

CLASS WORK

DAY-4(PROGRAMS)

1. Write a program to enter the marks of a student in four subjects. Then calculate the total and aggregate, display the grade obtained by the student. If the student scores an aggregate greater than 75%, then the grade is Distinction. If aggregate is $60 \geq$ and < 75 , then the grade is First Division. If aggregate is $50 \geq$ and < 60 , then the grade is Second Division. If aggregate is $40 \geq$ and < 50 , then the grade is Third Division. Else the grade is Fail.

Sample Input & Output:

Enter the marks in python: 90

Enter the marks in c programming: 91

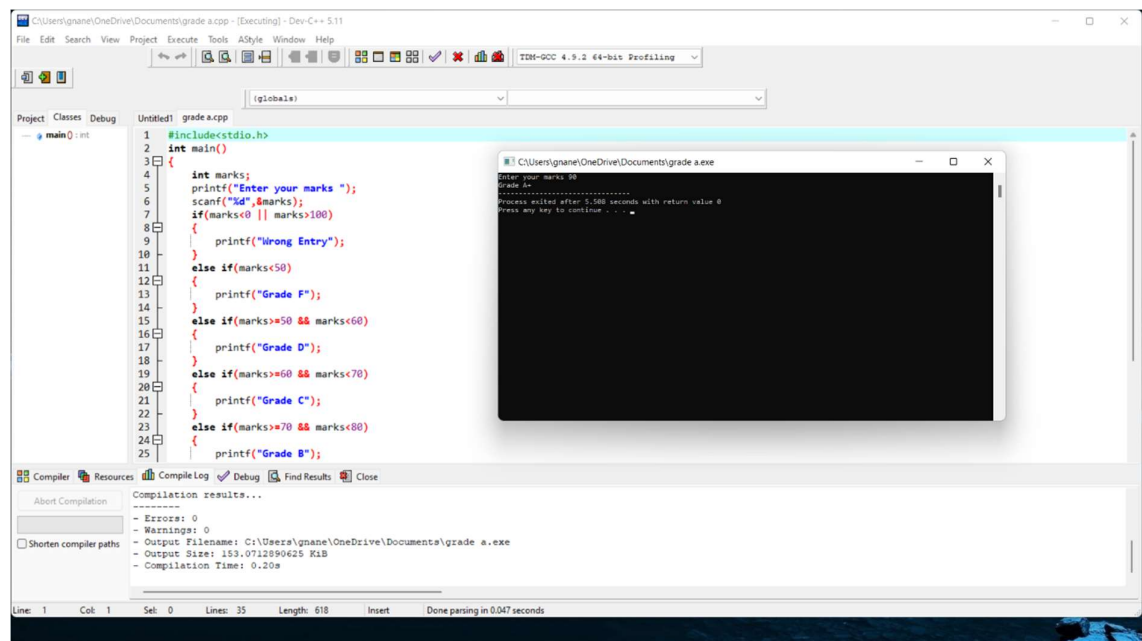
Enter the marks in Mathematics: 92

Enter the marks in Physics: 93

Total= 366

Aggregate = 91.5

DISTINCTION



```
1 #include<stdio.h>
2 int main()
3 {
4     int marks;
5     printf("Enter your marks ");
6     scanf("%d", &marks);
7     if(marks<0 || marks>100)
8     {
9         printf("Wrong Entry");
10    }
11    else if(marks<50)
12    {
13        printf("Grade F");
14    }
15    else if(marks>=50 && marks<60)
16    {
17        printf("Grade D");
18    }
19    else if(marks>=60 && marks<70)
20    {
21        printf("Grade C");
22    }
23    else if(marks>=70 && marks<80)
24    {
25        printf("Grade B");
26    }
27 }
```

Compilation results...

Errors: 0
Warnings: 0
Output Filename: C:\Users\gnane\OneDrive\Documents\grade.a.exe
Output Size: 153,0712899625 Kib
Compilation Time: 0.20s

2.Mr. Johnson would like to know how many As, Bs, Cs, Ds, and Fs his students received on a test. He has n students who took the test. He would like to enter the student number and the number grade for the test for each student using structure. Develop the solution to print out each student's student number, number grade and the total number of As, Bs, Cs, Ds, and Fs. His grading scale is as follows: 90–100 is an A, 78–89 is a B, 65–77 is a C, 50–64 is a D, and below 50 is an F.

