Experiment No-04: Inheritance in C++.

Objectives

- Familiarize with Inheritance.
- Explain the concept of single and Multi level inheritance in OOP.
- Solve various problems in order to comprehend the above topics.

Example 1: A C++ program to demonstrate the single level inheritance.

```
#include <iostream>
using namespace std;
// Base class
class Shape {
protected:
  int width;
  int height;
public:
  void setWidth(int w) {
    width = w;
  }
  void setHeight(int h) {
    height = h;
  }
};

// Derived class
class Rectangle: public Shape {
  public:
  int getArea() {
    return (width * height);
  }
};

int main(void) {
  Rectangle rect;
  rect.setWidth(10);
  rect.setHeight(12);
  // Print the area of the object.
  cout << "Total area: " << rect.getArea() << endl;

  return 0;
}
```

Example 2: A C++ program to demonstrate the Multilevel Inheritance.

```
#include <iostream>
using namespace std;
class base //single base class
{
   public:
   int x;
   void getdata()
   {
      cout << "Enter value of x= "; cin >> x;
   }
};
class derive1 : public base // derived class from base class
{
   public:
   int y;
   void readdata()
   {
       cout << "\nEnter value of y= "; cin >> y;
   }
};
class derive2 : public derive1 // derived from class derive1
{
   private:
   int z;
   public:
   void indata()
   {
      cout << "\nEnter value of z= "; cin >> z;
   }
   void product()
   {
       cout << "\nProduct= " << x * y * z;
   }
};
int main()
{
    derive2 a;     //object of derived class
    a.getdata();
    a.readdata();
    a.indata();
    a.product();
    return 0;
}               //end of program
```

*** For better understanding please feel free to search on internet because it is the best source of learning. ***

Practice Exercise

1. Write a C++ program to add two numbers. Accept these two numbers from the user in base class and display the sum of these two numbers in derived class.

2. Write a C++ program to calculate the percentage of a student. Accept the marks of five subjects (Physics, Chemistry, Math, Biology, and English) in base class. A class will derived from the base class which includes a function to find the total marks obtained and another class derived from this first derived class which calculates and displays the percentage of student.
Hints: Use array for taking the marks of a student.

[Resource Link 1]
[Resource Link 2]
[Resource Link 3]