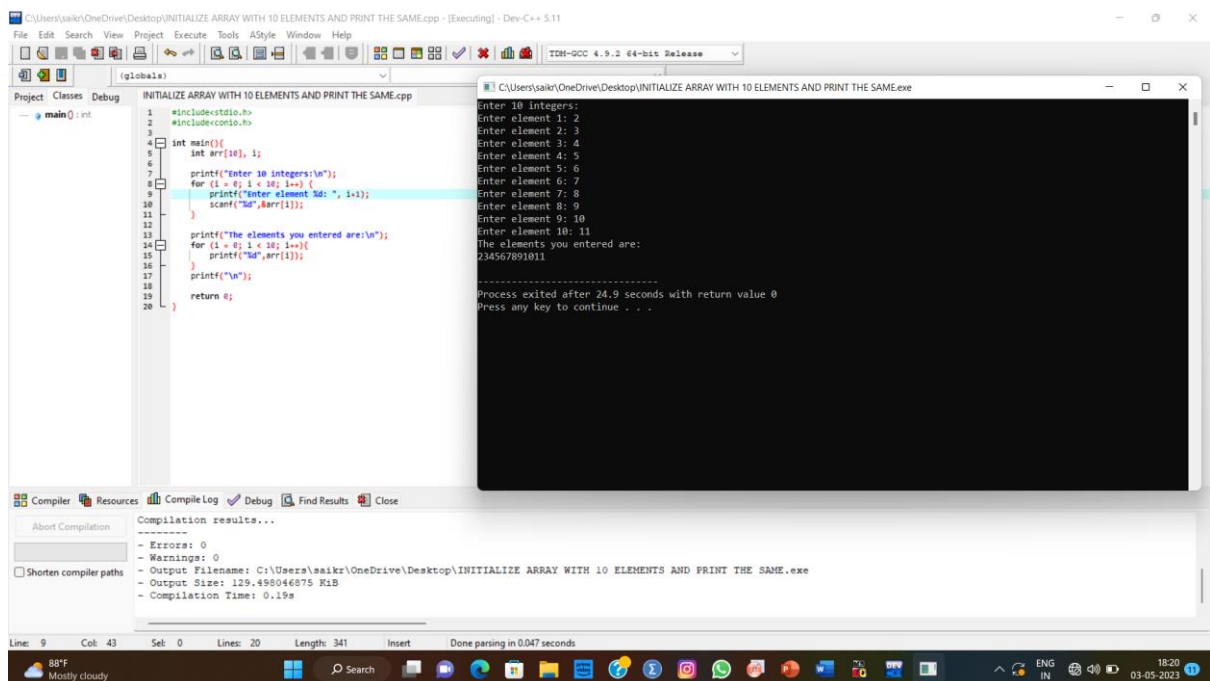
    printf("Enter the positive integer : ");
    scanf("%d",&n);

    i = 1;
    do{
        printf("%d", i);
        i++;
    } while (i >= 1);