Sample Input :

Enter No.Students: 1

Enter student 1 Number , Grade : 2001, A

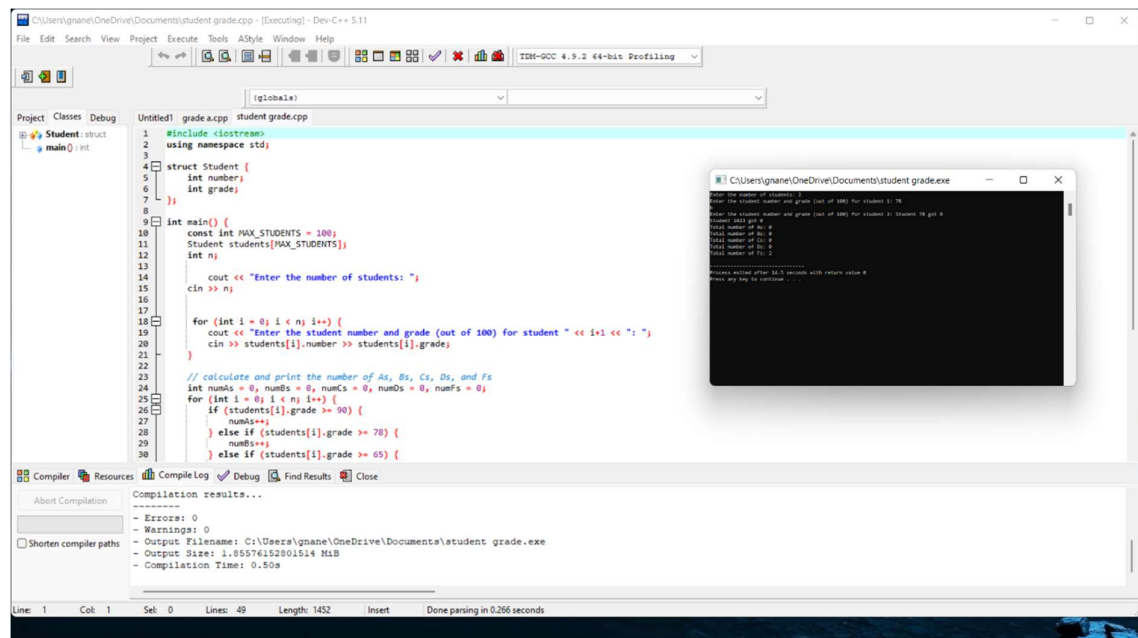
Sample Output:

Student 1 details:

Number : 2001

Grade : A

Total no. A: 1, B:0, c=0, D=0, F=0,



3. Write a program to print n prime numbers then find the n^{th} Prime number

Sample Input:

N = 3

Sample Output:

3rd Prime number is 5

3 prime numbers after 5 are: 7, 11, 13

The screenshot shows a C++ IDE with the following components:

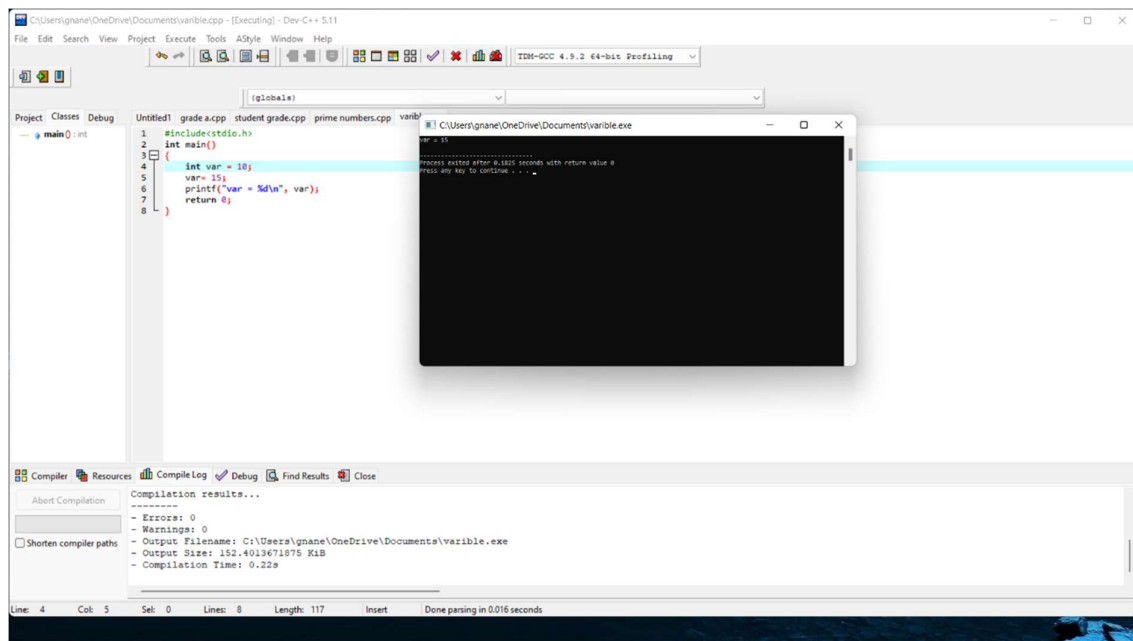
- Source Code (prime numbers.cpp):**

```
1 #include<stdio.h>
2 int main()
3 {
4     int num,PrimeCount=0,i,flag,prime=1;
5     printf("Enter the number:");
6     scanf("%d",&num);
7     while(num!=PrimeCount)
8     {
9         flag=0;
10        prime++;
11        for(i=2;i<=(prime/2);i++)
12        {
13            if(prime%i==0)
14            {
15                flag=1;
16            }
17            if(flag==0)
18            {
19                PrimeCount++;
20            }
21        }
22        printf("%d prime number is: %d",num,prime);
23        return 0;
24    }
```
- Execution Output:**

```
Enter the number:40
40 prime number is: 199
Process exited after 3.673 seconds with return value 0
Press any key to continue . . .
```
- Compiler Output:**

```
Compilation results...
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\gnane\OneDrive\Documents\prime numbers.exe
- Output Size: 153.0712890625 KiB
- Compilation Time: 0.19s
```

