

Monday
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PSG College of Arts and Science (Autonomous)
Ind CA Test
C- Programming

DOBEL523

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- i) Write a program to solve a quadratic equation for all types of roots

Aim:

To create a program to solve a quadratic equation for all type of roots.

Algorithm:

Step 1: Start the program

Step 2: Declare the variables a, b, c , determinant, root1, root2

Step 3: If determinant > 0 , roots are real

Step 4: If determinant $= 0$, roots are real and equal

Step 5: If determinant < 0 , roots are imaginary

Step 6: End the program

Result:

The Coding is compiled and output is verified.

2) Write a program to create a structure of student's worksheet.

Aim:

To create a program to create a structure of student's worksheet.

Algorithm:

Step 1: Start the program

Step 2: Declare the variables

Step 3: Enter first name for roll number 1

Step 4: Enter ~~mark~~ marks for roll number 1

Step 5: Enter first name for roll number 2

Step 6: Enter marks for roll number 2

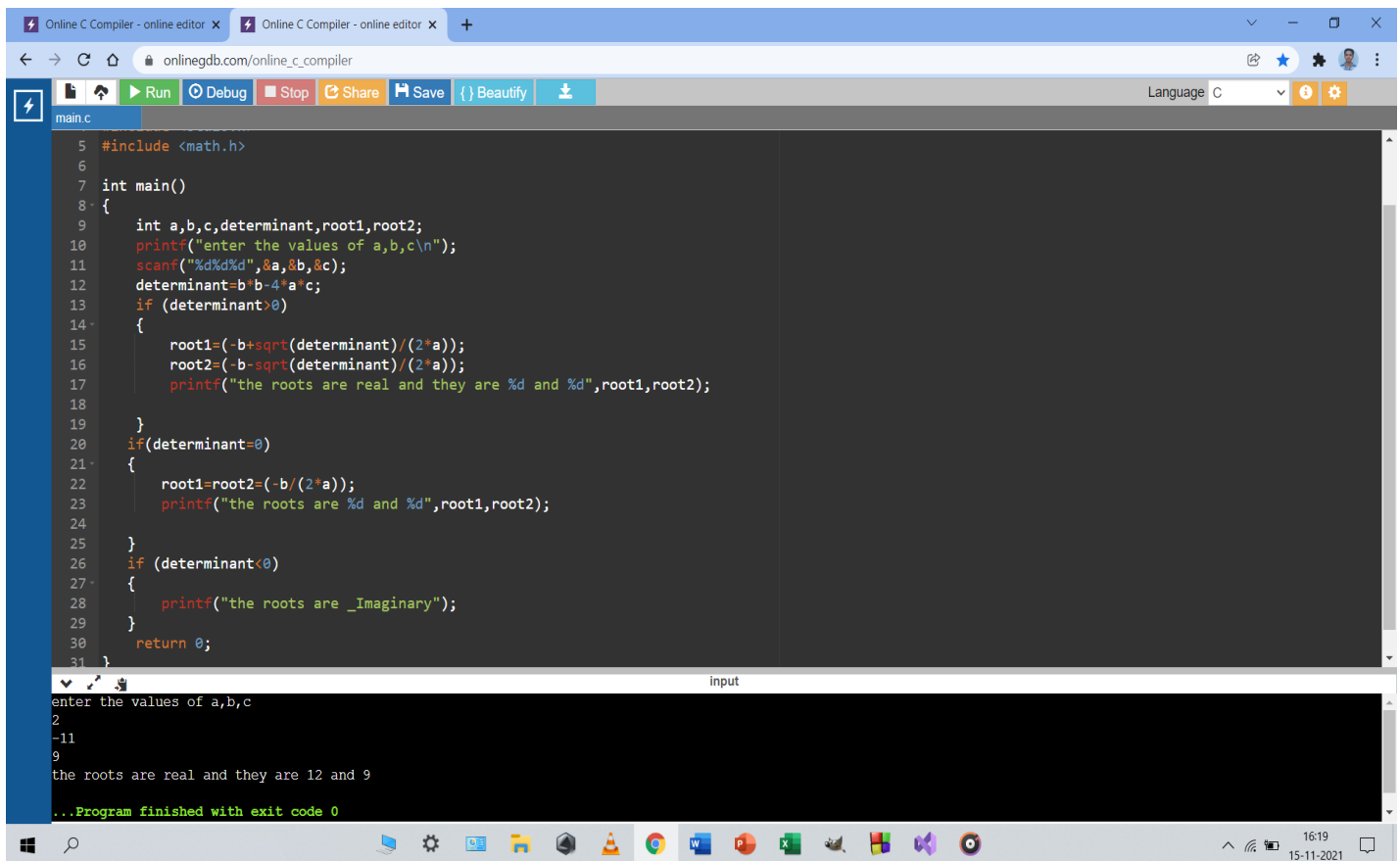
Step 7: Generate the worksheet

Step 8: End the program

Result:

The coding is compiled and output is verified.

