



Iqra National University Peshawar Pakistan

Department of Computer Science

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Note: Attempt all Questions.

Q.1 Read A, B and C representing the three sides of a triangle. Write a program to find out its area the formula is given below:

$$\text{Area} = \sqrt{S(S - A)(S - B)(S - C)}$$

$$\text{Where } S = \frac{A+B+C}{2}$$

Answer: The Following is code for finding area of triangle with above formula:

```
#include <bits/stdc++.h>
using namespace std;

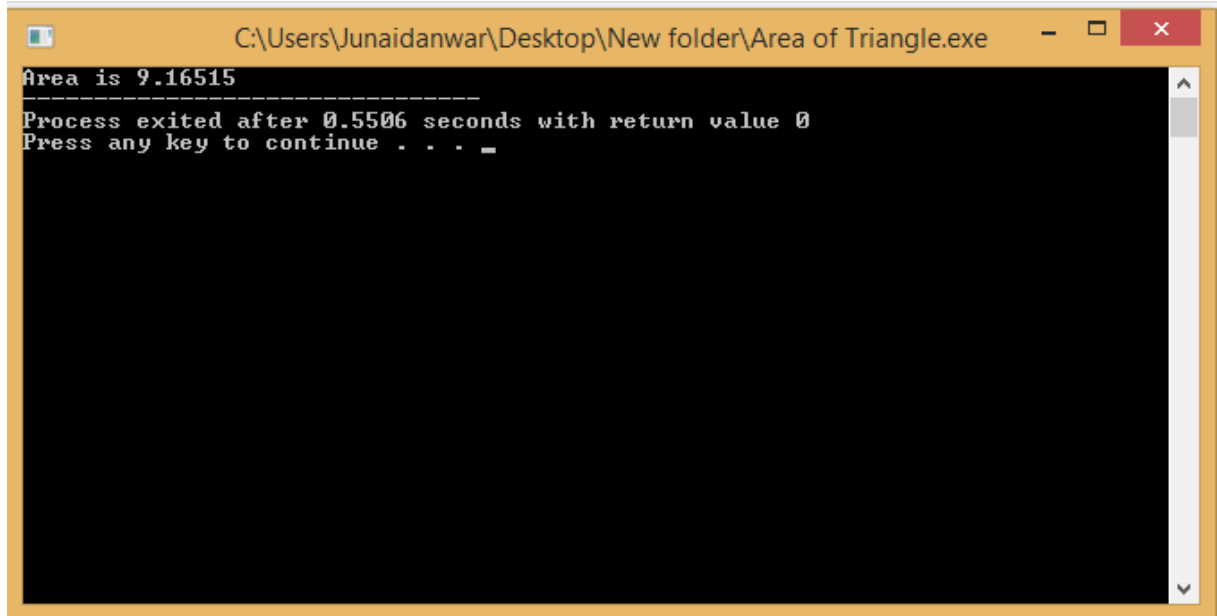
float findArea(float a, float b, float c)
{
    // Length of sides must be positive
    // and sum of any two sides
    // must be smaller than third side.
    if (a < 0 || b < 0 || c < 0 ||
        (a + b <= c) || a + c <= b ||
        b + c <= a)
    {
        cout << "Not a valid triangle\n";
        exit(0);
    }
    float s = (a + b + c) / 2;
    return sqrt(s * (s - a) *
                (s - b) * (s - c));
}

// Driver Code
int main()
{
    float a = 3.0;
    float b = 4.0;
    float c = 5.0;

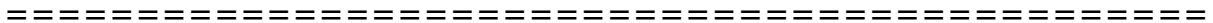
    cout << "Area is " << findArea(a, b, c);
    return 0;
}
```

```
File Edit Search View Project Execute Tools Style Window Help
(globals)
IDM-GCC 4.9.2 64-bit Release
Project Classes Debug
[*] main.cpp
Area of Triangle
1 #include <bits/stdc++.h>
2 using namespace std;
3
4 float findArea(float a, float b, float c)
5 {
6
7     if (a < 0 || b < 0 || c < 0 ||
8         (a + b <= c) || (a + c <= b) ||
9         (b + c <= a))
10     {
11         cout << "Not a valid triangle!";
12         exit(0);
13     }
14     float s = (a + b + c) / 2;
15     return sqrt(s * (s - a) *
16               (s - b) * (s - c));
17 }
18
19 // Driver Code
20 int main()
21 {
22     float a = 3.0;
23     float b = 4.0;
24     float c = 5.0;
25
26     cout << "Area is " << findArea(a, b, c);
27     return 0;
28 }
```

Code for Finding area of triangle



Result of area of triangle



Q.2 Write a C++ program to get marks obtained by a student in percentage **P** and then find the division according to the below rules:

- If Percentage P is above or equal to 60 then display.....1st Division.
- If Percentage P is between 50 & 59 then display.....2nd Division.
- If Percentage P is between 40 & 49 then display.....3rd Division.
- If Percentage P is less than 40 then display.....Fail.

