Coursework-2: OOP in C++

TASK - 2

Submitted by

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Task 2: Programming assignments: All questions are mandatory

1. Write a program with a class `Circle` having:
    1. Private member: radius (float)
    2. A constructor to initialize radius

A friend function `compare Two Circles` that takes two Circle objects and prints which circle has the larger area

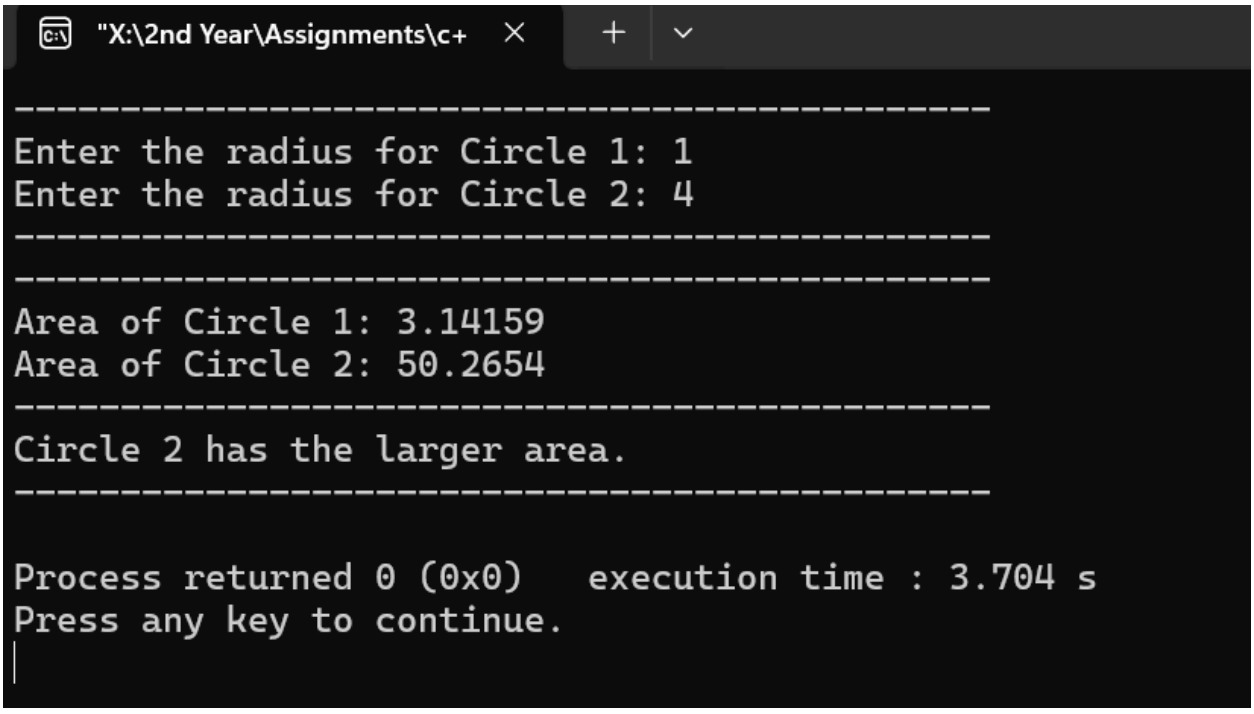
```
#include <iostream>
#include <string>
using namespace std;

class Student

{

private:

    string name;

    string subjects[3] = {"Python", "Networking", "Cybersecurity"};

    int marks[3];

public:

    void getDetails()

        {

            cout << "----------------------------------------" << endl;

            cout << "Enter the student's name: ";

        getline(cin, name);

        for (int i = 0; i < 3; i++)

            {
```