4. Write a c program to modify the constant variable in c.?

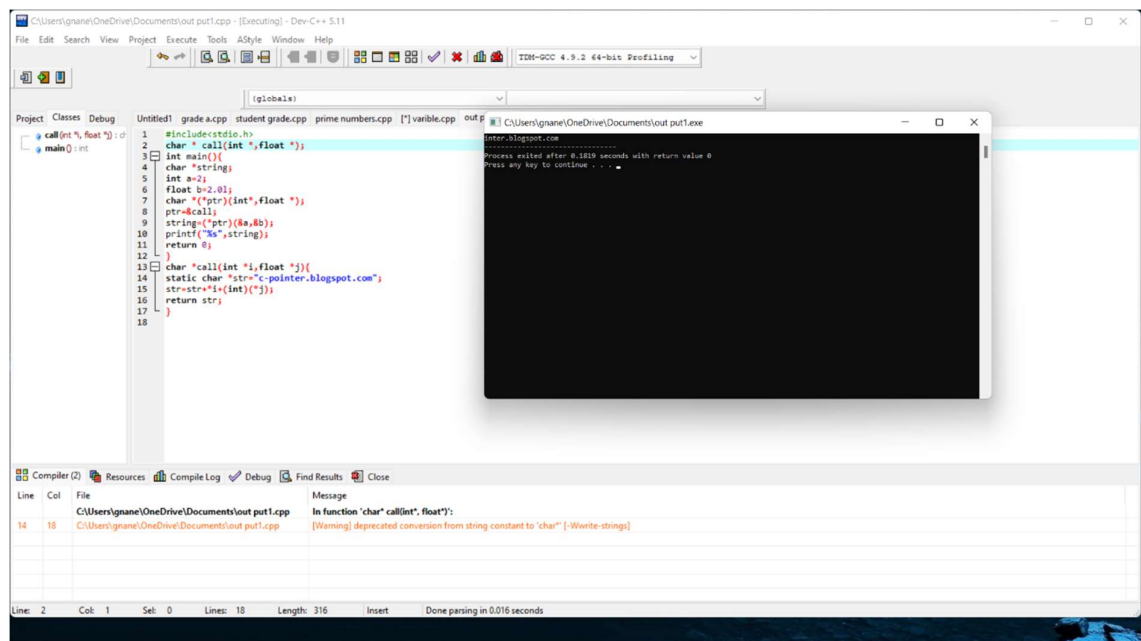


5. What will be output if you will execute following code?

```

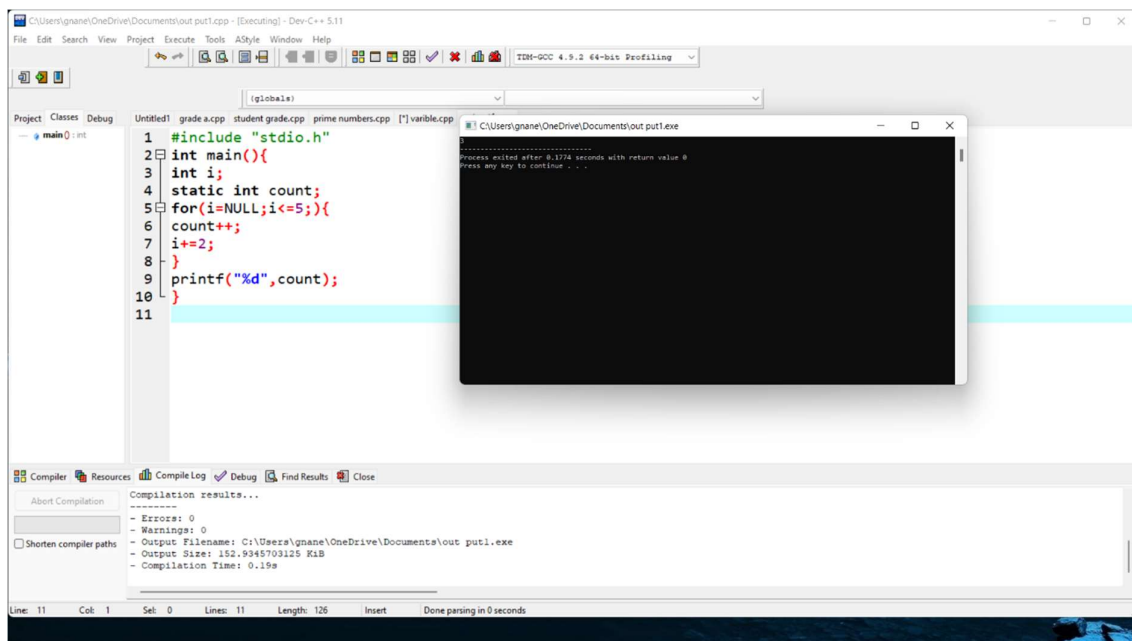
char * call(int *,float *);
int main(){
char *string;
int a=2;
float b=2.01;
char *(*ptr)(int*,float *);
ptr=&call;
string=(*ptr)(&a,&b);
printf("%s",string);
return 0;
}
char *call(int *i,float *j){
static char *str="c-pointer.blogspot.com";
str=str+*i+(int)(*j);
return str;
}

