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MODULE: Bachelors {Software Engineering}

SEMESTER: summer 2020

SUBJECT: Programming Fundamentals (Lab)

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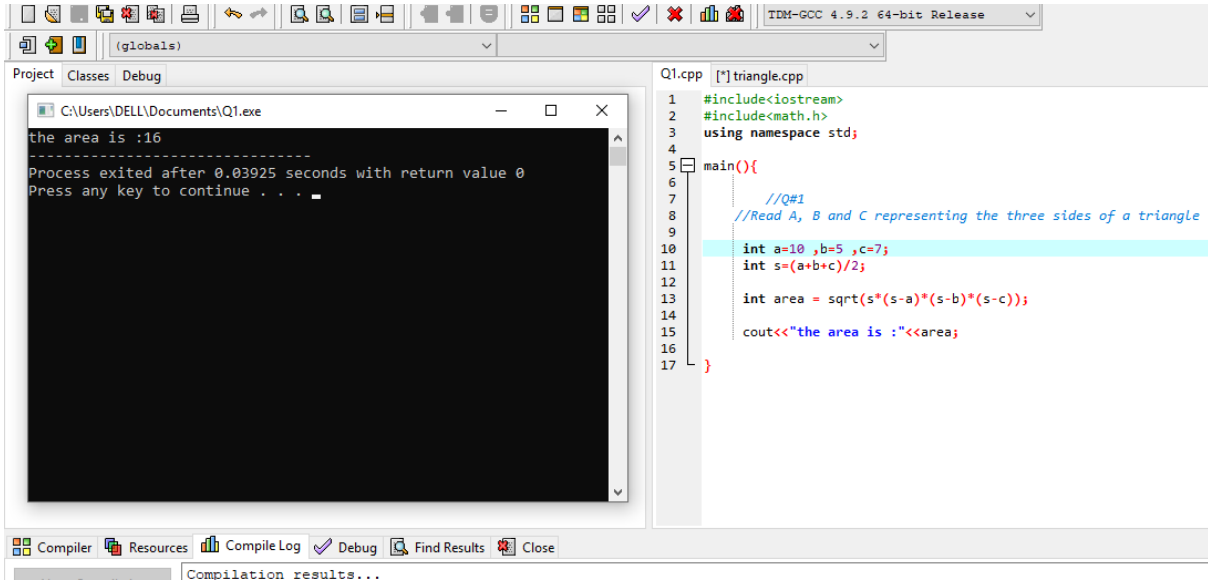
Question #1

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:



```
Q1.cpp [*] triangle.cpp
1  #include<iostream>
2  #include<math.h>
3  using namespace std;
4
5  main(){
6
7      //Q#1
8      //Read A, B and C representing the three sides of a triangle
9
10     int a=10 ,b=5 ,c=7;
11     int s=(a+b+c)/2;
12
13     int area = sqrt(s*(s-a)*(s-b)*(s-c));
14
15     cout<<"the area is :"<<area;
16
17 }
```

the area is :16

Process exited after 0.03925 seconds with return value 0
Press any key to continue . . .

Question #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:

The screenshot shows a C++ IDE with a source code editor on the left and a console window on the right. The code in the editor is as follows:

```
1 #include<iostream>
2 #include<math.h>
3 using namespace std;
4
5 main(){
6
7     //Q#2
8
9
10    int sub1, sub2, sub3, sub4;
11    int total = 400;
12    int obtain ;
13    int p;
14
15
16    //input 4 subject marks;
17    cout<<"enter first subject marks :"<<endl;
18    cin>>sub1;
19    cout<<"enter 2nd subject marks :"<<endl;
20    cin>>sub2;
21    cout<<"enter 3rd subject marks :"<<endl;
22    cin>>sub3;
23    cout<<"enter 4th subject marks :"<<endl;
24    cin>>sub4;
25
26    //total
27    obtain=sub1+sub2+sub3+sub4;
28    cout<<"the total marks is :"<<obtain<<endl;
29
30
31    //percentage
```

The console window shows the following output:

```
CAUsers\DELL\Documents\Q2.exe
enter first subject marks :
72
enter 2nd subject marks :
83
enter 3rd subject marks :
60
enter 4th subject marks :
50
the total marks is :265
the percentage is :66
1st division
-----
Process exited after 37.62 seconds with return value 0
Press any key to continue . . .
```

The screenshot shows the same C++ IDE with the source code editor open. The code is as follows:

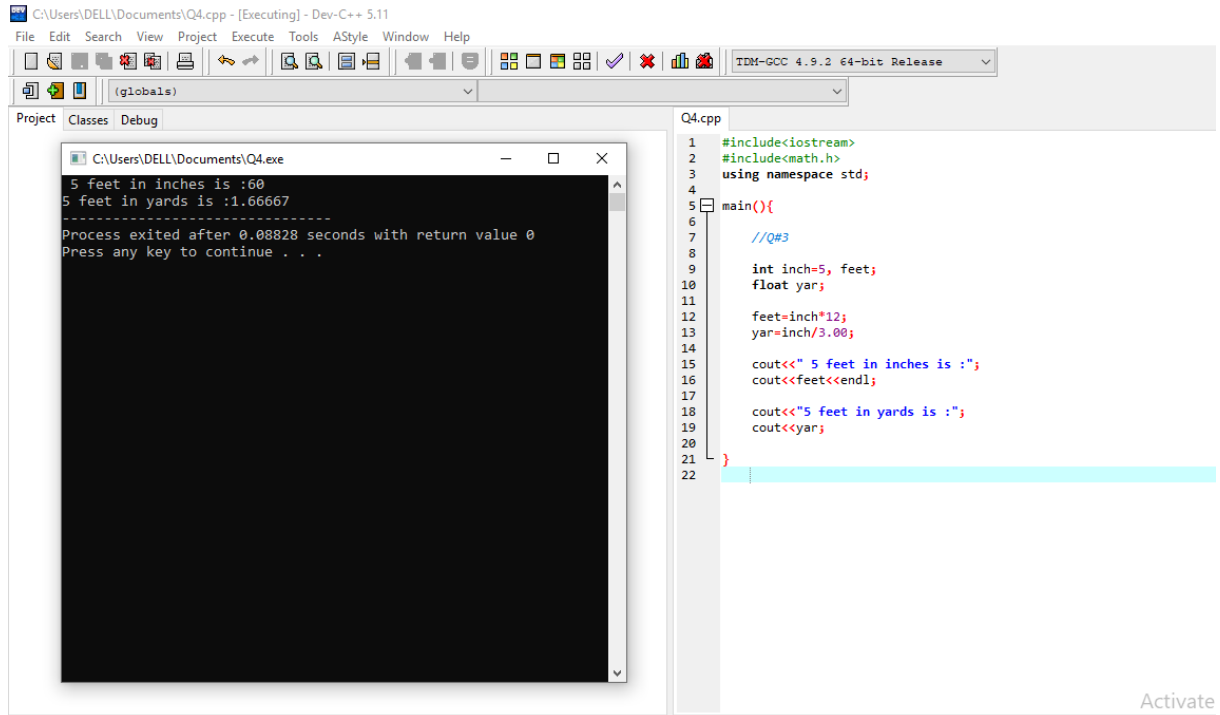
```
1 #include<iostream>
2 #include<math.h>
3 using namespace std;
4
5 main(){
6
7     //Q#2
8
9
10    int sub1, sub2, sub3, sub4;
11    int total = 400;
12    int obtain ;
13    int p;
14
15
16    //input 4 subject marks;
17    cout<<"enter first subject marks :"<<endl;
18    cin>>sub1;
19    cout<<"enter 2nd subject marks :"<<endl;
20    cin>>sub2;
21    cout<<"enter 3rd subject marks :"<<endl;
22    cin>>sub3;
23    cout<<"enter 4th subject marks :"<<endl;
24    cin>>sub4;
25
26    //total
27    obtain=sub1+sub2+sub3+sub4;
28    cout<<"the total marks is :"<<obtain<<endl;
29
30
31    //percentage
32
33    p=(obtain*100)/total;
34    cout<<"the percentage is :"<<p<<endl;
35
36
37    //geade
38
```

```
CAUsers\DELL\Documents\Q2.cpp - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
(globals)
Project Classes Debug Q2.cpp
22 cin>>sub3;
23 cout<<"enter 4th subject marks :"<<endl;
24 cin>>sub4;
25
26 //total
27 obtain=sub1+sub2+sub3+sub4;
28 cout<<"the total marks is :"<<obtain<<endl;
29
30 //percentage
31
32 p=(obtain*100)/total;
33 cout<<"the percentage is :"<<p<<endl;
34
35 //geade
36
37 if(p>=60){
38     cout<<"1st division";
39 }
40 else if(p>50&& p<60){
41     cout<<"2nd division";
42 }
43 else if(p>40&& p<50){
44     cout<<"3rd division";
45 }
46 else if(p>40){
47     cout<<"fail";
48 }
49
50
51
52
53
54
55
56
57
58
59 }
```

Question #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:



The screenshot shows a C++ IDE with a terminal window and a code editor. The terminal window displays the output of the program: "5 feet in inches is :60" and "5 feet in yards is :1.66667". The code editor shows the source code for Q4.cpp, which includes `<iostream>` and `<math.h>`, and uses the `std` namespace. The `main` function defines `int inch=5, feet;` and `float yar;`, then calculates `feet=inch*12;` and `yar=inch/3.00;`. Finally, it prints the results using `cout`.

```
1 #include<iostream>
2 #include<math.h>
3 using namespace std;
4
5 main(){
6
7     //Q#3
8
9     int inch=5, feet;
10    float yar;
11
12    feet=inch*12;
13    yar=inch/3.00;
14
15    cout<<" 5 feet in inches is :";
16    cout<<feet<<endl;
17
18    cout<<"5 feet in yards is :";
19    cout<<yar;
20
21 }
22
```

Terminal output:

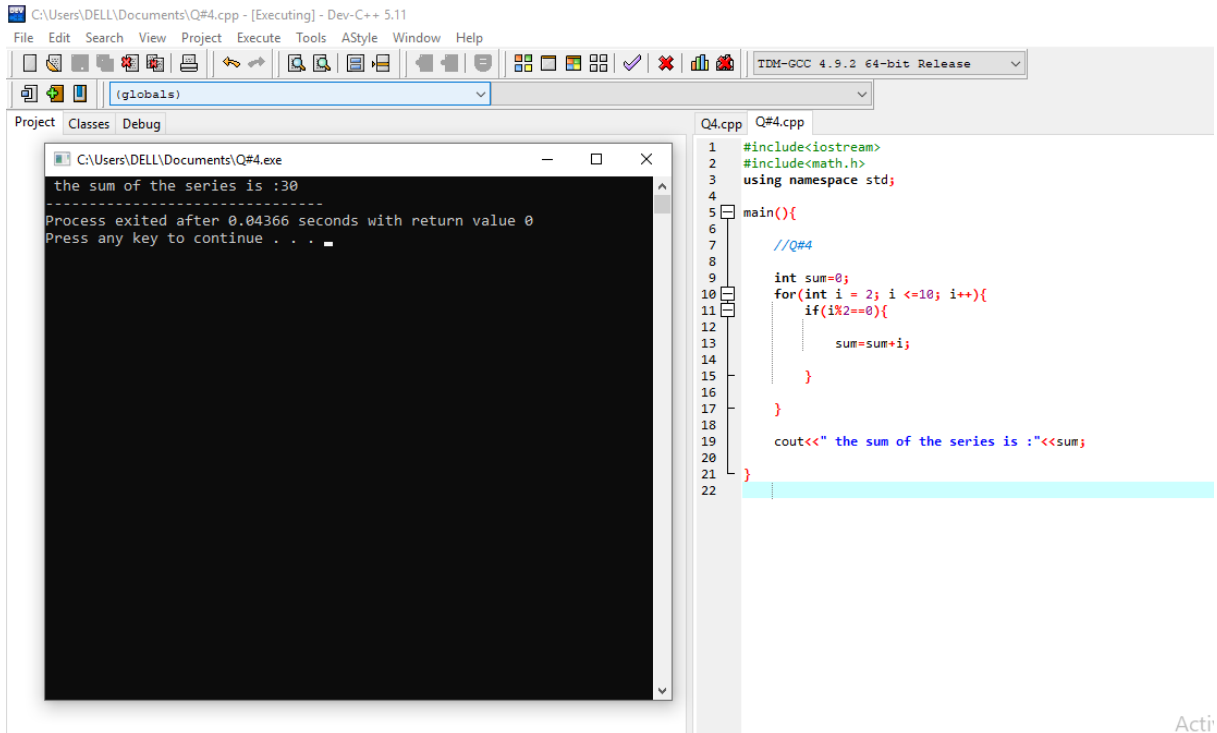
```
C:\Users\DELL\Documents\Q4.exe
5 feet in inches is :60
5 feet in yards is :1.66667
-----
Process exited after 0.08828 seconds with return value 0
Press any key to continue . . .
```

Question #4

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

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

ANSWER:



The screenshot shows a C++ IDE with a project named 'Q#4.cpp'. The code in the editor is as follows:

```
1 #include<iostream>
2 #include<math.h>
3 using namespace std;
4
5 main(){
6
7     //Q#4
8
9     int sum=0;
10    for(int i = 2; i <=10; i++){
11        if(i%2==0){
12            sum=sum+i;
13        }
14    }
15
16
17 }
18
19 cout<<" the sum of the series is :"<<sum;
20
21 }
22
```

