R O L L N O : 10
N A M E : Pradip S Karmakar
S U B J E C T : Object Oriented Concepts & Programming

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	Practical Assignment 1	**69**		
1	**Demonstrate the use of static variables in a class by using it to count the number of objects created in the program.**			
2	**Define a class to represent a bank account. Include the following members : DATA MEMBERS MEMBER FUNCTIONS** **Name of depositor** **(1) To assign initial values Account Number** **(2) To Deposit the amount Type of Account** **(3) To withdraw an amount after checking the Balance amount in account** **(4) To display name and balance Write C++ program to handle 10 customers.**			
3	**Create class STUDENT having rollno, name and age as data members, also take subject with three subjects and initialize their value with minimum passing marks. Using member**			

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	function, modify marks of student with specific rollno which is given by user.			
4	Create a class Rectangle. The class has attributes length and width, each of which defaults to 1. It has member functions that calculate the perimeter and the area of the rectangle. It has set and get functions for both length and width. The set functions should verify that length and width are each floating-point numbers larger than 0.0 and less than 20.0.			
5	Define a supplier class. The class contains details about the suppliers. One of the details is the list of items supplied by the supplier. Create a class Item to store item details. The items supplied by any given supplier are different and varying. Use dynamic memory allocation in the constructor function to achieve the solution.			
6	Define a class Student. Add data members as Rollno, Name, Marks_obtained, Max_marks and Percentage. Write member functions for reading values, calculating percentage and printing values of student. Define one more class as MCA_II. MCA_II contains array of students. MCA_II class should contain member functions as Add, delete, modify and replace. MCA_II is to be defined as friend of Student class.			
7	Define a class Car. Add data members as Make, Color, Size, and Cost. Write member functions for reading values and printing values of car. Define one more class as CarCollection. CarCollection contains array of cars. CarCollection class should contain member functions as Add, delete, modify and replace. CarCollection is to be defined as friend of Car class. Write C++ programs to test your classes.			
8	Use Employee and EmpCollection classes. Employee class contains details about employee and EmpCollection contains collection of employees in form of an array. Provide GetSubordinates friend function which returns an object of EmpCollection class which contains details of subordinates			

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	of a manager. The employee object describing manager is to be passed as a parameter.			
9	A book shop maintains the inventory of books that are being sold at the shop. The list includes details such as author, title, price, publisher and stock position. Whenever a customer wants a book, the sales person inputs the title and author and the system searches the list and displays whether it is available or not. If it is not, an appropriate message is displayed. If it is, then the system displays the book details and requests for the number of copies required. If the requested copies are available, the total cost of the requested copies is displayed; otherwise the message "Required copies not in stock" is display Design a system using a class called books with suitable member functions and constructors. Include the following features also : (a) The number of successful and unsuccessful transaction should be recorded for the purpose of the statistical analysis. Use static data members to keep count of transactions. (b) The price of the books should be updated as and when required. Use a private member function to implement this.			
10	Write a program to create class 'Search' having data members (int a[ ], x) and define member functions as void input(), void output(), void search(int position), void add(int value) to display result (Use New and Delete).			
	Practical Assignment 2	141		
1	WAP to use binary operator + add two object of class Numbers having num1 and num2 as its data members and display result.			
2	WAP to overload operator * which multiply a number to each element of an array within a class arrayContainer and display the result.			