    return 0;
}
```

Enter the positive integer : 12  
121110987654321  
-----  
Process exited after 1.916 seconds with return value 0  
Press any key to continue . . .

## 14) INITIALIZE ARRAY WITH 10 ELEMENTS AND PRINT THE SAME



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

int main(){
    int arr[10], i;

    printf("Enter 10 integers:\n");
    for (i = 0; i < 10; i++) {
        printf("Enter element %d: ", i+1);
        scanf("%d",&arr[i]);
    }

    printf("The elements you entered are:\n");
    for (i = 0; i < 10; i++) {
        printf("%d",arr[i]);
    }

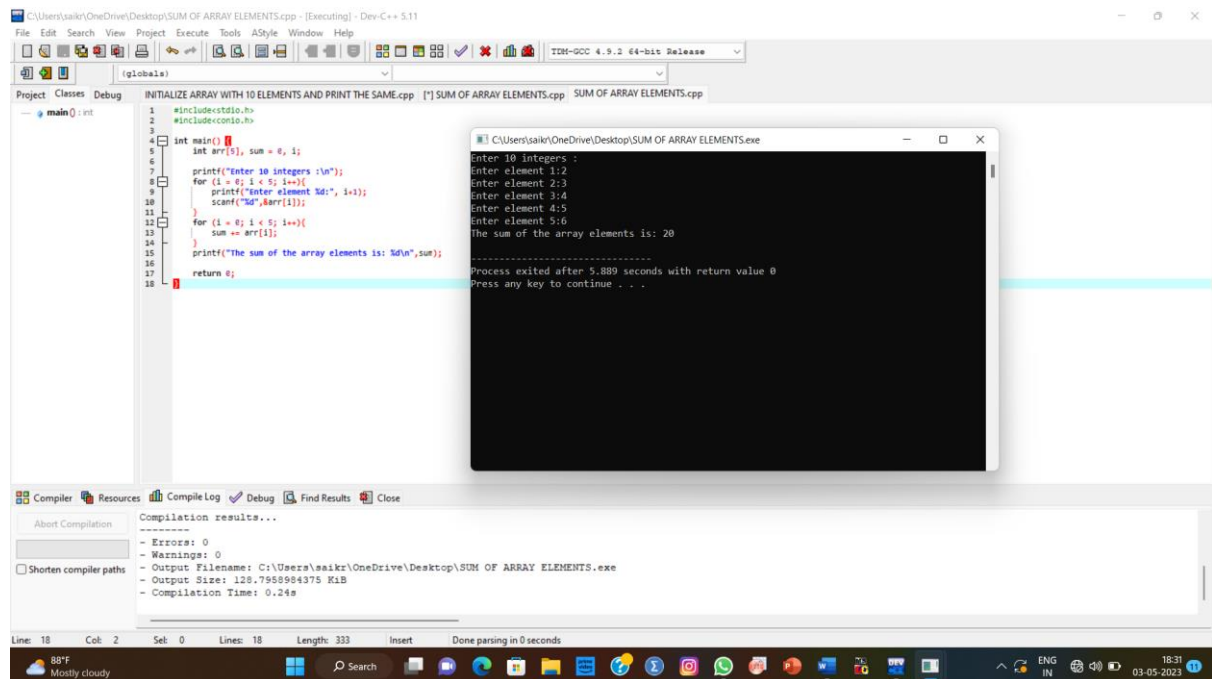
    printf("\n");

    return 0;
}
```

Enter 10 integers:  
Enter element 1: 2  
Enter element 2: 3  
Enter element 3: 4  
Enter element 4: 5  
Enter element 5: 6  
Enter element 6: 7  
Enter element 7: 8  
Enter element 8: 9  
Enter element 9: 10  
Enter element 10: 11  
The elements you entered are:  
234567891011  
-----  
Process exited after 24.9 seconds with return value 0  
Press any key to continue . . .



## 15)SUM OF ARRAY ELEMENTS



The screenshot shows a C++ IDE with the following code in `SUM OF ARRAY ELEMENTS.cpp`:

```
1 #include<stdio.h>
2 #include<conio.h>
3
4 int main()
5 {
6     int arr[5], sum = 0, i;
7     printf("Enter 5 integers :\n");
8     for (i = 0; i < 5; i++){
9         printf("Enter element %d: ", i+1);
10        scanf("%d", &arr[i]);
11    }
12    for (i = 0; i < 5; i++){
13        sum += arr[i];
14    }
15    printf("The sum of the array elements is: %d\n", sum);
16
17    return 0;
18 }
```