```



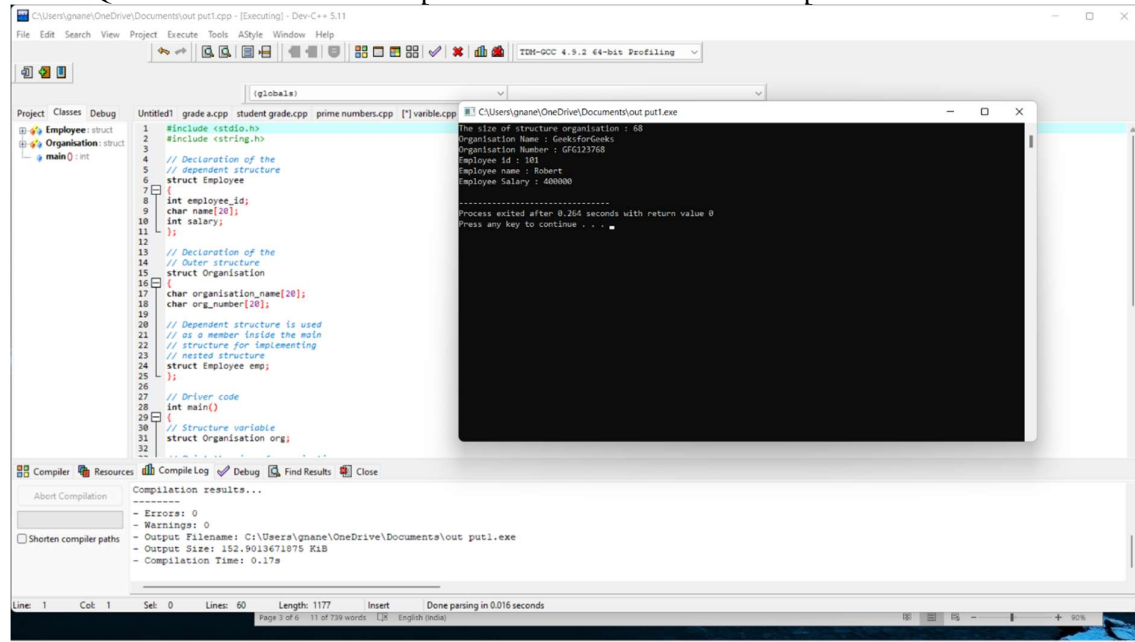
Q6.What will be the output of following c program?

```
#include "stdio.h"
int main(){
    int i;
    static int count;
    for(i=NULL;i<=5;){
        count++;
        i+=2;
    }
    printf("%d",count);
}
```



Q7. Write a program to guessing a number by the user against computer generated one using do while loop

Q9.To write a C code to implement Nested Structure concept



The screenshot shows a C++ IDE with a project named 'untitled1'. The main file is 'main0.c', which contains the following code:

```
1 #include <stdio.h>
2 #include <string.h>
3
4 // Declaration of the
5 // dependent structure
6 struct Employee
7 {
8     int employee_id;
9     char name[20];
10    int salary;
11 };
12
13 // Declaration of the
14 // Outer structure
15 struct Organisation
16 {
17     char organisation_name[20];
18     char org_number[20];
19
20     // Dependent structure is used
21     // as a member inside the main
22     // structure for implementing
23     // nested structure
24     struct Employee emp;
25 };
26
27 // Driver code
28 int main()
29 {
30     // Structure variable
31     struct Organisation org;
32 }
```