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3	**WAP to Overload the *, +,-, ==, ! = and = operators for the complex class.**			
4	**WAP to define an object m1 of matrix class, use m1<< Cout.**			
5	**WAP to define a matrix class and overload the * operator to multiply a number with matrix (Example: 5*Matrix should be possible).**			
6	**WAP to define a class Date with properties int month; int day; int year; overload the following operators.** **6.1 + operator [a+b] (a is of date type and b is an integer), use the assumption that all years all years have 360 days and months 30 days.** **6.2 – operator [a-b(same as above)]** **6.3 = operator** **6.4 <,<=,>,>=** **6.5 ++,--[post and pre both]**			
7	**WAP to define a class Time with properties int hour; int minute; int second; overload the following operators.** **7.1) + operator [a+b] (a is of time type and b is an integer)** **7.2) – operator [a-b(same as above)]** **7.3) = operator** **7.4) <,<=,>,>=** **7.5) ++,--[post and pre both]**			
8	**Write a menu driven program that can perform the following functions on strings. (Use overloaded operators where possible).(Do not use predefined string class)**			
9	**Design a manipulator to provide the following output specifications for printing float values (i) 5 column width (ii) Right justified (iii) 2 digits precision (iv) Filling unused spaces with +**			

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10	Define a class marksheet. The class should contain a function PrintMarkSheet such that it prints the marksheet of a given student with three subject names and five marks for each subject. Define manipulators for displaying headings and footnotes. The function should display marksheet with respective headings and class. The marks should be aligned under the headings (Use either ios functions or manipulators).			
	Practical Assignment 3	210		
1	Write a program to generate templates function for swapping values of variables and show its use with integer, float and character type of data as input.			
2	Write an object oriented program to implement a generic Stack. Incorporate all the possible operation on Stack in the program.			
3	Write a generic function that will sort a character string, integer and float value. Create a menu with appropriate options and accept the values from the user.			
4	Write a template function called find(). This function searches an array for an object. It returns either the index of the matching object (if one is found) or -1 if no match is found.			
5	WAP Implement template sort with a non type size. Inheritance			
6	WAP to create base class Book having int id and char name as data members and respective functionality, show following types of			

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	inheritance and display the details of each kind of books, also calculate the total no of each type of books in proper format. Simple inheritance with derived class Sales Hierarchical inheritance with derived classes academics and thrillers Show use of constructor and destructor in above examples of inheritance.			
7	WAP to create student having data members (rollno, name, stream) as base class. Derive class subject with marks of 5 subjects and apply respective functionality. Calculate final result and display details of each student from derived class. (multilevel inheritance)			
8	An educational institution wishes to maintain a database of its employees. The database is divided into a number of classes whose hierarchical relationships are shown in fig-1. The figure also shows the mínimum information required for each class. Specify all the classes and define function to create the database and retrieve individual information as and when required. Write parameterized constructor for each class in the hierarchy.			
9	Consider a class network of fig 2. The class master derives information from both account and admin classes which in turn derived derive information from the class person. Define all the four classes and write a program to create, update and display the information contained in master objects.			
10	Create a class student from which the classes test and sports are derived. The class student has the name and rollno of the student. The class test has the marks of the internal test and the sports class has the marks of the sports test. The class student contains a virtual function display() which are implemented in the classes test and sports. Write a program which will take relative information and display it using pointer of the base class.			
11	Write a Program to perform following operation on text file :			

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	11.1) write content in a text file **11.2) read content from file** **11.3) count no of word and no of lines in a file** **11.4) copy contents of one file to another file**			
12	**Write a program to create a file student to store name and marks of 5 students and then display them.**			
13	**Define a class Result which contains the result of an MCA II written test. It should take list from a file and display on the screen such that at a time only ten candidates information is printed on the screen.**			
14	**Use an Employee Class to write records of employee to a file. Include a menú that will allow the user to select any of the following features** **a. Add a new record.** **b. Modify an existing record.** **c. Retrieve and display an entire record for a given name.** **d. Generate a complete list of all names, addresses and telephone numbers.** **e. End of the computation.**			
15	**Write a program that stores and displays the records of the customer from a file the following information for account of the customer is to be stored.Account no, account type, name, old balance, new balance, last payment, date of last payment. Also display the current account status by comparing current payment and previous balance. Also calculate the current balance by subtracting the current payment from the previous balance.**			
16	**WAP to create namespace having function for total_marks. Show its use in class 'marks' of students, display total marks of subjects using namespace.**			
17	**WAP to define a vector and use it for student class to store and display information about student (Use STL).**			