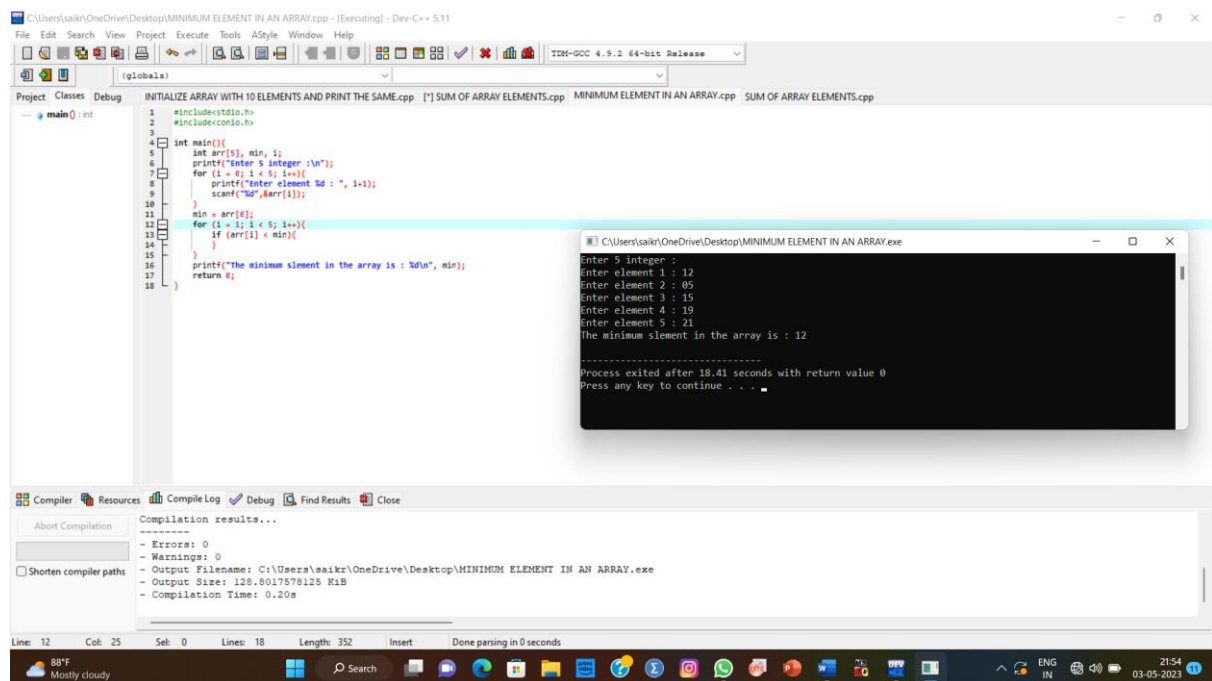
The execution output shows the user entering 5 integers (2, 3, 4, 5, 6) and the program outputting the sum: 20.

```
Enter 5 integers :
Enter element 1: 2
Enter element 2: 3
Enter element 3: 4
Enter element 4: 5
Enter element 5: 6
The sum of the array elements is: 20
-----
Process exited after 5.889 seconds with return value 0
Press any key to continue . . .
```

The compilation results show 0 errors and 0 warnings.

```
Compilation results...
-----
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\saikr\OneDrive\Desktop\SUM OF ARRAY ELEMENTS.exe
- Output Size: 128.7958984375 KiB
- Compilation Time: 0.24s
```

## 16)MINIMUM ELEMENT IN AN ARRAY



The screenshot shows a C++ IDE with the following code in `MINIMUM ELEMENT IN AN ARRAY.cpp`:

```
1 #include<stdio.h>
2 #include<conio.h>
3
4 int main()
5 {
6     int arr[5], min, i;
7     printf("Enter 5 integer :\n");
8     for (i = 0; i < 5; i++){
9         printf("Enter element %d : ", i+1);
10        scanf("%d", &arr[i]);
11    }
12    min = arr[0];
13    for (i = 1; i < 5; i++){
14        if (arr[i] < min){
15            min = arr[i];
16        }
17    }
18    printf("The minimum element in the array is : %d\n", min);
19    return 0;
20 }
```

