

VIT - Vellore

Name: RONIT MEXSON .

Email: ronit.mexson2024@vitstudent.ac.in

Roll no: 24BAI0036

Phone: 9999999999

Branch: ARUMUGA ARUN R_OOPS

Department: admin

Batch: VL2024250502365

Degree: admin

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BCSE102P_Structured and Object Oriented Programming Lab_VL2024250502365

VIT V_Structured and OOP_Lab 6_COD_Medium_Inheritance and Constructor

Attempt : 1

Total Mark : 10

Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Reema, an environmental enthusiast, is conducting research on forest ecosystems. She needs a program to calculate the annual rainfall for different forest areas.

Write a program that can determine the annual rainfall for square and rectangular forests based on the provided dimensions (side length, length, and width) and the average annual rainfall in millimeters (mm)

Create a class Forest and utilize constructor overloading in the Forest class to handle two types of forests:

For Square Forest: annual rainfall = sideLength * sideLength *

rainfallinmmFor Rectangular Forest: annual rainfall = length * width *
rainfallinmm

Answer

```
// You are using GCC
#include <iostream>
#include <iomanip>
using namespace std;
```

```
class Product {
protected:
    double cost, discount;
```

```
public:
    Product(double c, double d) : cost(c), discount(d) {}
    double calculateTotal() {
        return cost - (cost * discount);
    }
};
```

```
class ElectronicGadget : public Product {
public:
    ElectronicGadget(double c, double d) : Product(c, d) {}
    void calcTotalE() {
        cout << fixed << setprecision(2) << "Electronic Cost: Rs. " << calculateTotal()
<< endl;
    }
};
```

```
class MechanicalDevice : public Product {
public:
    MechanicalDevice(double c, double d) : Product(c, d) {}
    void calcTotalM() {
        cout << fixed << setprecision(2) << "Mechanical Cost: Rs. " <<
calculateTotal() << endl;
    }
};
```

```
class Forest {
public:
    Forest(double sideLength, double rainfallinmm) {
        double annualRainfall = sideLength * sideLength * rainfallinmm;
```

```

        cout << fixed << setprecision(2) << annualRainfall << " mm" << endl;
    }

    Forest(double length, double width, double rainfallinmm) {
        double annualRainfall = length * width * rainfallinmm;
        cout << fixed << setprecision(2) << annualRainfall << " mm" << endl;
    }
};

int main() {
    double sideLength, rainfallinmm1;
    double length, width, rainfallinmm2;

    cin >> sideLength >> rainfallinmm1;
    cin >> length >> width >> rainfallinmm2;

    Forest squareForest(sideLength, rainfallinmm1);
    Forest rectangularForest(length, width, rainfallinmm2);

    return 0;
}

```

Status : Correct

Marks : 10/10