Faculty of Engineering, University of Jaffna
Department of Computer Engineering
EC2010: Computer Programming
Lab 05

Lecturer: Dr, J. Jananie Instructors:

1. First, create a CPPproject and name it Lab05-RegNo, replacing the term RegNo with your RegNo.

2. Starting at the topmost line of the file, insert the following minimally required documentation, filling in your name, Reg_No, the assignment number, due date and a brief description of what the program will do. You must select one of the two forms of certification of Authenticity. Submissions not including a certification of authenticity will not be graded.

// Your Name
// Your RegNo
// EC2010
//Group: [Insert the number]
// Lab: [Insert the number]
// Program Description: [insert brief description here]
// Certificate of Authenticity: (choose one from below)
// I certify that the code in the method function main of this project
// is entirely my own work.
(or)
// I certify that the code in method function main of this project is
// entirely my own work, but I received assistance from [insert name/book/lectureslides].
// Follow this with a description of the type of assistance.

1) Implement the following programs and paste the outputs.

Task 01:

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

class Book{
    public:
        string pages;
    private:
        string title,author;


    public:
        void displayPages(){
        cout << "Number of Pages = "<<pages<<endl;
        }
    public:
        void displayTitle(string t)
        {
            title=t;
            cout<<"Book Title = "<<title<<endl;
        }
    public:
        void displayAuthor(string t, string a)
        {
            title=t;
            author=a;
            cout<<title<<" was written by "<<author<<endl;
        }
};
int main(){
    Book obj1;
    cout<<"Enter number of pages: ";
    cin>>obj1.pages;
    string authorinput;
    cout<<"Enter the author name: ";
    cin>>authorinput;
    string titleinput;
    cout<<"Enter the book title: ";
    cin>>titleinput;
    obj1.displayTitle(titleinput);
    obj1.displayAuthor(titleinput,authorinput);
    obj1.displayPages();
    return 0;
}
```

Task 02:

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

class WaterTank {
private:
    double capacity;
    double currentWaterLevel;

public:
    void initialize(double tankHeight, double tankRadius) {
        capacity = ((22 * tankRadius * tankRadius * tankHeight)/7)*1000;
    }

    double getCapacity() {
        return capacity;
    }

    void setWaterlevel(double currentWaterLevel){
        this->currentWaterLevel=currentWaterLevel;
    }

    double fill(double fillAmount) {
        if (currentWaterLevel + fillAmount <= capacity) {
            currentWaterLevel += fillAmount;
        } else {
            cout << "Tank can't be overfilled." << endl;
        }
        return currentWaterLevel;
    }

    double drain(double drainAmount) {
        if (currentWaterLevel >= drainAmount) {
            currentWaterLevel -= drainAmount;
        } else {
            cout << "Not enough water to drain." << endl;
        }
        return currentWaterLevel;
    }

    double getCurrentWaterLevel() {
        return currentWaterLevel;
    }
};
```

```
45
46  int main() {
47      WaterTank tank;
48
49      double tankHeight, tankRadius, currentWaterLevel;
50      cout << "Enter the height(in meter) of the water tank : ";
51      cin >> tankHeight;
52      cout << "Enter the radius(in meter) of the water tank : ";
53      cin >> tankRadius;
54
55      tank.initialize(tankHeight, tankRadius);
56
57      cout << "Tank capacity: " << tank.getCapacity() << " liters." << endl;
58      cout << "Enter the current water level(in liters): ";
59      cin >> currentWaterLevel;
60
61      tank.setWaterlevel(currentWaterLevel);
62
63      double fillAmount;
64      cout << "Enter the amount to fill(in liters): ";
65      cin >> fillAmount;
66      tank.fill(fillAmount);
67
68      cout << "Current water level: " << tank.getCurrentWaterLevel() << " liters." << endl;
69
70      double drainAmount;
71      cout << "Enter the amount to drain(in liters): ";
72      cin >> drainAmount;
73      tank.drain(drainAmount);
74
75      cout << "Current water level: " << tank.getCurrentWaterLevel() << " liters." << endl;
76
77      return 0;
78  }
79
```

2) Write a C++ program to find N th Fibonacci number in iterative and recursive way.
Fibonacci number : 1 1 2 3 5 8 13 21 34

3) Write a C++ program to check, whether the given number is triangle number or not by using the recursive method. (triangle number-a number that can be represented by a pattern of dots arranged in an equilateral triangle with the same number of dots on each side)

Enter the Number : 21

Output:- 21 is a triangle number.

4) Create a zip file in a format of Lab5-Regno-Coursecode including all your code folders and pdf answer sheets.

Upload the zip file on/before given deadline via team.

Any plagiarized work will be given 0 marks.