EC 2010 : Computer Programming

Lab 05

MALHARA R.M.Y.S

2022/E/126

EC2010

2023/11/30

**Task 01**

**Code:**

// MALHARA R.M.Y.S

// 2022/E/126

// EC2010

// Group: C

// Lab: 05

// Program Description: Q1 Task01

// Certificate of Authenticity:

// I certify that the code in the method function main of this project

// is entirely my own work.

#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;

}

**Output :**

Enter number of pages: 7

Enter the author name: sasindu malhara

Enter the book title: Book Title = malhara

malhara was written by sasindu

Number of Pages = 7

**Task 02**

**Code :**

// MALHARA R.M.Y.S

// 2022/E/126

// EC2010

//Group: C

// Lab: 05

// Program Description: Q1 Task02

// Certificate of Authenticity:

// I certify that the code in the method function main of this project

// is entirely my own work.

#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;

    }

};

int main(){

    WaterTank tank;

    double tankHeight, tankRadius, currentWaterLevel;

    cout << "Enter the height (in meter) of the water tank: ";

    cin >> tankHeight;

    cout << "Enter the radius (in meter) of the water tank: ";

    cin >> tankRadius;

    tank.initialize(tankHeight, tankRadius);

    cout << "Tank capacity: " << tank.getCapacity() << "liters." << endl;

    cout << "Enter the current water level (in liters): ";

    cin >> currentWaterLevel;

    tank.setWaterlevel(currentWaterLevel);

    double fillAmount;

    cout << "Enter the amount to fill (in liters): ";

    cin >>fillAmount;

    tank.fill(fillAmount);

    cout << "Current water level: " << tank.getCurrentWaterLevel() << "liters." << endl;

    double drainAmount;

    cout << "Enter the amount to drain(in liters): ";

    cin >> drainAmount;

    tank.drain(drainAmount);

    cout << "Current water level: " << tank.getCurrentWaterLevel () << "liters." << endl;

return 0;

}

**Output :**

Enter the height (in meter) of the water tank: 50

Enter the radius (in meter) of the water tank: 10

Tank capacity: 1.57143e+007liters.

Enter the current water level (in liters): 10000

Enter the amount to fill (in liters): 5000

Current water level: 15000liters.

Enter the amount to drain(in liters): 4000

Current water level: 11000liters.



**Code :**

// MALHARA R.M.Y.S

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// Group: C

// Lab: 05

// Program Description: fibonacciIterative

// Certificate of Authenticity:

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#include<iostream>

using namespace std;

int fibonacciIterative(int n) {

    if(n <= 1)

        return n;

    int fib = 1;

    int prevFib = 1;

    for(int i = 2; i < n; ++i) {

        int temp = fib;

        fib += prevFib;

        prevFib = temp;

    }

    return fib;

}

int main() {

    int n;

    cout << "Enter a positive integer: ";

    cin >> n;

    cout << "Fibonacci number is: " << fibonacciIterative(n);

    return 0;

}

// MALHARA R.M.Y.S

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// EC2010

// Group: C

// Lab: 05

// Program Description: fibonacciRecursive

// Certificate of Authenticity:

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// is entirely my own work.

#include<iostream>

using namespace std;

int fibonacciRecursive(int n) {

    if(n <= 1)

        return n;

    else

        return fibonacciRecursive(n - 1) + fibonacciRecursive(n - 2);

}

int main() {

    int n;

    cout << "Enter a positive integer: ";

    cin >> n;

    cout << "Fibonacci number is: " << fibonacciRecursive(n);

    return 0;

}



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// Program Description: TriangleNumber

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#include <iostream>

using namespace std;

bool isTriangleNumber(int num, int n = 1) {

    if(num == 0)

        return true;

    else if(num < 0)

        return false;

    else

        return isTriangleNumber(num - n, n + 1);

}

int main() {

    int num;

    cout << "Enter a number: ";

    cin >> num;

    if(isTriangleNumber(num))

        cout << num << " is a triangle number.";

    else

        cout << num << " is not a triangle number.";

    return 0;

}