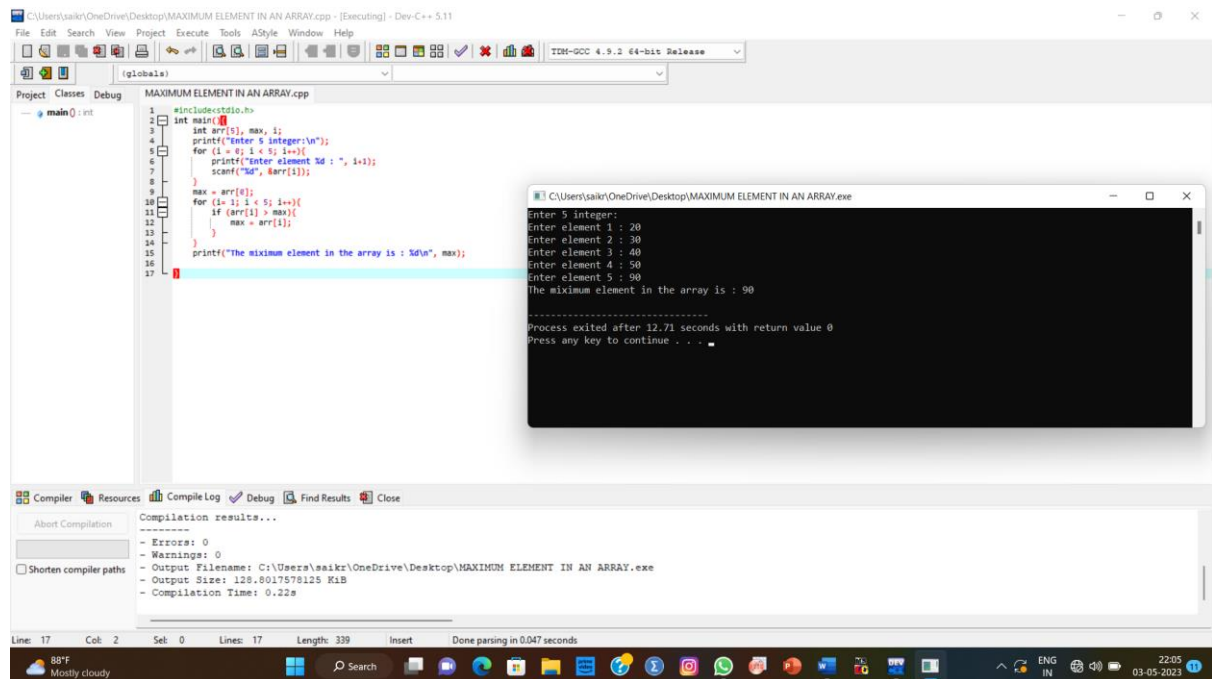
The execution output shows the user entering 5 integers (12, 05, 15, 19, 21) and the program outputting the minimum element: 12.

```
Enter 5 integer :
Enter element 1 : 12
Enter element 2 : 05
Enter element 3 : 15
Enter element 4 : 19
Enter element 5 : 21
The minimum element in the array is : 12
-----
Process exited after 18.41 seconds with return value 0
Press any key to continue . . .
```

The compilation results show 0 errors and 0 warnings.

```
Compilation results...
-----
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\saikr\OneDrive\Desktop\MINIMUM ELEMENT IN AN ARRAY.exe
- Output Size: 128.8017578125 KiB
- Compilation Time: 0.20s
```