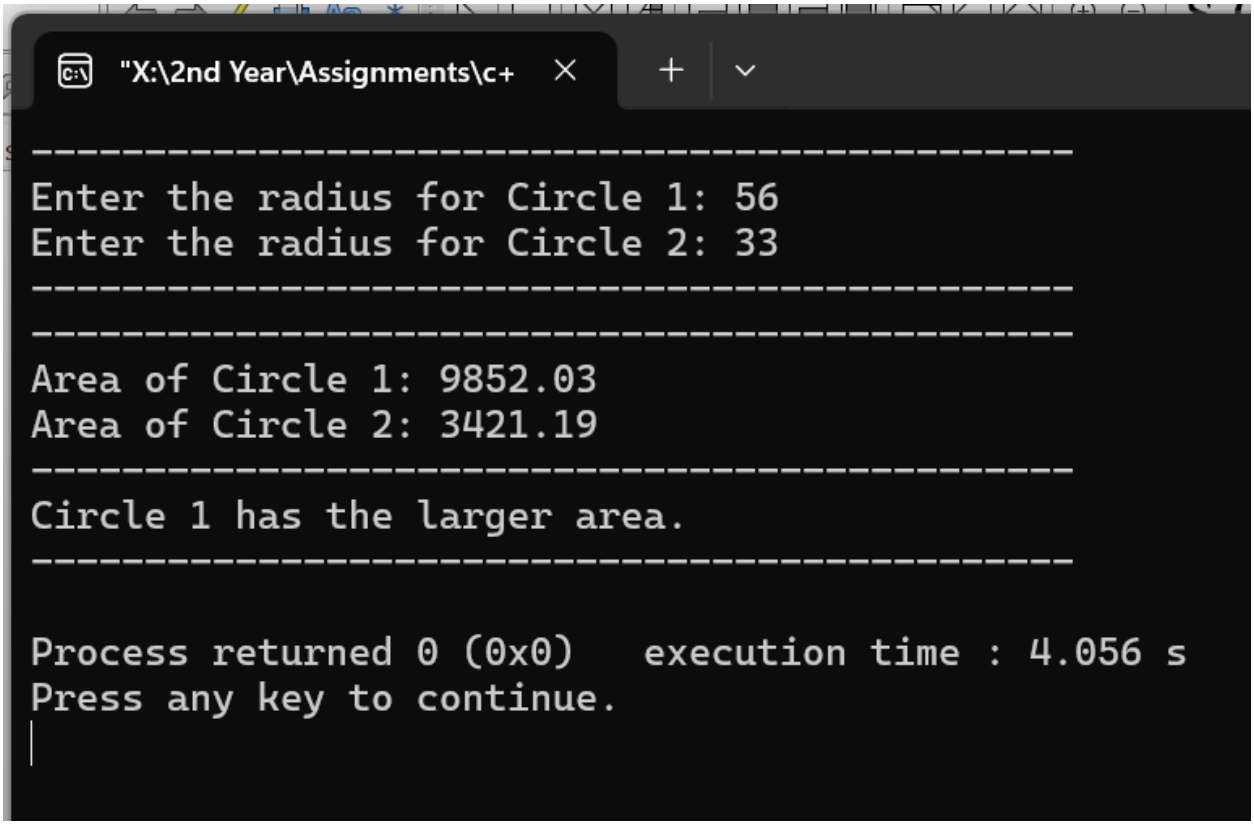
```
            cout << "Enter marks for " << subjects[i] << " (0-100): ";
            cin >> marks[i];
        while (marks[i] < 0 || marks[i] > 100)
            {
                cout << "Invalid input! Marks must be between 0 and 100.
Please enter again: ";
                cin >> marks[i];
            }
        }
        cout << "----------------------------------------" << endl;
    }

    int totalMarks()

    {

        int total = 0;

        for (int i = 0; i < 3; i++)

            {

                total += marks[i];

            }

        return total;
    }


    double averageMarks()

    {

        return static_cast<double>(totalMarks()) / 3.0;
    }

    char calculateGrade()
```

```
{

    double avg = averageMarks();

    if (avg >= 90)
        return 'A';

    else if (avg >= 80)
        return 'B';

    else if (avg >= 70)
        return 'C';

    else if (avg >= 60)
        return 'D';

    else
        return 'F';
}


void displayDetails()

{

    cout << "\n----------------------------------------" << endl;

    cout << "Student Name: " << name << endl;

    for (int i = 0; i < 3; i++)
        {

            cout << subjects[i] << " Marks: " << marks[i] << endl;

        }

    cout << "Total Marks: " << totalMarks() << endl;

    cout << "Average Marks: " << averageMarks() << endl;

    cout << "Grade: " << calculateGrade() << endl;

    cout << "----------------------------------------" << endl;
}
```

```
};

int main()

{
    Student s1;

    s1.getDetails();

    s1.displayDetails();

    return 0;
}
```

3.





