Inheritance in C++

Hierarchical Inheritance

```
// C++ program to demonstrate Hierarchical Inheritance

#include <iostream>
using namespace std;

// Base class
class Vehicle {
public:
    Vehicle() {
        cout << "This is a Vehicle" << endl;
    }
};

// First derived class
class Car : public Vehicle { };

// Second derived class
class Bus : public Vehicle { };

int main() {
    Car obj1;
    Bus obj2;
    return 0;
}
```

Hybrid Inheritance

```
// C++ program demonstrating Hybrid Inheritance

#include <iostream>
using namespace std;

// Base class
class Vehicle {
public:
    Vehicle() {
        cout << "This is a Vehicle" << endl;
    }
```

```
};

// Another base class
class Fare {
public:
    Fare() {
        cout << "Fare of Vehicle" << endl;
    }
};

// Derived class inheriting from Vehicle
class Car : public Vehicle { };

// Derived class inheriting from both Vehicle and Fare
class Bus : public Vehicle, public Fare { };

int main() {
    Bus obj2;
    Car obj1;
    return 0;
}
```

Multiple Inheritance

```
// C++ program demonstrating Multiple Inheritance

#include <iostream>
using namespace std;

// First base class
class Vehicle {
public:
    int a = 0;
    Vehicle() {
        cout << "This is a Vehicle" << endl;
    }
    void x() {
        cout << "Enter any integer: ";
        cin >> a;
    }
};

// Second base class
class FourWheeler {
```

```
public:
    FourWheeler() {
        cout << "This is a 4-wheeler Vehicle" << endl;
    }
};

// Derived class inheriting from both Vehicle and FourWheeler
class Car : public FourWheeler, public Vehicle {
public:
    Car() {
        cout << "4-wheelers are Cars" << endl;
    }
};

int main() {
    Car obj;
    obj.x();
    cout << "The entered number is: " << obj.a;
    return 0;
}
```

Multi-Level Inheritance

```
// C++ program demonstrating Multi-Level Inheritance

#include <iostream>
using namespace std;

// Base class
class Vehicle {
protected:
    Vehicle() {
        cout << "This is a Vehicle" << endl;
    }
};

// Derived class inheriting from Vehicle
class FourWheeler : protected Vehicle {
public:
    FourWheeler() {
        cout << "Objects with 4 wheels are vehicles" << endl;
    }
};
```

```
// Derived class inheriting from FourWheeler (Multi-Level Inheritance)
class Car : public FourWheeler {
public:
    void displayCar() {
        cout << "Car has 4 Wheels" << endl;
    }
};

int main() {
    Car obj;
    obj.displayCar();
    return 0;
}
```

Single Inheritance

```
// C++ program demonstrating Single Inheritance

#include <iostream>
using namespace std;

// Base class
class Vehicle {
public:
    Vehicle() {
        cout << "This is a Vehicle" << endl;
    }
};

// Derived class inheriting from a single base class
class Car : public Vehicle { };

int main() {
    Car obj;
    return 0;
}
```