## 17) MAXIMUM ELEMENT IN AN ARRAY

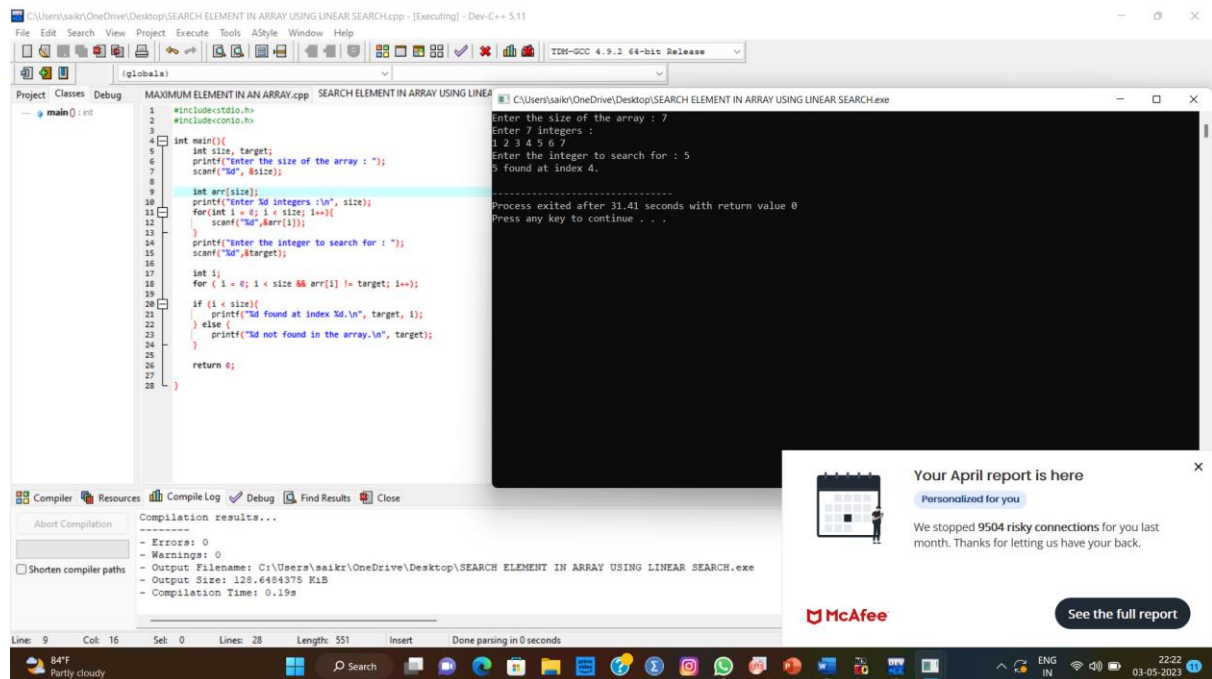


The screenshot shows a C++ IDE with the following code in `MAXIMUM ELEMENT IN AN ARRAY.cpp`:

```
1 #include <stdio.h>
2 int main()
3 {
4     int arr[5], max, i;
5     printf("Enter 5 integers:\n");
6     for (i = 0; i < 5; i++)
7     {
8         printf("Enter element %d : ", i+1);
9         scanf("%d", &arr[i]);
10    }
11    max = arr[0];
12    for (i = 1; i < 5; i++)
13    {
14        if (arr[i] > max)
15            max = arr[i];
16    }
17    printf("The maximum element in the array is : %d\n", max);
18 }
```

The execution output shows the user entering 5 integers: 20, 30, 40, 50, 90. The program outputs: "The maximum element in the array is : 90". The compilation results show 0 errors and 0 warnings.