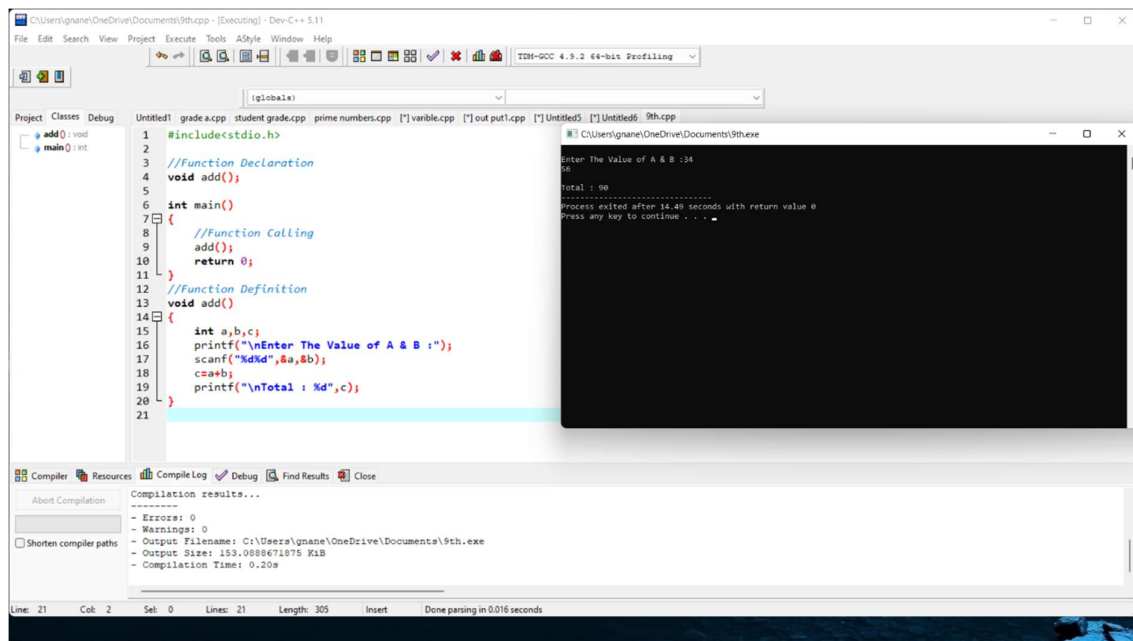
The output window shows the following output:

```
The size of structure organisation : 68
Organisation Name : GEEKSFORGEEKS
Organisation Number : GFG123768
Employee Id : 101
Employee Name : Robert
Employee Salary : 400000
Process exited after 0.264 seconds with return value 0
Press any key to continue . . .
```

The compiler window shows the following compilation results:

```
Compilation results...
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\gnane\OneDrive\Documents\out_put1.exe
- Output Size: 152.9013671075 KiB
- Compilation Time: 0.17s
```

Q10.Program to add two numbers using Function with no arguments and no return value



Q13. Find the **error** and show the output

```

main()
{
    int i=1,sum=0;
    clrscr();
    printf("Enter the values for n:");
    scanf("%d",n);
    while(i<=n)
    {
        sum==sum+i;
        i++;
    }
    printf("The sum of n numbers is",sum);
}

```

The image shows a C++ IDE with the following components:

- Code Editor:** Contains a C++ program for adding two numbers.

```
1 #include<stdio.h>
2
3 // function to find sum of two numbers
4 float addition(float num1, float num2)
5 {
6     // declare variable
7     float sum;
8
9     // calculate sum value
10    sum = num1 + num2;
11
12    // return result
13    return sum;
14 }
15
16 int main()
17 {
18     // declare variables
19     float number1, number2, result;
20
21     // take input
22     printf("Enter two number: ");
23     scanf("%f %f", &number1, &number2);
24 }
```
- Output Window:** Displays the execution results.

```
Enter two number: 23
12
23.00 + 12.00 = 35.00
.....
Process exited after 5.981 seconds with return value 0
Press any key to continue . . .
```
- Compiler Log:** Shows successful compilation results.

```
Compilation results...
-----
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\gnane\OneDrive\Documents\10\ qua.exe
- Output Size: 153.1025390625 KiB
- Compilation Time: 0.19s
```

Q14.Program to swap two numbers using call by reference

The screenshot shows a C++ IDE with a project named 'grade.a.cpp'. The code defines a swap function and a main function. The main function prompts the user to enter two numbers, reads them, and then calls the swap function. The output window shows the execution results, including the values of n1 and n2 before and after the swap function is called.

```

1 #include<stdio.h>
2
3 int swap(int,int);
4 int main( )
5 {
6     int n1,n2;
7     printf("Enter the two numbers to be swapped\n");
8     scanf("%d%d",&n1,&n2);
9     printf("\nThe values of n1 and n2 in the main function before calling swap function are n1=23 n2=56\n");
10    swap(n1,n2);
11    printf("\nThe values of n1 and n2 in the main function after calling swap function are n1=56 n2=23\n");
12
13    int swap(int n1,int n2)
14    {
15        int temp;
16        temp=n1;
17        n1=n2;
18        n2=temp;
19        printf("\nThe values of n1 and n2 in the swap function after swap are n1=23 n2=56\n");
20    }

```

Output window (C:\Users\gnane\OneDrive\Documents\11\ qus.exe):

```

Enter the two numbers to be swapped
23
56
The values of n1 and n2 in the main function before calling the swap function are n1=23 n2=56
The values of n1 and n2 in the swap function after swapping are n1=56 n2=23
The values of n1 and n2 in the main function after calling the swap function are n1=23 n2=56
.....
Process exited after 12.42 seconds with return value 0
Press any key to continue . . .

