



**B. P. PODDAR INSTITUTE OF MANAGEMENT & TECHNOLOGY**  
**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**  
**LABORATORY NAME: DENNIS RITCHIE LAB(C104)**  
**ACADEMIC YEAR: 2018-2019 ODD SEMESTER**

**COURSE NAME: PROGRAMMING PRACTICES USING C++**  
**COURSE CODE : CS 593**

TOPIC	LIST OF EXPERIMENTS WITH ADDITIONAL EXPERIMENTS	CO	PO/ PSO
<p><b>Demonstration and understanding the concept of class, object and accessing class members.</b></p>	<p>1. Define a class to represent a bank account. Include the following members.</p> <p><b>Data members</b></p> <p>a) Name of the depositor.  b) Account number  c) Type of account  d) Balance amount in the account.</p> <p><b>Member functions</b></p> <p>a) To assign initial values  b) To deposit an amount  c) To withdraw an amount after checking the balance  d) To display name and balance.</p> <p>Write a main program to test all those operations</p> <p>2. Define a class to represent batsman in a cricket team. Include the following members:</p> <p><b>Data Members</b></p> <p>a) Name of the batsman  b) runs made  c) Number of fours  d) Number of sixes</p> <p><b>Member Functions</b></p> <p>a) To assign the initial values  b) To update runs made            (It should simultaneously update fours and sixes , if required)  c) To display the batsman information</p>	<p>CO1, CO5</p>	<p>PO1, PO2, PO3, PO4, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2</p>

<b>Illustration of array of objects</b>	<p>3. Define a class employee with the following specification:</p> <p>Private members of class employee:</p> <p>EmpNo integer</p> <p>Name string 25 characters</p> <p>DeptName string 25 characters</p> <p>Designation string 25 characters</p> <p>Public member function of class employee:</p> <p>void init() Function to accept values for EmpNo, Name, DeptName and Designation of employee.</p> <p>void DisplayDetails() Function to display all the data members on the screen.</p> <p>Friend function of class employee:</p> <p>void ListDeptWise(employee ) Friend Function to display employee details dept. Wise.</p> <p>Write a C++ program that will take employee details of 10 employees from keyboard using the function init() and then display employee details dept. wise i.e., user will enter the dept. name and the program will display employee details of that dept. only using the concept of Friend function.</p>	CO1, CO5	PO1, PO2, PO3, PO4, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2
<b>Passing objects as arguments to a function and returning objects from a function</b>	<p>4. Passing object as an argument through a function, write a program to perform addition of two time in hour and minutes format.</p>	CO1, CO5	PO1, PO2, PO3, PO4, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2
<b>Friend function and Friend class</b>	<p>5. Passing objects as an argument through a function and returning a object also ,write a program to add two complex number <b>X</b> and <b>Y</b> to produce a third complex number <b>Z</b> and display all the three Complex Number. Use friend</p>	CO1, CO5	PO1, PO2,

	<p>function to implement the problem.</p> <p>6. Write a C++ program to swap two private numbers belong to two different classes illustrating the concept of Friend Functions.</p>		<p>PO3, PO4, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2</p>
<p><b>Static data member and static member functions</b></p>	<p>7. Write a program in C++ to use a static data member that can be used as a counter that records the occurrences of all the objects</p>	<p>CO1, CO5</p>	<p>PO1, PO2, PO3, PO4, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2</p>
<p><b>Constructor, Constructor overloading, Copy constructor and destructors</b></p>	<p>8. Write a program to add, subtract, multiply and divide two complex numbers that has two floating point members <b>real</b> and <b>imag</b> and display the result. Create the appropriate class members. Use default constructor, overloaded constructor. Use one function which returns object of the class in which it has been declare</p>	<p>CO2, CO5</p>	<p>PO1, PO2, PO3, PO4, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2</p>

<b>Dynamic memory allocation</b>	<p>9. Write a c++ program to create a singly linked list. Perform the following operation</p> <ul style="list-style-type: none"> <li>i) Create a singly linked list</li> <li>ii) Insert a node into the linked list.</li> <li>iii) Delete a node from the linked list.</li> <li>iv) display the linked list</li> </ul>	CO4, CO5	PO1, PO2, PO3, PO4, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2
<b>Operator overloading : Unary and binary overloading</b>	<p>10. Create a class Box containing Len, Br and Ht as data members. Use constructors for taking input and overload the following operators :</p> <ul style="list-style-type: none"> <li>(i) “++” to increment all data</li> <li>(ii) “+” to add corresponding data members of two Box class objects.</li> </ul> <p>Use display () method to display the appropriate outputs.</p> <p>11. Write a program in C++ to implement a class STRING which supports</p> <ul style="list-style-type: none"> <li>a) Concatenation of two string ( overload + )</li> <li>b) Compare of two string (overload = )</li> <li>c) Substring checking</li> <li>d) Find the length of a string</li> </ul>	CO2, CO5	PO1, PO2, PO3, PO4, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2
<b>Inheritance, Multiple Inheritance, Multilevel Inheritance and Hybrid Inheritance</b>	<p>12. Class <b>Student</b> stores the roll-number, class <b>Test</b> stores the marks obtained in two subjects and class <b>Result</b> contains the total marks obtained in the <b>Test</b> . The class <b>Result</b> can inherit the details of the marks obtained in the <b>Test</b> and the roll-number of the <b>Student</b> through multilevel inheritance. Write a C++ program to implement this problem.</p> <p>13. Class Staff contains code and name. Class Teacher and Typist are deriving from Staff class. Teacher has two data member subject and publication. Class Typist has speed as the data member. Define the functions to create the database and retrieve individual information as and when required</p>	CO3, CO5	PO1, PO2, PO3, PO4, PO8, PO9, PO10, PO11, PO12,

			PSO1, PSO2
<b>,Virtual functions and polymorphism</b>	<p>14. Create a base class called <b>Shape</b> and derive the classes <b>Box, Cube</b> and <b>Cylinder</b> from it. The class shape have functions volume () and whole surface_area(). Override these two functions in each of the derived classes. The dimensions of the shapes (box, cube, cylinder) are to be taken from the user.</p> <p>Write a main function to calculate the volume and area of the box, cube and Cylinder.</p> <p>15. Imagine a publishing company that markets both books and audio-cassets versions of its works. Create a class <b>publication</b> that stores the tittle and price of a publication. From this class derive two classes: <b>book</b>, which adds a page count and <b>tape</b> which adds a playing time in minutes. Each of these two classes should have a getdata() function to get its data from the user at the keyboard and a putdata() function to display the data. Write a main program to test the book and tape classes by creating instances of them, asking the user.</p>	CO3, CO5	PO1, PO2, PO3, PO4, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2
<b>Beyond Syllabus</b>	<ol style="list-style-type: none"> <li>1. Write a C++ program to implement a file handling concept using sequential access.</li> <li>2. Write a program to implement file handling concept using random access.</li> </ol>	CO5	PO1, PO2, PO3, PO4, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2