## 18) SEARCH ELEMENT IN ARRAY USING LINEAR SEARCH

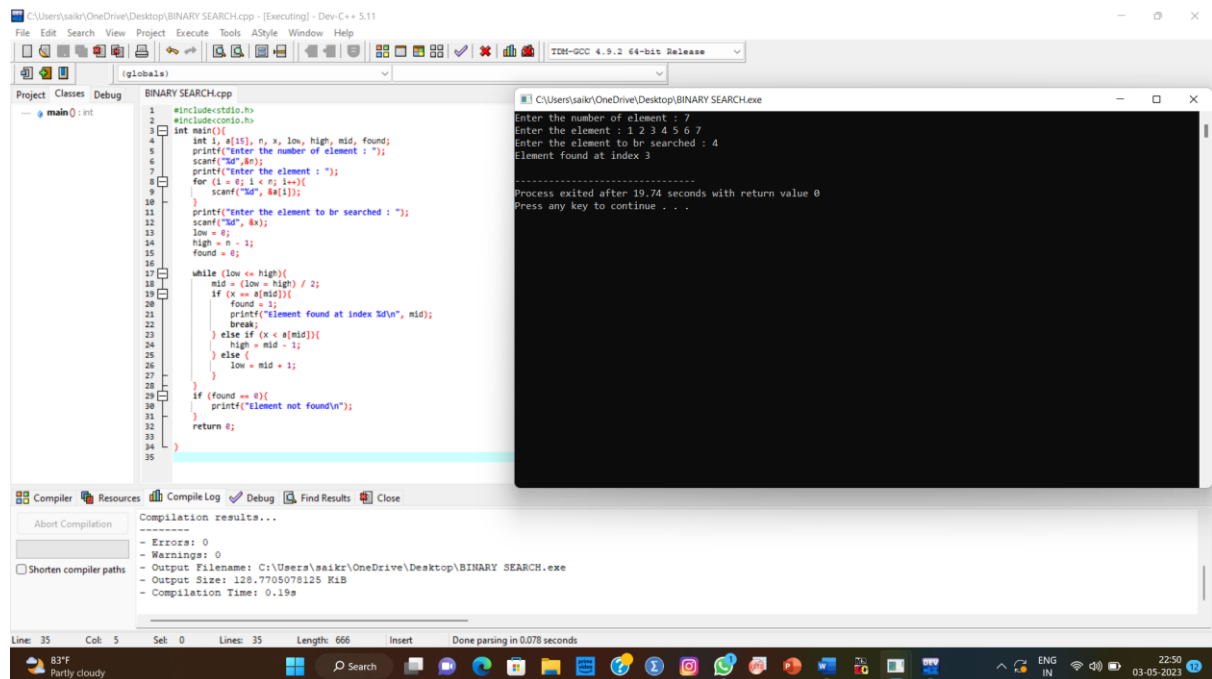


The screenshot shows a C++ IDE with the following code in `SEARCH ELEMENT IN ARRAY USING LINEAR SEARCH.cpp`:

```
1 #include <stdio.h>
2 #include <conio.h>
3
4 int main()
5 {
6     int size, target;
7     printf("Enter the size of the array : ");
8     scanf("%d", &size);
9
10    int arr[size];
11    printf("Enter %d integers :\n", size);
12    for (int i = 0; i < size; i++)
13    {
14        scanf("%d", &arr[i]);
15    }
16    printf("Enter the integer to search for : ");
17    scanf("%d", &target);
18
19    int i;
20    for (i = 0; i < size; i++)
21    {
22        if (arr[i] == target)
23        {
24            printf("%d found at index %d\n", target, i);
25        }
26        else
27        {
28            printf("%d not found in the array.\n", target);
29        }
30    }
31    return 0;
32 }
```

The execution output shows the user entering the size of the array as 7, then entering 7 integers: 1, 2, 3, 4, 5, 6, 7. The user enters the integer to search for as 5. The program outputs: "5 found at index 4". The compilation results show 0 errors and 0 warnings.

## 19) BINARY SEARCH



```
#include <stdio.h>
#include <conio.h>
int main()
{
    int i, a[10], n, x, low, high, mid, found;
    printf("Enter the number of element : ");
    scanf("%d", &n);
    printf("Enter the element : ");
    for (i = 0; i < n; i++)
    {
        scanf("%d", &a[i]);
    }
    printf("Enter the element to be searched : ");
    scanf("%d", &x);
    low = 0;
    high = n - 1;
    found = 0;
    while (low <= high)
    {
        mid = (low + high) / 2;
        if (x == a[mid])
        {
            found = 1;
            printf("Element found at index %d\n", mid);
            break;
        }
        else if (x < a[mid])
        {
            high = mid - 1;
        }
        else
        {
            low = mid + 1;
        }
    }
    if (found == 0)
    {
        printf("Element not found\n");
    }
    return 0;
}
```

