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Subject : Programming Fundamentals (Lab)

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Q. 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:

1

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

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

Answer:

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

float findArea(float a, float b, float c)
{
    if (a < 0 || b < 0 || c < 0 ||
        (a + b <= c) || a + c <= b ||
        b + c <= a)
    {
        cout << "Not a valid triangler";
        exit(0);
    }
    float s = (a + b + c) / 2;
    return sqrt(s * (s - a) *
                (s - b) * (s - c));
}

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

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

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

2

- 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:

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

int main()
{
    int sub1,percentage;
    cout<<"Enter marks ";
    cin>>sub1;
    percentage=(sub1)/1;

    if(percentage>=60)
        cout<<"1st Division";
    else if(percentage>=50)
        cout<<"2nd Division";
    else if(percentage>=40)
        cout<<"3rd Division";
    else
        cout<<"Fail" ;

    return 0;
}
```

Q. 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)

3

Answer:

```
#include<iostream>
using namespace std;
int main()
{
    int yard, feet, inch;
    cout<<"Enter Inches :: ";
    cin>>inch;

    yard = inch/432;
    inch %= 432;
    feet = inch /12;
    inch%=12;
```

```

cout<<" Yard :: "<<yard<<"\n Feet :: "<<feet<<"\n Inches :: "<<inch;

return 0;
}

```

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

$$2+4+6+8+10$$

Answer:

```

#include<iostream.h>
#include<conio.h>

void main()
{
clrscr();
int i,n,sum=0;
cout<<"1+2+3+.....+n";
cout<<"\nEnter the value of n:";
cin>>n;

for(i=1;i<=n;++i)
sum+=i;
cout<<"\nSum="<<sum;
getch();
}

```

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

$$\text{Gross-Pay} = \text{Hour-Worked} * \text{Hour-Rate}$$

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

$$\text{Net-Pay} = \text{Gross-Pay} - \text{Tax}$$

Answer:

```

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

const int   STD_HRS       = 40;
const float OVERTIME_MULT = 1.5;

```

```
int main()
{
    cout << fixed << showpoint;
    cout << setprecision(2);
    float hours, rate;
    cout << "Enter hours worked: ";
    cin >> hours;
    cout << "Enter rate: ";
    cin >> rate;
    float regular, overtime;
    if ( hours <= STD_HRS )
    {
        regular = hours * rate;
        overtime = 0.0;
    }
    else
    {
        regular = STD_HRS * rate;
        overtime = (hours - STD_HRS) * rate * OVERTIME_MULT;
    }
    float pay;
    pay = regular + overtime;
    cout << "Pay: $" << pay << endl;
    return 0;
}
```