1. Create a class with a function that prints "This is parent class" and its subclass with another function that prints "This is child class". Now, create an object for each class and call
    a. Function of the parent class by the object of the parent class
    b. Function of the child class by the object of the child class
    c. Function of the parent class by the object of the child class.
2. Create a class named 'Member' having the following members:
   Data members
   1 - Name
   2 - Age
   3 - Phone number
   4 - Address
   it also has a function named 'printSalary' which prints the salary of the members. Two classes 'Employee' and 'Manager' inherits the 'Member' class. The 'Employee' and 'Manager' classes have data members 'specialization' and 'department' respectively. Now, assign name, age, phone number, address and salary to an employee and a manager by making an object of both of these classes and print the same.
3. Create a class named 'Rectangle' with two data members 'length' and 'breadth' and two functions to print the area and perimeter of the rectangle respectively. Its constructor having parameters for length and breadth is used to initialize the length and breadth of the rectangle. Let class 'Square' inherit the 'Rectangle' class with its constructor having a parameter for its side (suppose s) calling the constructor of its parent class. Print the area and perimeter of a rectangle and a square.
4. Now repeat the above example to print the area of 10 squares.
   [Hint-Use array of objects]
5. Create a class named 'Shape' with a function to print "This is a shape". Then create two other classes named 'Rectangle' and 'Circle' inheriting the Shape class, both having a function to print "This is rectangular shape" and "This is circular shape" respectively. Create a subclass 'Square' of 'Rectangle' having a function to print "Square is a rectangle". Now call the function of the 'Shape' and the 'Rectangle' class by the object of the 'Square' class.
6. Write a program to print the names of students by creating a Student class. If no name is passed while creating an object of the Student class, then the name should be "Unknown", otherwise the name should be equal to the String value passed while creating the object of the Student class.
7. Create a class named 'Rectangle' with two data members- length and breadth and a function to calculate the area which is 'length*breadth'. The class has three constructors which are:
   1 - having no parameter - values of both length and breadth are assigned zero.
   2 - Having two numbers as parameters - the two numbers are assigned as length and

breadth respectively.
3 - Having one number as parameter - both length and breadth are assigned that number.
Now, create objects of the 'Rectangle' class having none, one and two parameters and print their areas.

8. Suppose you have a Bank with an initial amount of $50 and you have to add some more amount to it. Create a class **'AddAmount'** with a data member named 'amount' with an initial value of $50. Now make two constructors of this class as follows:
    a. without any parameter - no amount will be added to the Bank
    b. Having a parameter which is the amount that will be added to the Bank
    Create an object of the **'AddAmount'** class and display the final amount in the Bank.
9. Create a class named 'Programming'. While creating an object of the class, if nothing is passed to it, then the message "I love programming languages" should be printed. If some String is passed to it, then in place of "programming languages" the name of that String variable should be printed.
    For example, while creating the object if we pass "cpp", then "I love cpp" should be printed.
10. Create a class named 'PrintNumber' to print various numbers of different datatypes by creating different functions with the same name 'printn' having a parameter for each datatype.
11. Create a class to print an integer and a character using two functions having the same name but different sequence of the integer and the character parameters.
    For example, if the parameters of the first function are of the form (int n, char c), then that of the second function will be of the form (char c, int n).
12. Create a class to print the area of a square and a rectangle. The class has two functions with the same name but different number of parameters. The function for printing the area of rectangle has two parameters which are its length and breadth respectively while the other function for printing the area of square has one parameter which is the side of the square.
13. Create a class 'Student' with three data members which are name, age and address. The constructor of the class assigns default values to name as "unknown", age as '0' and address as "not available". It has two functions with the same name 'setInfo'. First function has two parameters for name and age and assigns the same whereas the second function takes has three parameters which are assigned to name, age and address respectively. Print the name, age and address of 10 students.
    [Hint - Use array of objects]
14. Create a class 'Degree' having a function 'getDegree' that prints "I got a degree". It has two subclasses namely 'Undergraduate' and 'Postgraduate' each having a function with the same name that prints "I am an Undergraduate" and "I am a Postgraduate" respectively. Call the function by creating an object of each of the three classes.
15. A boy has his money deposited $1000, $1500 and $2000 in banks-Bank A, Bank B and Bank C respectively. We have to print the money deposited by him in a particular bank.