```

Compilation results:

```

-----
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\gnane\OneDrive\Documents\11\ qus.exe
- Output Size: 153.267578125 Kib
- Compilation Time: 0.17s

```

Q15. Write a program for Binary Search using recursive functions

The screenshot shows a C++ IDE with a project named '12 qus.cpp'. The code defines a recursive function to calculate the sum of numbers from 1 to n. The main function prompts the user to enter a number, reads it, and then calls the recursive function. The output window shows the execution results, including the sum of numbers from 1 to 10.

```

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

```

Output window (C:\Users\gnane\OneDrive\Documents\12\ qus.exe):

```

Enter the values for n:10
The sum of n numbers is 55
.....
Process exited after 7.163 seconds with return value 0
Press any key to continue . . .

```

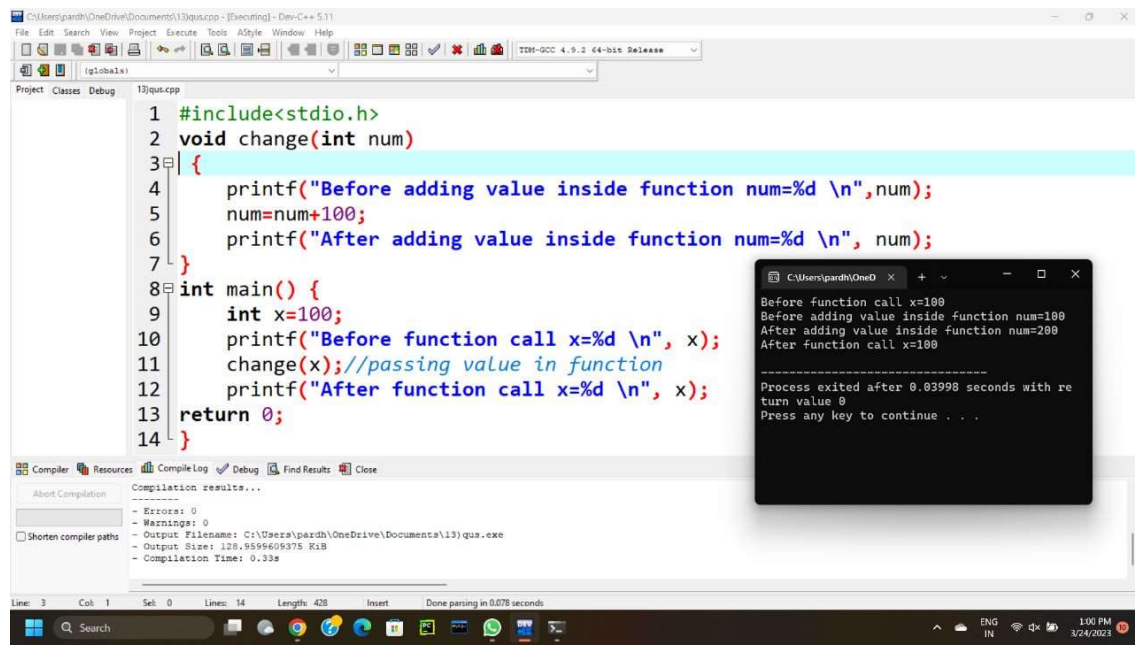
Compilation results:

```

-----
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\gnane\OneDrive\Documents\12\ qus.exe
- Output Size: 153.0712890625 Kib
- Compilation Time: 0.19s

```

Q16 Program to find Employee no, name, salary, doj using nested structure



```
1 #include<stdio.h>
2 void change(int num)
3 {
4     printf("Before adding value inside function num=%d \n",num);
5     num=num+100;
6     printf("After adding value inside function num=%d \n", num);
7 }
8 int main() {
9     int x=100;
10    printf("Before function call x=%d \n", x);
11    change(x); //passing value in function
12    printf("After function call x=%d \n", x);
13    return 0;
14 }
```

