COMPUTER LABORATORY 6

Task1: Copy and paste the code below. Save (as **triangle.cpp**), compile and run it.

```
// Computing the area of a triangle
#include <iostream>
#include <cmath>
using namespace std;
// The function prototype
double TArea(double, double, double);
int main()
{
    double a, b, c, alan;
    cout << "Enter the sides of the triangle: ";
    cin >> a >> b >> c;
    alan = TArea(a, b, c);
    cout << "The area of this triangle is " << alan << endl;
    // system("Pause"); // not adding in VS-Code. You may add on Dev-C++
    return 0;
}

// Returns the area of any triangle
double TArea(double a, double b, double c)
{
    // Check if any side is negative
    if (a<0. || b<0. || c<0.) return 0.0;
    // Check if any side is greater than sum of two
    if (a >= b+c) return 0.0;
    if (b >= a+c) return 0.0;
    if (c >= a+b) return 0.0;
    // Calculate and return the area
    double u, area;
    u = 0.5*(a+b+c);
    area = sqrt(u*(u-a)*(u-b)*(u-c));
    return area;
}
```

Task 2: Using recursion, write a function (named as fibo) to find nth Fibonacci number. Call this function in the main program with the argument n.

Fibonacci Series:
1st 2nd 3rd 4th 5th 6th 7th 8th 9th 10th 11th 12th ...

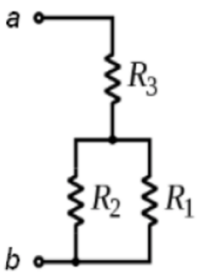
0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89...

Task 3

For the given circuit, write a C++ function named

```
void circuit(double Vab, double& i1, double& i2, double& i3)
```

where the input parameter `Vab` is the potential difference between points *a* and *b* and the output parameters `i1`, `i2` and `i3` are the current passing through each resistor. In the function, define the resistances as follows: R_1 = 1.1 kΩ, R_2=2.2 kΩ and R_3=3.3 kΩ. Use the function in a main program.



Home Work**: send your solution **only to** eee146gaun@gmail.com **as pdf format with your name.

Write a program that, when given a double number *x, a* and an integer number *n* calculates and prints out

$$(x+a)^n = \sum_{k=0}^{n} \binom{n}{k} x^k a^{n-k}$$

without using any Math library. To do this, write and use functions for the following tasks:

a. pow: when given a double *x* and integer *y*; returns *xy*.

b. fact: when given an integer *x;* returns *x*!

c. binom_coef: when given an integer *n and k;* returns *Binomial coefficient*

$$\binom{n}{k} = \begin{cases} \dfrac{n!}{k!(n-k)!} & for\ 0 \le k \le n \\ 0 & Otherwise \end{cases}$$

Examples: x=2 a=0 n=3 ➔ approxiately 8