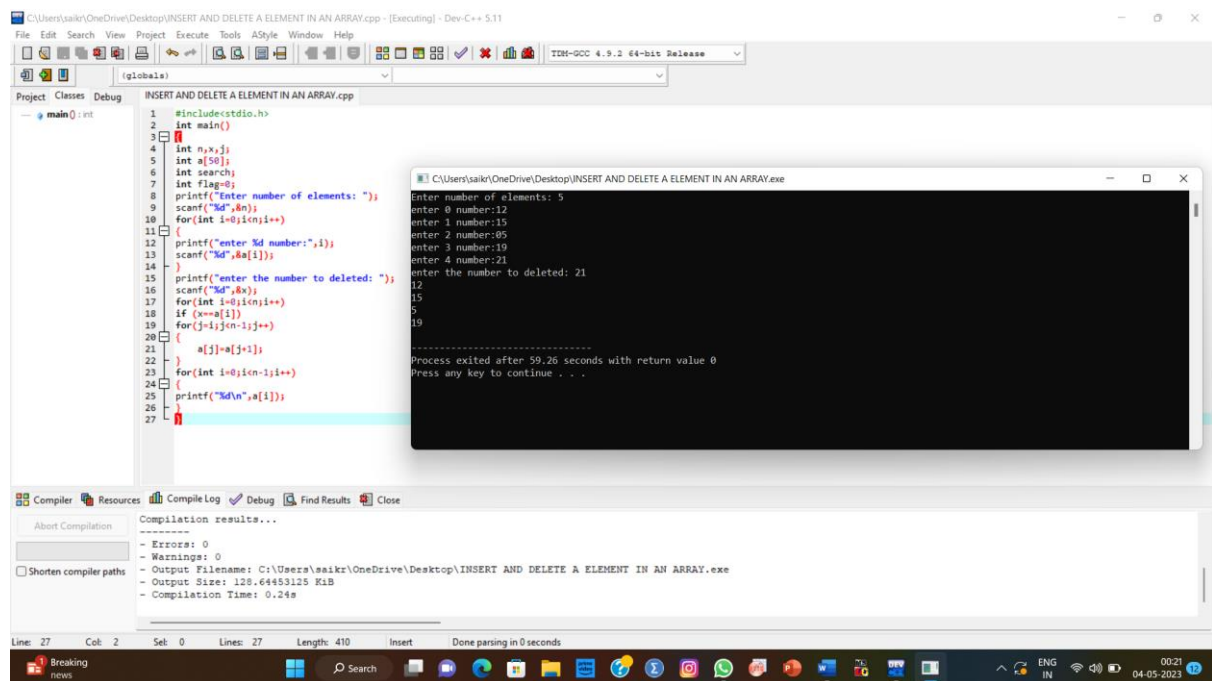
```
Enter the number of element : 7
Enter the element : 1 2 3 4 5 6 7
Enter the element to be searched : 4
Element found at index 3

Process exited after 19.74 seconds with return value 0
Press any key to continue . . .
```

Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\sakr\OneDrive\Desktop\BINARY\_SEARCH.exe
- Output Size: 128.7705078125 KiB
- Compilation Time: 0.19s

## 20) INSERT AND DELETE A ELEMENT IN AN ARRAY



```
#include <stdio.h>
int main()
{
    int n, x, j;
    int a[50];
    int search;
    int flag = 0;
    printf("Enter number of elements: ");
    scanf("%d", &n);
    for (int i = 0; i < n; i++)
    {
        printf("enter %d number:", i);
        scanf("%d", &a[i]);
    }
    printf("enter the number to deleted: ");
    scanf("%d", &x);
    for (int i = 0; i < n; i++)
    {
        if (x == a[i])
        {
            for (j = i; j < n - 1; j++)
            {
                a[j] = a[j + 1];
            }
            for (int i = 0; i < n - 1; i++)
            {
                printf("%d\n", a[i]);
            }
        }
    }
}
```

