

Q1. Write a C++ Program illustrating the single inheritance feature and specific problem where we can use this concept for solve the specific problem using the single inheritance.

```
#include <bits/stdc++.h>

using namespace std;

//Base class
class brand
{
    public:
    string brand;
};

// Sub class inheriting from Base Class
class model : public brand
{
    public:
    int model;
};

//main function
int main()
{
    model latest;
    latest.brand = "Iphone";
    latest.model = 13;
    cout << "Latest brand is " << latest.brand << " Latest model is " <<
latest.model<<endl;

    return 0;
}
```

Latest brand is Iphone Latest model is 13

Q2. Write a C++ Program illustrating the multiple inheritance feature and specific problem where we can use this concept for solve the specific problem using the multiple inheritance.

```
#include<iostream>
```

```
using namespace std;
```

```
class A
```

```
{
```

```
public:
```

```
A() { cout << "A's constructor called" << endl; }
```

```
};
```

```
class B
```

```
{
```

```
public:
```

```
B() { cout << "B's constructor called" << endl; }
```

```
};
```

```
class C: public B, public A // Note the order
```

```
{
```

```
public:
```

```
C() { cout << "C's constructor called" << endl; }
```

```
};
```

```
int main()
```

```
{
```

```
    C c;
```

```
    return 0;
```

```
}
```

```
B's constructor called  
A's constructor called  
C's constructor called
```

Q3. Write a C++ Program illustrating the multilevel inheritance feature and specific problem where we can use this concept for solve the specific problem using the multilevel inheritance.

```
#include <iostream>

using namespace std;

class country
{
public:
    country()
    {
        cout << "India\n";
    }
};

class state : public country
{
public:

    state()
    {
        cout << "Himachal Pradesh\n";
    }
};

class city : public state
{
public:
```

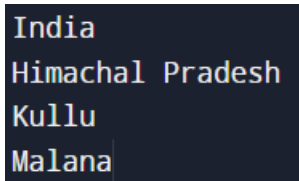
```

    city()
    {
        cout<<"Kullu\n";
    }
};

class village : public city{
    public:
    village(){
        cout<<"Malana";
    }
};

int main()
{
    village a;
    return 0;
}

```



```

India
Himachal Pradesh
Kullu
Malana

```

Q4. Write a C++ Program illustrating the hybrid inheritance feature and specific problem where we can use this concept for solve the specific problem using the hybrid inheritance.

```

#include <iostream>

using namespace std;

class vehicle
{
    public:
    vehicle()
    {
        cout<< "This is a vehicle\n";
    }
}

```

```
};  
  
class Car: public vehicle  
{  
public:  
    Car()  
    {  
        cout<< "This is a car\n";  
    }  
};  
  
class Racing  
{  
public:  
    Racing()  
    {  
        cout<< "This is for Racing\n";  
    }  
};  
  
class Ferrari: public Car, public Racing  
{  
public:  
    Ferrari()  
    {  
        cout<< "Ferrari is a Racing Car\n";  
    }  
  
};  
  
int main() {  
    Ferrari f;  
    return 0;  
}
```

```
This is a vehicle
This is a car
This is for Racing
Ferrari is a Racing Car
```

Q5. Write a C++ Program illustrating the hierarchal inheritance feature and specific problem where we can use this concept for solve the specific problem using the hierarchal inheritance.

```
#include <iostream>

using namespace std;

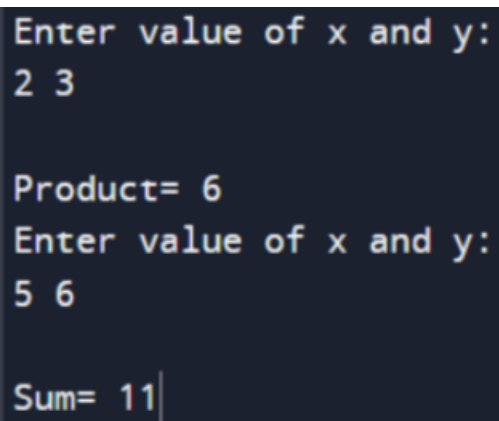
class A // Base class
{
public:
int x, y; // data members
void getdata() // to input x and y
{
cout<< "Enter value of x and y:\n";
cin>> x >> y;
}
};

class B : public A //B is derived from class base
{
public:
void product()
{
cout<< "\nProduct= " << x * y << endl; // Perform product
}
};

class C : public A //C is also derived from class base
{
public:
void sum()
```

```
{
cout<< "\nSum= " << x + y; // Perform sum
}
};

int main()
{
    B obj1; //object of derived class B
    C obj2; //object of derived class C
    obj1.getdata(); // input x and y
    obj1.product();
    obj2.getdata();
    obj2.sum();
    return 0;
}
```

A screenshot of a terminal window with a dark background and light-colored text. It shows the output of a C++ program. The first prompt is "Enter value of x and y:", followed by the input "2 3". The next line shows "Product= 6". The second prompt is "Enter value of x and y:", followed by the input "5 6". The final line shows "Sum= 11" with a vertical cursor bar at the end.

```
Enter value of x and y:
2 3

Product= 6
Enter value of x and y:
5 6

Sum= 11|
```