The output window shows the following text:

```
C:\Users\DELL\Documents\Q#4.exe
the sum of the series is :30
-----
Process exited after 0.04366 seconds with return value 0
Press any key to continue . . .
```

Question# 5

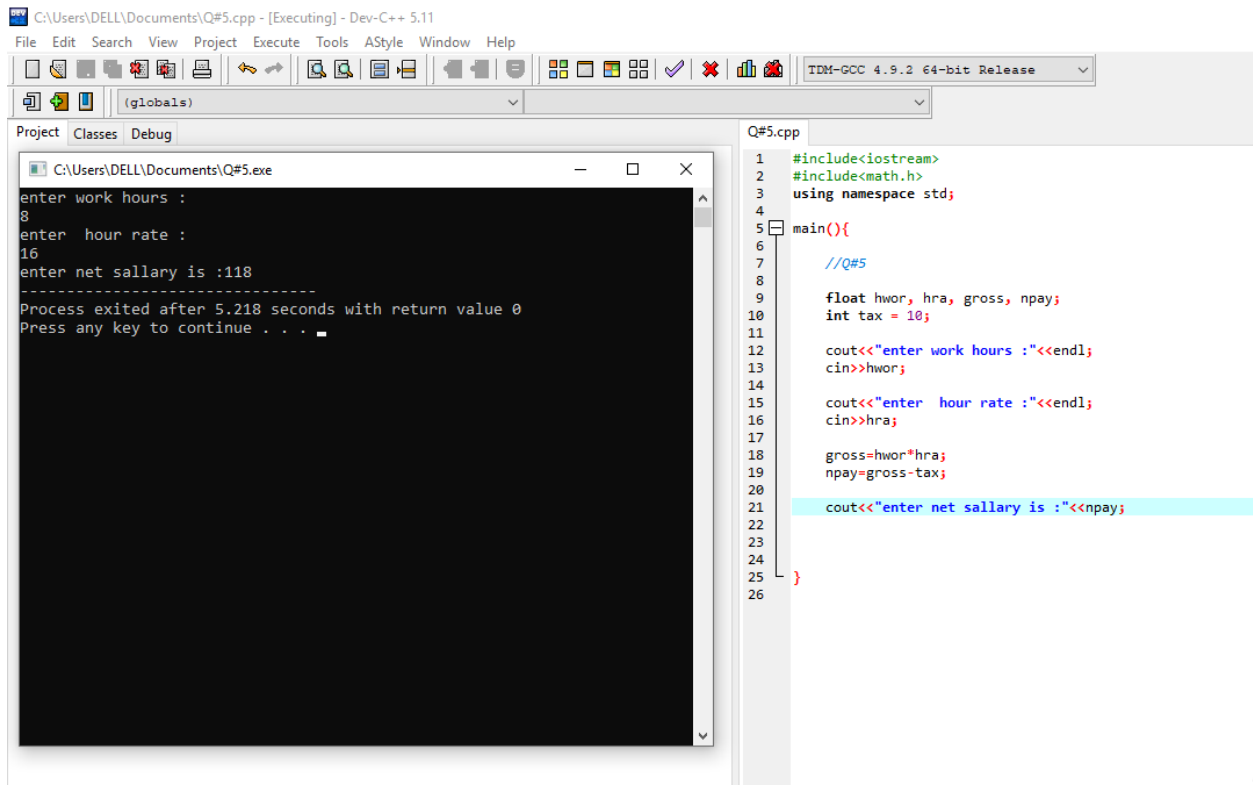
Write a C++ program to input Hours Worked and Hour Rate of an Employee. Calculate and display the Gross-Pay, Tax and Net-Pay; where

Gross-Pay=Hour-Worked*Hour-Rate

Tax=10% of Gross-Pay

Net-Pay=Gross-Pay - Tax

ANSWER:



The image shows a screenshot of a C++ IDE (Dev-C++ 5.11) with a project named "Q#5". The IDE is running a program, and the output window shows the following text:

```
enter work hours :
8
enter hour rate :
16
enter net sallary is :118
-----
Process exited after 5.218 seconds with return value 0
Press any key to continue . . .
```

The source code in the editor is as follows:

```
1 #include<iostream>
2 #include<math.h>
3 using namespace std;
4
5 main(){
6
7     //Q#5
8
9     float hwor, hra, gross, npay;
10    int tax = 10;
11
12    cout<<"enter work hours :"<<endl;
13    cin>>hwor;
14
15    cout<<"enter hour rate :"<<endl;
16    cin>>hra;
17
18    gross=hwor*hra;
19    npay=gross-tax;
20
21    cout<<"enter net sallary is :"<<npay;
22
23
24
25 }
26
```