Answer:

In the below program the student enter the marks of 4 subjects and then the marks will be converted to percentage and show him his grade according to percentage.

```
#include<iostream>
using namespace std;

int main()
{
    int sub1,sub2,sub3,sub4,percentage;

    cout<<"Enter marks of four subjects : ";

    // geting value from user.

    cin>>sub1>>sub2>>sub3>>sub4;
    //Calclating percentage

    percentage=(sub1+sub2+sub3+sub4)/4;

    if(percentage>=60)

        cout<<"Ist division";

    else if(percentage>=50 )

        cout<<"IInd division";

    else if(percentage>=40)

        cout<<"IIIrd division";

    else

        cout<<"Fail" ;

    return 0;
}
```

The image shows a C++ IDE with the following code in `main.cpp`:

```
1 #include<iostream>
2 using namespace std;
3
4 int main()
5 {
6     int sub1,sub2,sub3,sub4,percentage;
7     cout<<"Enter marks of four subjects : ";
8     // getting value from user.
9     cin>>sub1>>sub2>>sub3>>sub4;
10    //Calculating percentage
11    percentage=(sub1+sub2+sub3+sub4)/4;
12
13    if(percentge>=60)
14        cout<<"Ist division";
15    else if(percentge>=50 )
16        cout<<"IInd division";
17    else if(percentge>=40)
18        cout<<"IIIRD division";
19    else
20        cout<<"Fail" ;
21
22
23    return 0;
24 }
```

The terminal window shows the following output:

```
C:\Users\Junaidanwar\Desktop\New folder\Area of Triangle.exe
Enter marks of four subjects : 63
78
76
64
Ist division
-----
Process exited after 22.2 seconds with return value 0
Press any key to continue . . .
```

Code With Result



Q.3 Write a C++ program to convert 5 feet to the equivalent number of (a) Inches (b) Yards. Where 1foot =12 Inches and 1 yard=3 feet)

Answer:

A) INCHES CONVERSION, B) foot to yard

> FOOT TO INCHES :

>foot to yard

```
#include <iostream>
```

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

```
#include<stdlib.h>
```

```
using namespace std;
```

```
int main() {
```

```
    // Declare Variables
```

```
    int feet, inches = 0;
```

```
    float yard=0;
```

```
    cout << "Simple C++ Program : Convert Feet to Inches \n";
```

```
    feet=5;
```

```
    yard=feet / 3.0;
```

```
    inches = feet * 12;
```

```
    //Print Total Inches
```

```
    cout << "\n\nTotal Inches : " << inches;
```

```
    cout << "\n\nTotal yard : " <<yard;
```

```
    getch();
```

```
    return (0);
```

```
}
```

```

1 #include <iostream>
2 #include<conio.h>
3 #include<stdlib.h>
4
5 using namespace std;
6
7 int main() {
8     // Declare Variables
9     int feet, inches = 0;
10    float yard=0;
11
12    cout << "Converting feet to inches ,converting feet to yard";
13
14
15    feet=5;
16    yard=feet / 3.0;
17
18    inches = feet * 12;
19
20    //Print Total Inches
21    cout << "\n\nTotal Inches : " << inches;
22    cout << "\n\nTotal yard : " <<yard;
23
24    getch();
25    return (0);
26 }

```

```

C:\Users\Junaidanwar\Desktop\New folder\Area of Triangle.exe
Converting feet to inches ,converting feet to yard
Total Inches : 60
Total yard : 1.66667_

```

Code With Result to Convert feet to inches ,Feet to yard

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Q.4 Write a C++ program to find the sum of the following series:

2+4+6+8+10.

