CSS-114- FUNDAMENTALS OF PROGRAMMING

LAB MANUAL #2

LAB AND HOME TASK

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Lab Task:

1. Write a C++ code that displays your name, department and degree on the console. Make sure the three things are in three different lines.

CODE:

CLASS TASK.cpp

```cpp
#include<iostream>
using namespace std;
int main(){
    cout<<"Task 1"<<endl;
    cout<<"Abdullah Bin Khurram"<<endl;
    cout<<"SMME"<<endl;
    cout<<"Mechanical Engineering"<<endl;
```

RESULT:

```
Task 1
Abdullah Bin Khurram
SMME
Mechanical Engineering
```

2. Write a C++ code that takes two numbers and displays the addition, subtraction, division, multiplication and square of given numbers, on the console window. Make sure to comment your code.

CODE:

```
cout<<"Task 2"<<endl;
int a, b, sum, sub, mult, div, sqA, sqB;
cout<<"enter a value for the first number"<<endl;
cin>>a;
cout<<"enter a value for the second number"<<endl;
cin>>b;
sum = a+b;
sub = a-b;
mult = a*b;
div = a/b;
sqA = a*a;
sqB = b*b;
cout<<"Addition of two numbers is:"<<sum<<endl;
cout<<"Subtraction of two numbers is:"<<sub<<endl;
cout<<"Multiplication of two numbers is:"<<mult<<endl;
cout<<"Division of two numbers is:"<<div<<endl;
cout<<"sqA of two numbers is:"<<sqA<<endl;
cout<<"sqB of two numbers is:"<<sqB<<endl;
```

RESULT:

```
Task 2
enter a value for the first number
4
enter a value for the second number
8
Addition of two numbers is:12
Subtraction of two numbers is:-4
Multiplication of two numbers is:32
Division of two numbers is:0
sqA of two numbers is:16
sqB of two numbers is:64
```

3. Write a code in C++ that takes radius of a circle as input from user and outputs the circumference and area. The output should be clear and readable. Add proper comments to the code. You can set the value of π up to 3 decimal places.

CODE:

```
cout<<"Task 3"<<endl;
float r, pi = 3.142 , area, circ;
cout<<"enter the radius"<<endl;
cin>>r;
area = pi * r * r;
circ = 2 * pi * r;
cout<<"Area of the circle is:"<<area<<endl;
cout<<"circumfrence of the circle is:"<<circ<<endl;
```

RESULT:

```
Task 3
enter the radius
20.98
Area of the circle is:1382.98
circumfrence of the circle is:131.838
```

4. Write a C++ code that prints out the following sequence: 0, 1, 1, 2, 3, 5, 8, 13 using three variables.

CODE:

```
    cout<<"Task 4"<<endl;
    int q=0;
    int t=1;
    int s=1;
    cout<<q<<t<<s;
    q = t + s;
    t = s + q;
    s = t + q;
    cout<<q<<t<<s;
    q = t + s;
    t = s + q;
    s = t + q;
    cout<<q<<t<<s;
    q = t + s;
    t = s + q;
    s = t + q;
   cout<<q<<t<<s;
    q = t + s;
    t = s + q;
    s = t + q;
    cout<<q<<t<<s;
    q = t + s;
    t = s + q;
    s = t + q;

    return 0;
}
```

RESULT:

```
Task 4
011235813213455891442333 77
--------------------------------
Process exited after 33.29 seconds with return value 0
Press any key to continue . . .
```

Home Task:

1. Write a C++ program to calculate distance between two points. The values should of coordinates should be input by user.

$$d = \left(x_2 - x_1\right)^2 + \left(y_2 - y_1\right)^2$$

CODE:

HOME TASK.cpp

```cpp
#include<iostream>
using namespace std;
int main(){
    cout<<"HOME TASK BY ABDULLAH BIN KHORRAM, CMS ID 466612 :)"<<endl;

    cout<<"HOME TASK 1"<<endl;
    cout<<"Caluculate the Distance Between Two Points"<<endl;
    float x1,y1, x2, y2, d;
    cout<<"Enter Co-ordinates of First Point"<<endl;
    cin>>x1;
    cin>>y1;
    cout<<"Enter Co-ordinates of Second Point"<<endl;
    cin>>x2;
    cin>>y2;
    d = (x2-x1)*(x2-x1) + (y2-y1)*(y2-y1);
    cout<<"distance between the two points is:"<<d<<endl;
```

RESULT:

```
Caluculate the Distance Between Two Points
Enter Co-ordinates of First Point
2
2
Enter Co-ordinates of Second Point
4
4
distance between the two points is:8
```

2. Write a code in C++ to take length from user in centimeter and convert it into meter and kilometer.

CODE:

```cpp
cout<<"HOME TASK 2"<<endl;
float cm, m, km;
cout<<"enter your length in cm"<<endl;
cin>>cm;
m = cm/100;
cout<<"length in m is:"<<m<<endl;
km = cm/100000;
cout<<"length in km is:"<<km<<endl;
```

RESULT:

```
HOME TASK 2
enter your length in cm
567.98
length in m is:5.6798
length in km is:0.0056798
```

3. Write a code in C++ that takes values of a and b from the user and displays result of polynomial $a^2 + 2ab + b^2$.

CODE:

```
cout<<"HOME TASK 3"<<endl;
float a, b, poly;
cout<<"enter your value for a"<<endl;
cin>>a;
cout<<"enter your value for b"<<endl;
cin>>b;
poly = a*a + b*b + 2*a*b;
cout<<"value of polynomial is:"<<poly<<endl;
```

RESULT:

```
HOME TASK 3
enter your value for a
5
enter your value for b
3
value of polynomial is:64
```

4. Write a program in C++ to convert temperature in Fahrenheit to Celsius.

CODE:

```
36      cout<<"HOME TASK 4"<<endl;
37      float Fah, Cel;
38      cout<<"Enter your temperature in Fahrenheit:"<<endl;
39      cin>>Fah;
40      Cel = (Fah - 32)/1.8;
41      cout<<"Temperature in Celsius is:"<<Cel<<endl;
42
43
44      return 0;
45  }
```

RESULT:

```
HOME TASK 4
Enter your temperature in Fahrenheit:
360.77
Temperature in Celsius is:182.65

--------------------------------
Process exited after 43.52 seconds with return value 0
Press any key to continue . . .
```