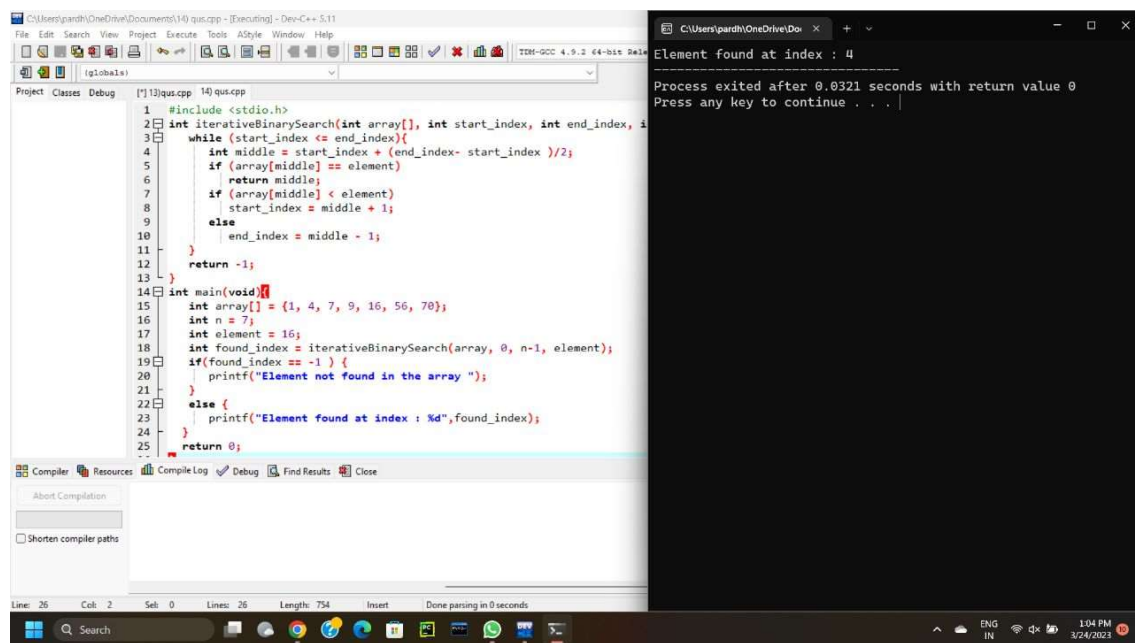
Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\parth\OneDrive\Documents\13\qus.exe
- Output Size: 129,555 bytes
- Compilation Time: 0.33s

Before function call x=100
Before adding value inside function num=100
After adding value inside function num=200
After function call x=100

Process exited after 0.03998 seconds with return value 0
Press any key to continue . . .

Q17.Program to find student details using nested structure



```
1 #include <stdio.h>
2 int iterativeBinarySearch(int array[], int start_index, int end_index, int element)
3 {
4     while (start_index <= end_index){
5         int middle = start_index + (end_index- start_index )/2;
6         if (array[middle] == element)
7             return middle;
8         if (array[middle] < element)
9             start_index = middle + 1;
10        else
11            end_index = middle - 1;
12    }
13    return -1;
14 }
15 int main(void){
16     int array[] = {1, 4, 7, 9, 16, 56, 70};
17     int n = 7;
18     int element = 16;
19     int found_index = iterativeBinarySearch(array, 0, n-1, element);
20     if(found_index == -1 ) {
21         printf("Element not found in the array ");
22     }
23     else {
24         printf("Element found at index : %d",found_index);
25     }
26     return 0;
27 }
```

Element found at index : 4

Process exited after 0.0321 seconds with return value 0
Press any key to continue . . .

Q18.Program to store 3 book records in one structure / using array of structure

```
#include <stdio.h>

/*structure declaration*/
struct employee{
    char name[30];
    int empId;
    float salary;
};

int main()
{
    /*declare structure variable*/
    struct employee emp;

    /*read employee details*/
    printf("\nEnter details :\n");
    printf("Name ? :");
    printf("ID ? :");
    printf("Salary ? :");

    gets(emp.name);
    scanf("%d",&emp.empId);
    scanf("%f",&emp.salary);

    /*print employee details*/
    printf("\nEnter detail is:");
    printf("Name: %s",emp.name);
    printf("Id: %d",emp.empId);
    printf("Salary: %f\n",emp.salary);
}
```

Enter details :
Name ? :gnanendra
ID ? :192211158
Salary ? :10000000000
Entered detail is:Name: gnanendraId: 192211158Salary: 10000000000.000000
Process exited after 34.12 seconds with return value 0
Press any key to continue . . .

Q.19 Find out the error and show the output

```
#include <stdio.h>

/* Declaration of structure */
struct address
{
    int houseNo;
    char street[20];
    int stateNo;
};

/* Declaration of structure */
struct student
{
    char name[30];
    int roll;
    struct address adrs; /* Nested structure */
};

int main()
{
    struct student stud;

    printf("Enter name and roll number of student:\n");
    scanf("%s",&stud.name,&stud.roll);
    printf("Enter street name, house number and state number:\n");
    scanf("%d",&stud.adrs.houseNo,&stud.adrs.street,&stud.adrs.stateNo);
    printf("Student detail is:\n");
    printf("Name: %s\Roll: %d\n",stud.name,stud.roll);
    printf("Address: %s, House no. %d, state: %d",stud.adrs.street,stud.adrs.houseNo,stud.adrs.stateNo);

    return 0;
}
```

Enter name and roll number of student:
gnanendra
192211158
Enter street name, house number and state number:
srikalahastrri
34
andhar pradesh
Student detail is:
Name: gnanendra Roll: 192211158
Address:srikalahastrri, House no. -34, state: 0
Process exited after 73.24 seconds with return value 0
Press any key to continue . . .

