

VIT - Vellore

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BCSE102P_Structured and Object Oriented Programming Lab_VL2024250502365

VIT V_Structured and OOP_Lab 6_COD_Hard_Inheritance and Constructor

Attempt : 1

Total Mark : 10

Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Design a program to calculate the sum of the first N odd or even numbers based on the provided type.

Implement a class Calculator with constructors for different scenarios: one to initialize N and type, one to adjust the starting point if necessary, and a function calculateSum() to calculate the sum.

The program should take input for the type ("odd" or "even") and the value of N and output the sum of the first N numbers of the specified type.

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 Calculator {
private:
    int N;
    string type;
```

```
public:
    Calculator(string t, int n) : type(t), N(n) {}
```

```
int calculateSum() {  
    int sum = 0, start = (type == "odd") ? 1 : 2;  
    for (int i = 0; i < N; ++i) {  
        sum += start;  
        start += 2;  
    }  
    return sum;  
}  
};
```

```
int main() {  
    string type;  
    int N;  
    cin >> type >> N;  
    Calculator calc(type, N);  
    cout << calc.calculateSum() << endl;  
  
    return 0;  
}
```

Status : Correct

Marks : 10/10