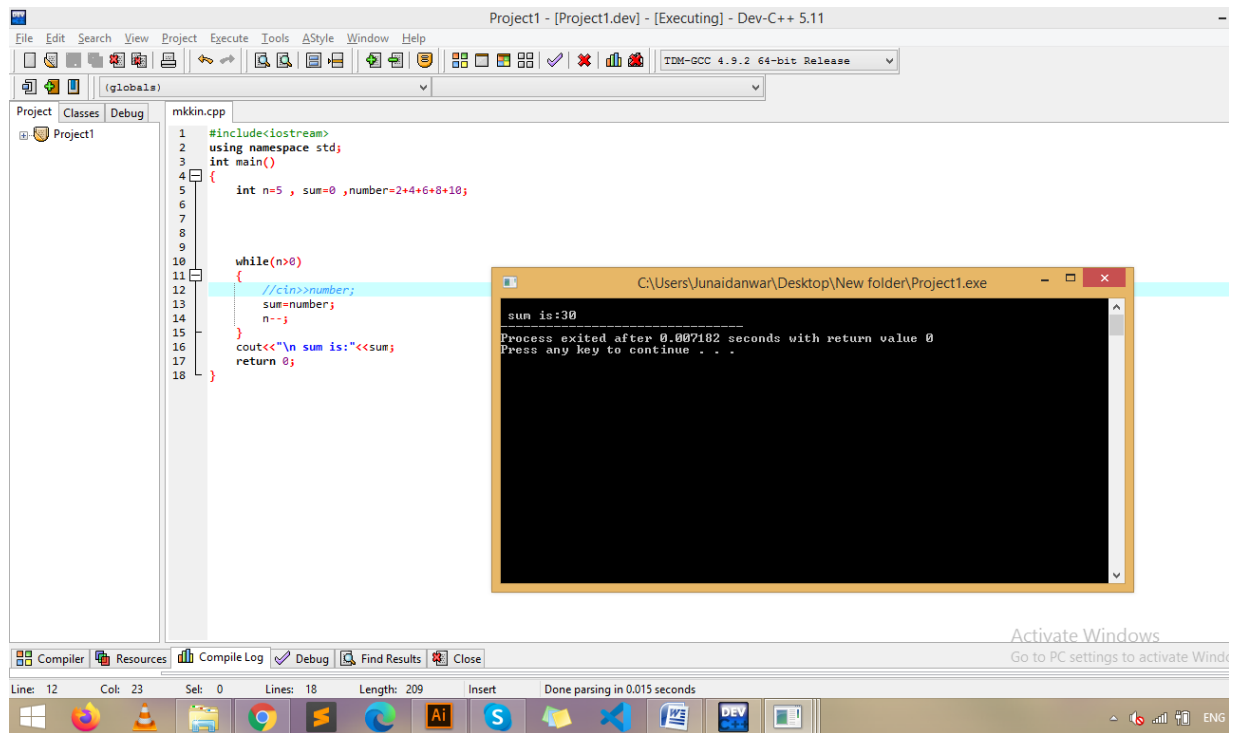
Answer: The following is code to display the sum of the above numbers:

```

#include<iostream>
using namespace std;
int main()
{
    int n=5 , sum=0 ,number=2+4+6+8+10;

    while(n>0)
    {
        //cin>>number;
        sum=number;
        n--;
    }
    cout<<"\n sum is:"<<sum;
    return 0;
}

```



Code for showing sum

=====

Q.5 Write a C++ program to input Hours Worked and Hour Rate of an Employee. Calculate and display the Gross-Pay, Tax and Net-Pay; where

$Gross-Pay = Hour-Worked * Hour-Rate$

$Tax = 10\% \text{ of Gross-Pay}$

$Net-Pay = Gross-Pay - Tax$

Answer:

The following is program to get data of working hours and hours rate and show gross-pay, tax and net paly;

```
#include<iostream>
using namespace std;

int main()
{
    float Work_Hours;
    float Hour_Rate;
    float Gross_Pay, Tex, Net_Pay;

    cout<<"Total Worked Hours: ";
    //getting input from user;
    cin>> Work_Hours;
    cout<<"Hour Rate: ";
    //getting input of hourly rate from user;
    cin>>Hour_Rate;
```

```

//formula to calculator Gross_pay
Gross_Pay = Work_Hours * Hour_Rate;
Tex = Gross_Pay * 0.10;
Net_Pay = Gross_Pay - Tex;
cout<<"Gross Pay: "<<Gross_Pay<<endl;
cout<<"Tex 10%: "<<Tex<<endl;
cout<<"Net Pay: "<<Net_Pay;
return 0;
}

```

The screenshot shows the Dev-C++ IDE with a C++ program named 'mkkin.cpp'. The code calculates Gross Pay, Tax (10%), and Net Pay based on user input for Total Worked Hours and Hour Rate. The execution window shows the following output:

```

C:\Users\Junaidanwar\Desktop\New folder\Project1.exe
Total Worked Hours: 12
Hour Rate: 200
Gross Pay: 2400
Tex 10%: 240
Net Pay: 2160
-----
Process exited after 11.92 seconds with return value 0
Press any key to continue . . .

```

Code with result

☺*****The End*****☺

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