Q20. Find out the error and show the output

```
void main()
{
    int a[20][20],c[20][20],i,j,r1,c1;
    clrscr();
    printf("\n Enter the number of rows and column of a matrix: \n");
    scanf("%d",&r1,&c1);
    printf("Enter the elements of matrix :");
    for(i=0;i<r1;i++)
    {
        for(j=0;j<r1;j++)
            scanf("%d",&a[i][j]);
    }
    printf("The elements of matrix are :");

    for(i=0;i<r1;i++)
    {
        Printf {"\n"};
        for(j=0;j<c1;j++)
            printf("\t%d",&a[i][j]);
    }
    printf("\n Transpose Matrix is\n");
    for(i=0;i<r1;i++)
    {
        printf("\n");
        for(j=0;j<c2;j++)
```

```

    {
        c[i][j]=a[j][i]; /* inverse rows and column */
        printf("%d\t",c[i][j]);
    }
}
getch();
}

```

The screenshot shows a C++ IDE with a file named 'qus.cpp'. The code defines a 'student' struct with fields for 'firstName' (char array), 'roll' (int), and 'marks' (float). The 'main' function prompts the user to enter information for 5 students. It uses a loop to collect roll numbers, first names, and marks, storing them in an array 's'. Finally, it displays the entered information for each student.

```

1  #include <stdio.h>
2  struct student {
3      char firstName[50];
4      int roll;
5      float marks;
6  } s[5];
7
8  int main() {
9      int i;
10     printf("Enter information of students:\n");
11
12     // storing information
13     for (i = 0; i < 5; ++i) {
14         s[i].roll = i + 1;
15         printf("\nFor roll number %d, \n", s[i].roll);
16         printf("Enter first name: ");
17         scanf("%s", s[i].firstName);
18         printf("Enter marks: ");
19         scanf("%f", &s[i].marks);
20     }
21     printf("Displaying Information:\n\n");
22
23     // displaying information
24     for (i = 0; i < 5; ++i) {

```

The output window shows the following text:

```

For roll numbers,
Enter first name: vikram
Enter marks: 89
Displaying Information:

Roll number: 1
First name: gnanendra
Marks: 100.0

Roll number: 2
First name: pardhu
Marks: 95.0

Roll number: 3
First name: shiva
Marks: 0.0

Roll number: 4
First name: sai
Marks: 50.0

Roll number: 5
First name: vikram
Marks: 89.0

-----
Process exited after 110 seconds with return value 0
Press any key to continue . . .

```

Q21. Find out the error and show the output

```

void main()
{

```

```

    charstr[50];
    inti,length = 0;
    clrscr();
    printf("\nEnter the String: ");
    get(str);
    for(i=0; str[i]!='\0'; i++)
    {
        length++;
    }
    printf("\nThe length of the string is %c.",count);
    getch();
}

```

The screenshot shows a C++ IDE with the following code in `17) ques.cpp`:

```

1 #include <stdio.h>
2 struct student {
3     char firstName[50];
4     int roll;
5     float marks;
6 } s[5];
7
8 int main() {
9     int i;
10    printf("Enter information of students:\n");
11
12    // storing information
13    for (i = 0; i < 5; ++i) {
14        s[i].roll = i + 1;
15        printf("\nFor roll number %d,\n", s[i].roll);
16        printf("Enter first name: ");
17        scanf("%s", s[i].firstName);
18        printf("Enter marks: ");
19        scanf("%f", &s[i].marks);
20    }
21    printf("Displaying Information:\n\n");
22
23    // displaying information
24    for (i = 0; i < 5; ++i) {

```

The output window shows the following execution results:

```

For roll numbers,
Enter first name: vikram
Enter marks: 89
Displaying Information:

Roll number: 1
First name: gnanendra
Marks: 100.0

Roll number: 2
First name: pardhu
Marks: 95.0

Roll number: 3
First name: shiva
Marks: 0.0

Roll number: 4
First name: sai
Marks: 50.0

Roll number: 5
First name: vikram
Marks: 89.0

-----
Process exited after 110 seconds with return value 0
Press any key to continue . . .

```

The compiler output shows 0 errors and 0 warnings, with the output file named `ques.exe`.

Q22.Find out the error and show the output

```
void main()
{
    char str1[30],str2[30];
    printf("Enter first string: ");
    gets(str1);
    printf("Enter second string: ");
    get(str2);
    if(strcmp(str1,str2)=0)
    {
        print("Both strings are equal");
    }
    else
        printf("Strings are unequal");
}
```

