

1. Class and Object Basics

```
#include <iostream>
using namespace std;

class Student {
public:
    string name;
    int roll_no;

    void getDetails() {
        cin >> name >> roll_no;
    }

    void display() {
        cout << "Name: " << name << endl;
        cout << "Roll No: " << roll_no << endl;
    }
};

int main() {
    Student s;
    s.getDetails();
    s.display();
    return 0;
}
```

2. Constructor Initialization

```
#include <iostream>
using namespace std;

class Book {
    string title;
    float price;
public:
    Book(string t, float p) {
        title = t;
        price = p;
    }

    void display() {
        cout << "Title: " << title << endl;
        cout << "Price: " << price << endl;
    }
};

int main() {
    Book b("C++ Programming", 299.50);
    b.display();
    return 0;
}
```

3. Single Inheritance

```
#include <iostream>
using namespace std;

class Person {
public:
    string name;
};

class Employee : public Person {
public:
    float salary;

    void display() {
        cout << "Name: " << name << endl;
        cout << "Salary: " << salary << endl;
    }
};

int main() {
    Employee e;
    e.name = "John";
    e.salary = 50000;
    e.display();
    return 0;
}
```

4. Multilevel Inheritance

```
#include <iostream>
using namespace std;

class Vehicle {
public:
    string brand = "Generic";
};

class Car : public Vehicle {
public:
    string model = "Sedan";
};

class ElectricCar : public Car {
public:
    int battery = 100;

    void displayInfo() {
        cout << "Brand: " << brand << ", Model: " << model << ", Battery: " << battery
        << "% " << endl;
    }
};

int main() {
```

```
    ElectricCar ec;  
    ec.displayInfo();  
    return 0;  
}
```

5. Method Overloading

```
#include <iostream>  
using namespace std;  
  
class Calculator {  
public:  
    int add(int a, int b) {  
        return a + b;  
    }  
  
    int add(int a, int b, int c) {  
        return a + b + c;  
    }  
  
    float add(float a, float b) {  
        return a + b;  
    }  
};  
  
int main() {  
    Calculator calc;  
    cout << calc.add(5, 10) << endl;  
    cout << calc.add(1, 2, 3) << endl;  
    cout << calc.add(2.5f, 3.5f) << endl;  
    return 0;  
}
```