



Solution to Exercise on Cpp Inheritance | C++ Tutorials for Beginners #47



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A solution to Exercise on Inheritance in C++

As I have given you an exercise on inheritance to solve in the previous tutorial. In this tutorial, we will see the solution to that exercise. So the question was to make three classes “SimpleCalculator”, “ScientificCalculator” and “HybridCalculator”.

- In “SimpleCalculator” class you have to take input of 2 numbers and perform function (+, -, *, /)
- In “ScientificCalculator” class you have to take input of 2 numbers and perform any 4 scientific operations
- You have to inherit both “SimpleCalculator” and “ScientificCalculator” classes with the “HybridCalculator” class. You have to make an object of the “HybridCalculator” class and display the results of “SimpleCalculator” and “ScientificCalculator” classes.

The solution to the above Question is shown below,

```
class SimpleCalculator {
    int a, b;
public:
    void getDataSimple()
    {
        cout<<"Enter the value of a"<<endl;
        cin>>a;
        cout<<"Enter the value of b"<<endl;
        cin>>b;
    }

    void performOperationsSimple(){
        cout<<"The value of a + b is: "<<a + b<<endl;
        cout<<"The value of a - b is: "<<a - b<<endl;
        cout<<"The value of a * b is: "<<a * b<<endl;
        cout<<"The value of a / b is: "<<a / b<<endl;
    }
};
```

Code snippet 1: Simple Calculator Class

As shown in a code snippet 1,

1. We created a class “SimpleCalculator” which contains two private data members “a” and “b”
2. The class “SimpleCalculator” contains two member functions “getDataSimple” and

“performOperationsSimple”

3. The function “getDataSimple” will take 2 numbers as input

4. The function “performOperationsSimple” will perform the operations “+, -, *, /”

```
class ScientificCalculator{
    int a, b;

public:
    void getDataScientific()
    {
        cout << "Enter the value of a" << endl;
        cin >> a;
        cout << "Enter the value of b" << endl;
        cin >> b;
    }

    void performOperationsScientific()
    {
        cout << "The value of cos(a) is: " << cos(a) << endl;
        cout << "The value of sin(a) is: " << sin(a) << endl;
        cout << "The value of exp(a) is: " << exp(a) << endl;
        cout << "The value of tan(a) is: " << tan(a) << endl;
    }

};
```

Code Snippet 2: Scientific Calculator Class

As shown in code snippet 2,

1. We created a class “ScientificCalculator” which contains two private data members “a” and “b”
2. The class “ScientificCalculator” contains two member functions “getDataScientific” and “performOperationsScientific”
3. The function “getDataScientific” will take 2 numbers as input
4. The function “performOperationsScientific” will perform the operations “cos, sin, exp, tan”

```
class HybridCalculator : public SimpleCalculator, public ScientificCalculator{  
  
};
```

Code Snippet 3: Hybrid Calculator Class

As shown in code snippet 3, we created a “HybridCalculator” class which is inheriting the “SimpleCalculator” class and “ScientificCalculator” class.

```
int main()  
{  
    HybridCalculator calc;  
    calc.getDataScientific();  
    calc.performOperationsScientific();  
    calc.getDataSimple();  
    calc.performOperationsSimple();  
  
    return 0;  
}
```

Code Snippet 4: Main Program

As shown in code snippet 4,

1. We created an object “calc” of the data type “hybridCalculator”
2. The function “getDataScientific” is called using the object “calc”
3. The function “performOperationsScientific” is called using the object “calc”
4. The function “getDataSimple” is called using the object “calc”
5. The function “performOperationsSimple” is called using the object “calc”

The output of the following program is shown in the figure below,

```
Enter the value of a
3
Enter the value of b
4
The value of cos(a) is: -0.989992
The value of sin(a) is: 0.14112
The value of exp(a) is: 20.0855
The value of tan(a) is: -0.142547
```

Figure 1: Program Output 1

```
Enter the value of a
1
Enter the value of b
4
The value of a + b is: 5
The value of a - b is: -3
The value of a * b is: 4
The value of a / b is: 0
```

Figure 2: Program Output 2

Q1. What type of Inheritance are you using?

Ans. Multiple inheritances

Q2. Which mode of Inheritance are you using?

Ans. public SimpleCalculator, public ScientificCalculator

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