Assignment-31
new and delete operator, Inheritance

1. Define a class Person with instance members name and age. Also define member functions setName(), setAge(), getName(), getAge(). Now define class Employee by inheriting Person class. In the Employee class define empid and salary as instance members. Also define setEmpid, setSalary, getEmpid, getSalary.
2. Write a C++ program to add two numbers using single inheritance. Accept these two numbers from the user in base class and display the sum of these two numbers in derived class.
3. Write a C++ program to calculate the percentage of a student using multi-level inheritance. Accept the marks of three subjects in base class. A class will be derived from the above mentioned class which includes a function to find the total marks obtained and another class derived from this class which calculates and displays the percentage of students.
4. Write a C++ program to design a base class Person (name, address, phone_no). Derive a class Employee (eno, ename) from Person. Derive a class Manager (designation, department name, basic-salary) from Employee. Write a menu driven program to:

   a. Accept all details of 'n' managers.
   b. Display manager having highest salary
   Output -

```
How Many Managers You Want to Enter? : 2

Enter Details of Manager
-----------------------
Enter Employee No. : 101

Enter Name : Surendra

Enter Address : Pune

Enter Phone No. : 02045777

Enter Designation : Manager

Enter Department Name : Production

Enter Basic Salary : 75000

Enter Details of Manager
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Enter Employee No. : 202

Enter Name : Prashant

Enter Address : Mumbai

Enter Phone No. : 02232777

Enter Designation : Manager

Enter Department Name : Animation

Enter Basic Salary : 85000

Manager with Highest Salary is : 85000
And, Manager Name is : Prashant
```

5.   Write a C++ program to define a base class Item (item-no, name, price). Derive a class Discounted-Item (discount-percent). A customer purchases 'n' items. Display the item-wise bill and total amount using appropriate format.

Output -

```
How many items you want to enter? : 2

Enter Item Name : Shirt

Enter Item No. : 1002

Enter Item Price : 500

Enter Discount Percent : 20

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Enter Item Name : Jeans

Enter Item No. : 2002

Enter Item Price : 700

Enter Discount Percent : 20

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Item Name : Shirt
Item No. : 1002
Item Price : 500
Discount Percent : 20
Discounted Price : 400
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Item Name : Jeans
Item No. : 2002
Item Price : 700
Discount Percent : 20
Discounted Price : 560
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Total Price : 1200
Total Discount : 240
```

6.   Write a C++ program to demonstrate how a common friend function can be used to exchange the private values of two classes. (Use call by reference method).

7.   Write class declarations and member function definitions for a C++ base class to represent an Employee (emp-code, name).

Derive two classes as Fulltime (daily rate, number of days, salary) and Parttime (number of working hours, hourly rate, salary).

Write a menu driven program to:

1. Accept the details of 'n' employees.
2. Display the details of 'n' employees.
3. Search a given Employee by emp-code.

Output -

```
1.Enter Record
2.Display Record
3.Search Record
4.Quit

Enter Your Choice : 2

- - - - - - - - - - - - - - - - - - - - - - - - -

Employee Number    :   1001
Employee Name      :   Prajakta
Salary             :   17000
Status             :   Fulltime
- - - - - - - - - - - - - - - - - - - - - - - -


- - - - - - - - - - - - - - - - - - - - - - - -

Employee Number    :   1002
Employee Name      :   Sapna
Salary             :   16000
Status             :   Fulltime
- - - - - - - - - - - - - - - - - - - - - - - -


- - - - - - - - - - - - - - - - - - - - - - - -

Employee No     :   2001
Employee Name   :   Rohit
Salary          :   3600
Status          :   Part time
- - - - - - - - - - - - - - - - - - - - - - - -
```

8 - In a bank, different customers have savings account. Some customers may have taken a loan from the bank. So bank always maintain information about bank depositors and borrowers.

Design a Base class Customer (name, phone-number). Derive a class Depositor(accno, balance) from Customer.

Again, derive a class Borrower (loan-no, loan-amt) from Depositor.

Write necessary member functions to read and display the details of 'n' customers.

Output -

```
Enter No. of Customer Details You Want  :  2        Details of Customer

Enter Customer Name       :  Prajakta                -----------------------------------

Enter Customer Phone No. :  35146                     Customer Name            :  Prajakta
                                                      Customer Phone No.       :  35146
Enter Customer A/c No     :  123                      Customer A/c No          :  123
                                                      Balance                  :  50000
Enter Balance             :  50000                   -----------------------------------

Enter Loan No             :  321                      Loan No                  :  321
                                                      Loan Amount              :  10000
Enter Loan Amount         :  10000                   -----------------------------------

-----------------------------------                  Details of Customer

Enter Customer Name       :  Sapna                    -----------------------------------

Enter Customer Phone No. :  26479                     Customer Name            :  Sapna
                                                      Customer Phone No.       :  26479
Enter Customer A/c No     :  456                      Customer A/c No          :  456
                                                      Balance                  :  60000
Enter Balance             :  60000                   -----------------------------------

Enter Loan No             :  654                      Loan No                  :  654
                                                      Loan Amount              :  12000
Enter Loan Amount         :  12000                   -----------------------------------

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```

9. Write a C++ program to implement the following class hierarchy:

Student: id, name
StudentExam (derived from Student): Marks of 6 subjects
StudentResult (derived from StudentExam) : percentage

Define appropriate functions to accept and display details.

Create 'n' objects of the StudentResult class and display the marklist.

Output -

```
Enter No. of Students You Want? : 1

----------------------------------------
Enter Roll No.                : 1

Enter Student Name            : Prajakta

Enter Marks for Subject 1 : 65

Enter Marks for Subject 2 : 45

Enter Marks for Subject 3 : 75

Enter Marks for Subject 4 : 95

Enter Marks for Subject 5 : 40

Enter Marks for Subject 6 : 60

----------------------------------------
********** Student Marklist **********
----------------------------------------
Roll No.                :  1
Student Name            :  Prajakta

Marks of Subject 1    :  65
Marks of Subject 2    :  45
Marks of Subject 3    :  75
Marks of Subject 4    :  95
Marks of Subject 5    :  40
Marks of Subject 6    :  60

Total Percentage      :  63.3333
----------------------------------------
```

10. Consider two base classes
worker(int code, char name, float salary),
officer(float DA, HRA)
class manger(float TA(is 10% of salary), gross salary) is derived from both base classes.
Write necessary member functions.

Output -

```
Enter Manager Count : 1

Enter Worker Information for 1

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Enter Code    : 1001

Enter Name    : Surendra

Enter Salary : 50000

Enter DA      : 600

Enter HRA     : 700

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Manager Information
------------------------------
Code          : 1001
Name          : Surendra
Salary        : 50000
DA            : 600
HRA           : 700
TA            : 5000
Gross Salary  : 56300
```