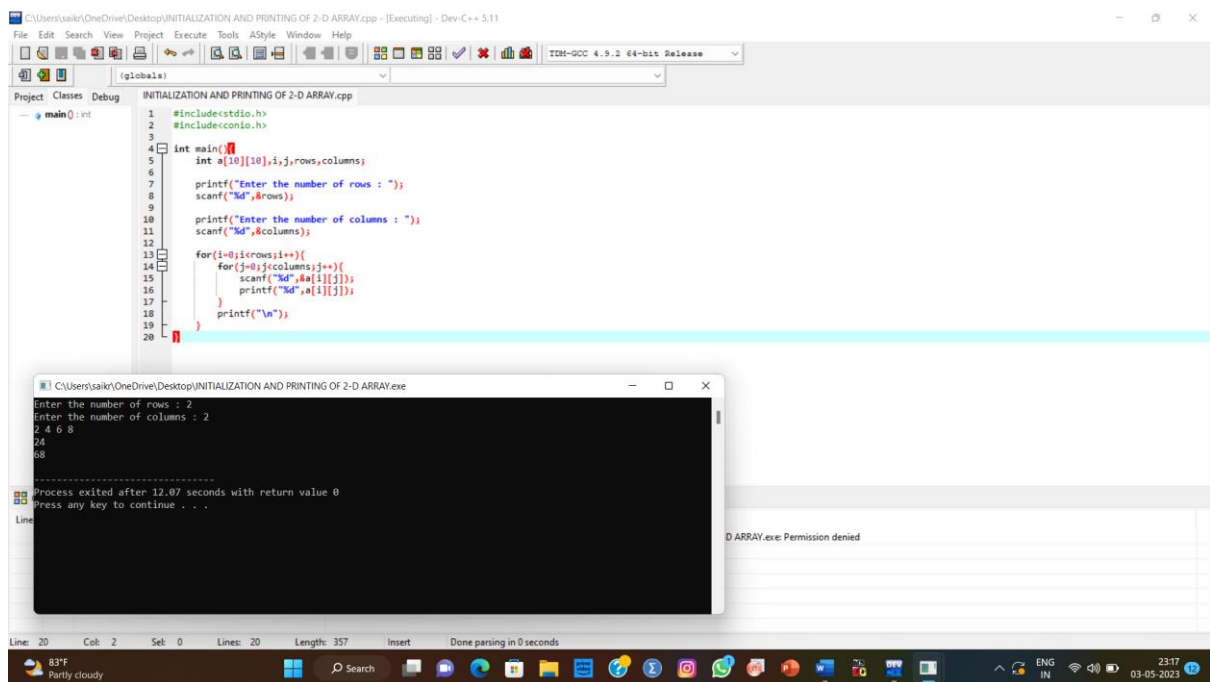
```
Enter number of elements: 5
enter 0 number:12
enter 1 number:15
enter 2 number:85
enter 3 number:19
enter 4 number:21
enter the number to deleted: 21
12
15
85
19

Process exited after 59.26 seconds with return value 0
Press any key to continue . . .
```

Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\sakr\OneDrive\Desktop\INSERT AND DELETE A ELEMENT IN AN ARRAY.exe
- Output Size: 128.64453125 KiB
- Compilation Time: 0.24s

## 21) INITIALIZATION AND PRINTING OF 2-D ARRAY



The screenshot displays a C++ IDE with a project named "INITIALIZATION AND PRINTING OF 2-D ARRAY.cpp". The code in the editor is as follows:

```
1 #include<stdio.h>
2 #include<conio.h>
3
4 int main()
5 {
6     int a[10][10], i, j, rows, columns;
7     printf("Enter the number of rows : ");
8     scanf("%d", &rows);
9     printf("Enter the number of columns : ");
10    scanf("%d", &columns);
11
12    for(i=0; i<rows; i++){
13        for(j=0; j<columns; j++){
14            scanf("%d", &a[i][j]);
15            printf("%d", a[i][j]);
16        }
17        printf("\n");
18    }
19 }
20
```

The program's output is shown in a separate window titled "C:\Users\sakir\OneDrive\Desktop\INITIALIZATION AND PRINTING OF 2-D ARRAY.exe". The output is:

```
Enter the number of rows : 2
Enter the number of columns : 2
2 4 6 8
24
68
-----
Process exited after 12.07 seconds with return value 0
Press any key to continue . . .
```

The IDE's status bar at the bottom indicates "Line: 20 Col: 2 Sel: 0 Lines: 20 Length: 357 Insert Done parsing in 0 seconds". The Windows taskbar at the very bottom shows the date and time as "03-05-2023 23:17".