Quadratic equation:



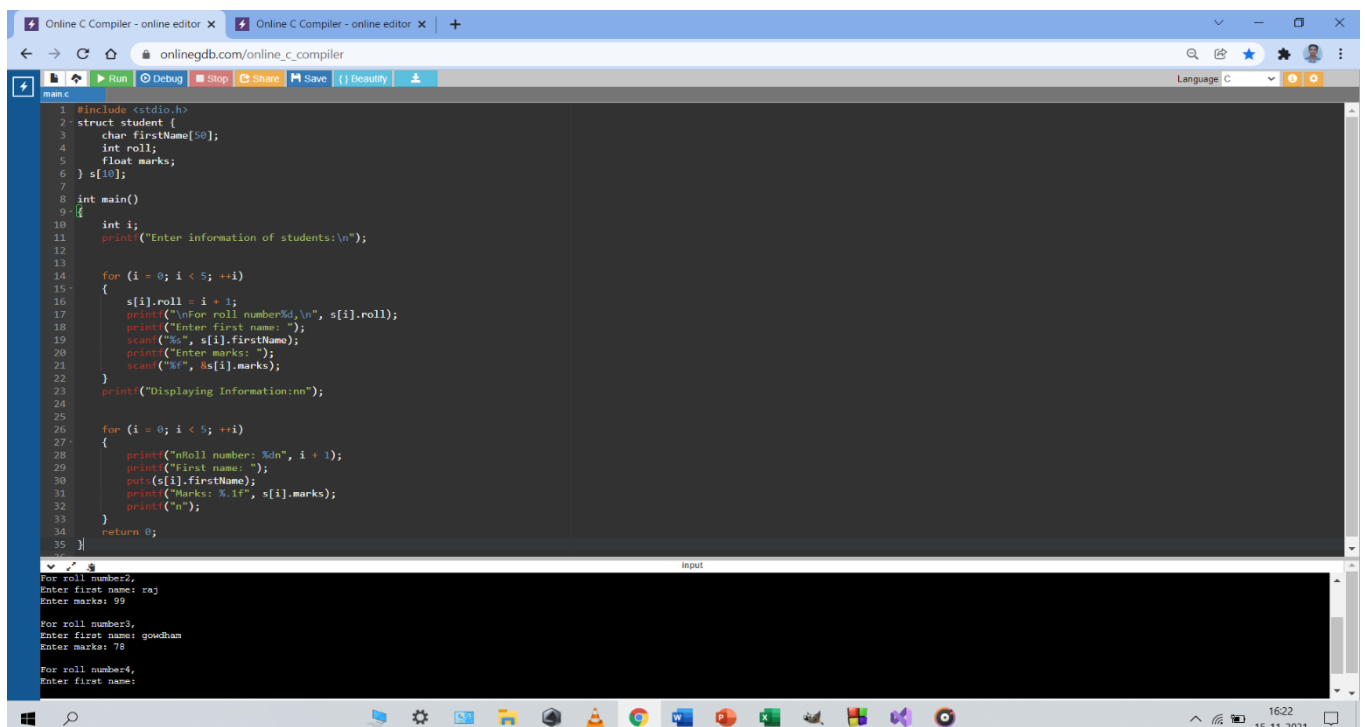
The screenshot shows an online C compiler interface with a single tab titled "Online C Compiler - online editor". The browser address bar displays "onlinegdb.com/online_c_compiler". The code editor contains a C program for solving quadratic equations. The program prompts the user to enter coefficients a, b, and c. It calculates the determinant and then uses conditional logic to find the roots. If the determinant is greater than zero, it calculates two distinct real roots. If it is zero, it calculates one real root. If it is less than zero, it indicates that the roots are imaginary. The output window shows the program's execution with input values 2, -11, and 9, resulting in two real roots: 12 and 9. The program finishes with exit code 0.

```
main.c
5 #include <math.h>
6
7 int main()
8 {
9     int a,b,c,determinant,root1,root2;
10    printf("enter the values of a,b,c\n");
11    scanf("%d%d%d",&a,&b,&c);
12    determinant=b*b-4*a*c;
13    if (determinant>0)
14    {
15        root1=(-b+sqrt(determinant)/(2*a));
16        root2=(-b-sqrt(determinant)/(2*a));
17        printf("the roots are real and they are %d and %d",root1,root2);
18    }
19    if(determinant==0)
20    {
21        root1=root2=(-b/(2*a));
22        printf("the roots are %d and %d",root1,root2);
23    }
24    if (determinant<0)
25    {
26        printf("the roots are _Imaginary");
27    }
28    return 0;
29 }
30
31 }
```

Input

```
enter the values of a,b,c
2
-11
9
the roots are real and they are 12 and 9
...Program finished with exit code 0
```

Student worksheet:



The screenshot shows an online C compiler interface with a single tab titled "Online C Compiler - online editor". The browser address bar displays "onlinegdb.com/online_c_compiler". The code editor contains a C program for a student worksheet. The program prompts the user to enter information for five students, including roll number, first name, and marks. It then displays the entered information for each student. The output window shows the program's execution with input values for five students, resulting in the display of their information. The program finishes with exit code 0.

```
main.c
1 #include <stdio.h>
2 struct student {
3     char firstName[50];
4     int roll;
5     float marks;
6 } s[10];
7
8 int main()
9 {
10    int i;
11    printf("Enter information of students:\n");
12
13    for (i = 0; i < 5; ++i)
14    {
15        s[i].roll = i + 1;
16        printf("\nFor roll number %d,\n", s[i].roll);
17        printf("Enter first name: ");
18        scanf("%s", s[i].firstName);
19        printf("Enter marks: ");
20        scanf("%f", &s[i].marks);
21    }
22    printf("Displaying Information:\n\n");
23
24    for (i = 0; i < 5; ++i)
25    {
26        printf("Roll number: %d\n", i + 1);
27        printf("First name: ");
28        printf("%s", s[i].firstName);
29        printf("Marks: %.1f", s[i].marks);
30        printf("\n");
31    }
32    return 0;
33 }
34
35 }
```

Input

```
For roll number2,
Enter first name: raj
Enter marks: 99

For roll number3,
Enter first name: gowdham
Enter marks: 78

For roll number4,
Enter first name:
Enter marks:
...Program finished with exit code 0
```