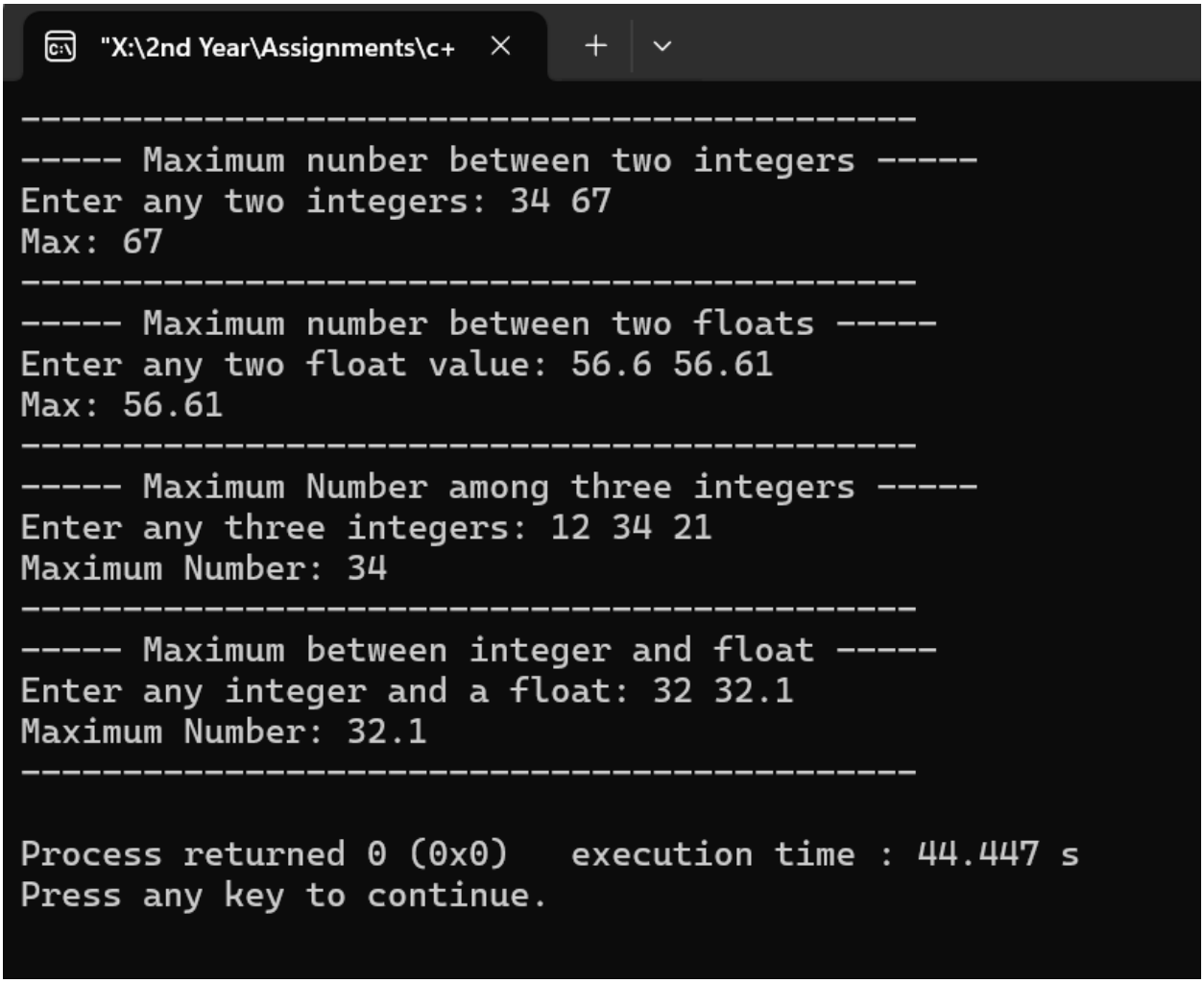
2. Create a program with these overloaded functions named `findMax`:
    1. One that finds maximum between two integers
    2. One that finds maximum between two floating-point numbers
    3. One that finds maximum among three integers

One that finds maximum between an integer and a float

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

class MaxFinder

{
```

```
public:

    int findMax(int a, int b)
    {

        return (a > b) ? a : b;
    }

    float findMax(float a, float b)

    {

        return (a > b) ? a : b;
    }

    int findMax(int a, int b, int c)

    {
        if (a >= b && a >= c)
            return a;

        else if (b >= a && b >= c)
            return b;

        else
            return c;
    }

    float findMax(int a, float b)
    {

        return (a > b) ? a : b;
    }
};

int main() {
    MaxFinder m1;
    int int1, int2, int3;

    float float1, float2;

    cout << "-----------------------------------------" << endl;
    cout << "----- Maximum nunber between two integers -----" << endl;
```

```
    cout << "Enter any two integers: ";
    cin >> int1 >> int2;

    cout << "Max: " << m1.findMax(int1, int2) << endl;

    cout << "-----------------------------------------" << endl;
    cout << "----- Maximum number between two floats -----" << endl;

    cout << "Enter any two float value: ";
    cin >> float1 >> float2;

    cout << "Max: " << m1.findMax(float1, float2) << endl;

    cout << "-----------------------------------------" << endl;
    cout << "----- Maximum Number among three integers -----" << endl;

    cout << "Enter any three integers: ";
    cin >> int1 >> int2 >> int3;

    cout << "Maximum Number: " << m1.findMax(int1, int2, int3) << endl;

    cout << "-----------------------------------------" << endl;

    cout << "----- Maximum between integer and float -----" << endl;

    cout << "Enter any integer and a float: ";

    cin >> int1 >> float1;

    cout << "Maximum Number: " << m1.findMax(int1, float1) << endl;

    cout << "-----------------------------------------" << endl;



    return 0;
}
```


"X:\2nd Year\Assignments\c+

----- Maximum nunber between two integers -----
Enter any two integers: 34 67
Max: 67

----- Maximum number between two floats -----
Enter any two float value: 56.6 56.61
Max: 56.61

----- Maximum Number among three integers -----
Enter any three integers: 12 34 21
Maximum Number: 34

----- Maximum between integer and float -----
Enter any integer and a float: 32 32.1
Maximum Number: 32.1

Process returned 0 (0x0) execution time : 44.447 s
Press any key to continue.