CLASS AND OBJECT ASSIGNMENT

1. Input student Name, Rollno, Branch, Age and telephoneno as a record through structure and display all the information.

2. Input Name, Designation, Basic Salary of employee into the employee record and calculate

    TA = 55% of Basic

    DA = 65% of Basic

    HRA = 35% of Basic

    PF = 12% of Basic

    Also calculate Group Salary and net salary

    a) Use Array to structure to input minimum 3 records (3 persons data) and display all the   records sequentially.

    b) Use pointer to structure to input minimum 3 records (3 persons data) and display all the records sequentially.

3. Input your date of Birth and current date through structure and calculate your age in Year, Month and days assume that 1 year = 365 days and 1 month = 30 days.

4. Create a student structure having data members roll, class & address, mark structure having data members roll, sub1, sub2, sub3 and a student detail structure having data members roll, class total marks, no of subject pass & overall pass. Those students who have appeared the exam, their information only stored in the mark structure array. Write a program which will collect the information & fill the data in student detail array depending on the pass criteria.

5. Define an **ADT** (i.e. **Abstract Data Type**) named **student** contains the following member elements: -

- Member Data:
  To hold **enrolment**, marks obtained in **c**, **cpp**, and **java** and **remark.**

- Member Functions:
  void input(int enrol, float c, float cpp, float java)
  To accept enrolment and marks detail of a student.

  void process()
  To evaluate the marks and set **remark** as **PASS** if passed in each paper otherwise **FAIL**. C and CPP are of 60 marks and JAVA is of 75 marks. To pass a paper the marks must be minimum 50%.

  void output()
  To display the result of a student in formatted way.

6. Define an **ADT** (i.e. **Abstract Data Type**) named **number** contains the following member elements: -
   - Member Data:
     To hold a number

   - Member Functions:
     void input()
     To accept a number interactively from its user and store it in the object.

     void output()
     To display the number from the object.

     void sign()
     To display the sign of the number as **positive**, **negative**, or **zero**.

     void nature
     To display the nature of the number as **even** or **odd**.

     void prime(), void perfect(), void armstrong()
     To display the message whether the number is **prime**, **perfect**, **armstrong** or not.

7. Define an **ADT** (i.e. Abstract Data Type) named **number**, which contains the following member elements: -

- **Member Data:**
  To hold a number

- **Member Functions:**
  a) All the constructors like **default**, **overloaded**, and **copy constructors** to initialize the object of the class.
  b) All the way to accept input to the object like **input(), input(int)** etc.
  c) All the way to output the values from the object like **output(),** int output().
  d) Maximum possible tools like **sign()**, **nature()**, **prime()**, **perfect()**, **armstrong()**, **count_digits()**, **sum_digits()**, **sum()**, **prod()**, **avg()**, etc.

8. Define an **ADT** (i.e. Abstract Data Type) named **string**, which contains the following member elements: -

- **Member Data:**
  To hold a string
- **Member Functions:**
  a) All the constructors like **default**, **overloaded**, and **copy constructors** to initialize the object of the class.
  b) All the way to accept input to the object like **input(), input(int)** etc.
  c) All the way to output the values from the object like **output(),** int output().
  d) Maximum possible tools like **reverse()**, **strcopy()**, **strcomp()**, **strlength()**, **palindrome()**, **wordcount()** etc.

9. Define an **ADT** (i.e. Abstract Data Type) named **employee**, which contains the following member elements: -

a. Member Data:
   To hold the employee code, name, post, and basic salary
b. Member Functions:
   a) All the constructors like **default**, **overloaded**, and **copy constructors** to initialize the object of the class.
   b) All the way to accept input to the object like **input(), input(int)** etc.
   c) All the way to output the values from the object like **output(),** int output().
   d) Maximum possible tools like **calc_salary()**.

10. Write a C++ program to find the area of circle using class circle which have following details:
    a. Accept radius from the user
    b. Calculate the area
    c. Display the result

11. Write a C++ program to define a class employee having members Emp-id, Emp-name, basic salary and functions accept() and display(). Calculate DA @ 25% of basic salary, HRA @ 8% of basic salary, tax @ 15% of basic salary. Display the payslip using appropriate output format.

12. Write a class to represent a vector. Include member functions to perform the following tasks:
    1) To create the vector
    2) To modify the value of given element.
    3) To display the vector in the form (10, 20, 30,…)

13. Create a C++ class Date which contains:
    - Day
    - Month
    - Year
    Write necessary member functions to accept and display a date using >> and << operators.

14. Define a class to represent a bank account. Include the following members:
    Data members:
    1) Name of the depositor
    2) Account number
    3) Type of account
    4) Balance amount in the account.

    Member functions:
    1) To assign initial values
    2) To deposit an amount
    3) To withdraw an amount after checking the balance
    4) To display name and balance.
    Write a main program to test the program.

15. Create a class staff having fields: Staff_id , name, salary. Write a menu driven program for:
    1) To accept the data
    2) To display the data
    3) To sort the data by name

16. Create a class phone having data members: STD code, Exchange code, Number. Write a C++ program to accept details from users(max 10) and change input phone number to new phone number using following criteria:

    a) Add 1 to 1st digit of STD code (If digit is 9, it becomes 10)
    b) The exchange code is retained as it is.
    c) In 3rd part of structure, 1st two digits should be reversed. Ex: I/P => 212-766-9801 =>O/P: 312-766-9801

    Display all changed phone numbers.

17. Create two classes dist1(meters, centimeters) and dist2(feet, inches). Accept two distances from the user, one in meter and centimeter and other in feet and inches. Find the sum and differences of the two distances. Display the result in, meters and centimeters as well as feet and inches (using friend function). (1 inch = 2.54 cm and 1 feet = 0.30 m)

18. Create a class for an electricity board that charges the following rates to users
    a) For first 100 units : 40p per unit
    b) For next 200 units : 50p per unit
    c) Beyond 300 units   : 60p per unit

    All users are charged a minimum of Rs.500. If the total cost is more than Rs.250.00 then an additional charges of 15% are added.

    Write a C++ program using class to read the names of users & number of units consumed & print out the charges with names.