**Task: Understanding Virtual Functions and Inheritance in C++**

**Objective**: Create a C++ program to demonstrate the concept of virtual functions and inheritance in object-oriented programming.

**Instructions:**

1. **Class Definitions**:
2. **Base Class**:
3. Create a class named Base that contains:
4. A public virtual function show(), which prints "Base class show function" to the console.
5. **Derived Class**:
6. Create a class named Derived that inherits from the Base class:
7. Override the show() function to print "Derived class show function" to the console.
8. **Double Class**:
9. Create a class named doubleclass that inherits from the Derived class:
10. Override the show() function to print "Double class show function" to the console.
11. **Main Function**:
12. In the main function:
13. Create a pointer of type Base called basePtr.
14. Create an object of the Derived class named derivedObj.
15. Point basePtr to derivedObj.
16. Call basePtr->show() and observe the output, which should demonstrate polymorphism (calling the overridden method in the derived class).
17. Additionally:
18. Create a pointer of type Derived called Devptr.
19. Create an object of the doubleclass named obj.
20. Point Devptr to obj.
21. Call Devptr->show() and observe the output, which should demonstrate further inheritance and the overriding of methods.
22. **Expected Output**:
23. When the program is executed, the output should be:

Derived class show function

Double class show function

**Example Code Structure:**

Follow the provided code structure to implement your program. Ensure to include the necessary headers and use the correct namespaces.

**Task: Understanding Polymorphism with Virtual Functions in C++**

**Objective**: Create a C++ program to demonstrate polymorphism using virtual functions in object-oriented programming.

**Instructions:**

1. **Class Definitions**:
2. **Base Class** (A):
3. Create a class named A that contains:
4. A public virtual function show() which prints "parent class A" to the console.
5. **Derived Classes**:
6. Create a class named B that inherits from class A:
7. Override the show() function to print "child class B" to the console.
8. Create another class named C that also inherits from class A:
9. Override the show() function to print "the child class C" to the console.
10. **Main Function**:
11. In the main function:
12. Declare instances of the classes:
13. A a1;
14. B a2;
15. C a3;
16. Create a pointer of type A called ptr.
17. Use this pointer to point to the objects:
18. First, point ptr to a1 and call ptr->show().
19. Then, point ptr to a2 and call ptr->show().
20. Finally, point ptr to a3 and call ptr->show().
21. **Expected Output**:
22. When the program is executed, the output should be:

parent class A

child class B

the child class C

**Example Code Structure:**

Follow the provided code structure to implement your program. Make sure to include necessary headers and use the correct namespaces.