Create a class 'Bank' with a function 'getBalance' which returns 0. Make its three subclasses named 'BankA', 'BankB' and 'BankC' with a function with the same name 'getBalance' which returns the amount deposited in that particular bank. Call the function 'getBalance' by the object of each of the three banks.

16. A class has an integer data member 'i' and a function named 'printNum' to print the value of 'i'. Its subclass also has an integer data member 'j' and a function named 'printNum' to print the value of 'j'. Make an object of the subclass and use it to assign a value to 'i' and to 'j'. Now call the function 'printNum' by this object.
17. All the banks operating in Bangladesh are controlled by BB. BB has set a well-defined guideline (e.g. minimum interest rate, minimum balance allowed, maximum withdrawal limit etc) which all banks must follow. For example, suppose BB has set minimum interest rate applicable to a saving bank account to be 4% annually; however, banks are free to use 4% interest rate or to set any rates above it.
18. Write a program to implement bank functionality in the above scenario. Note: Create few classes namely Customer, Account, BB (Base Class) and few derived classes (IBBL, SIBL, PNB etc). Assume and implement required member variables and functions in each class.

Hint:

```
{
       //Personal Details ...
       // Few functions ...
}
Class Account
{
       // Account Detail ...
       // Few functions ...
}
Class BB
{
    Customer c; //hasA relationship
    Account a;      //hasA relationship
    ..
    Public double GetInterestRate() {   }
    Public double GetWithdrawalLimit() {      }
}
Class IBBL:
public BB
{
       //Use BB functionality or define own functionality.
}
Class SIBL:
public BB
{
       //Use BB functionality or define own functionality.
}
```

19. Create two classes named Mammals and MarineAnimals. Create another class named BlueWhale which inherits both the above classes. Now, create a function in each of these classes which prints "I am mammal", "I am a marine animal" and "I belong to both the categories: Mammals as well as Marine Animals" respectively. Now, create an object for each of the above class and try calling
    a. function of Mammals by the object of Mammal
    b. of MarineAnimal by the object of MarineAnimal
    c. function of BlueWhale by the object of BlueWhale
    d. function of each of its parent by the object of BlueWhale
20. Make a class named Fruit with a data member to calculate the number of fruits in a basket. Create two other class named Apples and Mangoes to calculate the number of apples and mangoes in the basket. Print the number of fruits of each type and the total number of fruits in the basket.
21. We want to calculate the total marks of each student of a class in Physics, Chemistry and Mathematics and the average marks of the class. The number of students in the class are entered by the user. Create a class named Marks with data members for roll number, name and marks. Create three other classes inheriting the Marks class, namely Physics, Chemistry and Mathematics, which are used to define marks in individual subject of each student. Roll number of each student will be generated automatically.
22. We want to store the information of different vehicles. Create a class named Vehicle with two data member named mileage and price. Create its two subclasses
    *Car with data members to store ownership cost, warranty (by years), seating capacity and fuel type (diesel or petrol).
    *Bike with data members to store the number of cylinders, number of gears, cooling type(air, liquid or oil), wheel type(alloys or spokes) and fuel tank size(in inches)
    Make another two subclasses Audi and Ford of Car, each having a data member to store the model type. Next, make two subclasses Walton and TVS, each having a data member to store the make-type.
    Now, store and print the information of an Audi and a Ford car (i.e. model type, ownership cost, warranty, seating capacity, fuel type, mileage and price.) Do the same for a Walton and a TVS bike.
23. Create a class named Shape with a function that prints "This is a shape". Create another class named Polygon inheriting the Shape class with the same function that prints "Polygon is a shape". Create two other classes named Rectangle and Triangle having the same function which prints "Rectangle is a polygon" and "Triangle is a polygon" respectively. Again, make another class named Square having the same function which prints "Square is a rectangle".
    Now, try calling the function by the object of each of these classes.