**C++ Program Contents**

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|  | | **Chapter No.8** | |  |
| 1. | Write a program that declares a structure to store Roll no. marks, Average and Grades of a student. The program should define a structure variable inputs the value and then displays these values. | |  | |
| 2. | Write a program that declares a structure to store day, month and year of birth date. It inputs three values and displays date of birth in dd /mm/ yy format. | |  | |
| 3. | Write a program that declares a structure to store book ID, price and pages of a book . It defines two structures variables and inputs values .It displays the record of most costly book. | |  | |
| 4. | Write a program that declares the structure to store employee id and salary of an employ .It defines and initializes a structure variables and displays it. | |  | |
| 5. | Write a program that store three parts of phone number i.e. National code ,area code ,Number separately . Creat two variables of structure phone. Initiallize one variable and gets input from the user in the second variable and then display the both number | |  | |
| 6. | Write a program that uses a structure to store employee number, name, hours, worked, hourley rate and gross pay. The program inputs employee number, name, hours worked and hourley rate the user, calculates gross pay and then display all employee data on screen | |  | |
| 7. | Write program that declares a structure to store marks and grades of a student .It defines two structure variables. It finally displays the value of both variables | |  | |
| 8. | Write a program that declares a structure to store roll no & marks of five subjects . It defines a structure variable , inputs the values and displays roll no, marks & average marks. | |  | |
| 9. | Write a program that declares a structure to store the distance covered by an player along with the minutes and seconds taken to cover the distance. The program should input the records of two players and then display the record of the winner. | |  | |
| 10. | Write a program that declares a structure to store the code number,salary and grade of an employee.The program defines two structure variables,inputs records of two employees and then displays the record of the employee with more salary. | |  | |
|  | **Chapter No.9** | |  | |
|  | Write a program that displays a message “Programming makes life interesting” on screen using function. | |  | |
|  | Write a program that inputs two numbers in main() function, passes these numbers to a function. The function displays the maximum number. | |  | |
|  | Write a program that inputs a number in main function and passes the number to a function. The function displays table of that number. | |  | |
|  | Write a program that inputs a number and displays its precessor and successor numbers using functions. | |  | |
|  | Write a program that inputs a number in main function and passes the number to a function. The function displays the factorial of that number. | |  | |
|  | Write a program to check whether a number is prime number, even number or odd number using function. | |  | |
|  | Write a program that inputs two numbers and one arithmetic operator in main function and passes then to a function. The function applies arithmetic operation on two numbers on the basis of the operator entered by user using switch statement. | |  | |
|  | Write a program that displays the square of characters using functon. The program inputs a number and a character in main function and passes them the function. For Example, If the user enter 3 and @, the function displays the following 3 rows of the symbol @. | |  | |
|  | Write a program that inputs two integers in main () function and passes the integers to a function by reference. The function swaps the values. The main () function should display the values before and after swapping. | |  | |
|  | Write a program that inputs marks in main function and passes these marks to a function. The function finds grade of student on the basis of the following criteria.Grade A 80 or above marksGrade B 60 to 79 marksGrade C 40 to 59 marksGrade D Below 40 marks | |  | |
|  | write a program that uses functions mul(int, int) to detremine for a pair of integers whether the second integer is a multiply of the first. The function should take two integers arguments and return 1 (true) if second s the multiply of the first and 0 (false) otherwise. The program should input a series of paris of integers. | |  | |
|  | Write a program that inputs base and height of a triangle in main function and passes them to a function. The function finds the area of triangle and returns it to main function where it is displayed on the screen. Area=1/2(Base\*Height) | |  | |
|  | Write a program that inputs two integers. It passes first integer to a function that calculates and returns its square. It passes second integer to another function that calculates and returns its cube. The main () functions adds both returned values and displays the result. | |  | |
|  | Write a program that inputs two integers in main () function and passes the values to a function. The function finds and returns the greatest common divisor. The main () function then displays the returned value. | |  | |
|  | Write a program that calculates the sum of the following series using funtion. The main() function inputs a number and passes it to a function. The function findes the sum from 1 to the given number and returns the result to main() function.  1+1/1!+/1/2!+1/3!+1/4!...................... | |  | |
|  | Write a program that inputs a number in a global variable. The program calls a function that multiplies the value of global variable by 2. The main function then displays the value of global variable. | |  | |
|  | Write a program that calls a funtion for five tmes using loop. The functions uses a static varable intialized to 0. Each time the function is called, the value of static variables is incremented by 1 and is displayed on the screen. | |  | |
|  | Write a program that inputs five integers in an array and passes the array to a function. The function displays the values of the array. | |  | |
|  | Write a program that inputs five integers in an array and passes the array to a function. The function counts the even numbers in the array and returns the result to main () function where the result is display it.. | |  | |
|  | Write a program that inputs five integers in an array. It passes all elements of the array to a function one by one. The function displays the actual value of the element and its square. | |  | |
|  | Write a program that inputs values in a two-dimensional array with three rows and two columns. The program passes the array to a function. The function returns the maximum value in the array. | |  | |
|  | Write a program that declares a structure to store marks and grade. It defines structure variable and inputs values. It passes the variable to a function that shows is contents. | |  | |
|  | Write a program that declares a structure to store coutry name and population in million.It defines two structure variable and inputes values. It passes both variable to a function that shows the record of the country with more population. | |  | |
|  | Write a program that declares a structure time to store hours, minutes and seconds. The program declares an array of this structure and inputs two tmes from the user. It adds both times and displays the total time in hh mm ss formate. | |  | |
|  | Write a program that inputs the following record of cricketers.  Players Name  Runs  Innings  Time Not out  The program should declares a structure to store the above data values.The program should declares an array of structure of five elements to inputs the record of five cricketers and then displays them in tabular form. | |  | |
|  | Write a program that declares a structure to store price and author name of a book. It defines a structure variable and inputs values. It passes the variable to a function by reference that doubles the value of price. The main () function finally displays the values. | |  | |
|  | Write a program that uses a structure to simulate the time in hours,minutes and seconds .Write a function to set the ,another fcuntion to increment the time by number of seconds and a function to display the time. | |  | |
|  | Write a program that declares a structure to store author name, pages, and price of a book. It declares two structures variables and inputs values. It passes these variables to a function.The function returns the variable with more price.The program finally displays the values of the returned structure variable. | |  | |
|  | Write a function that receives an integer array, its size and character + or - . By default, the character should be ‘+’. The function returns the sum of positive numbers store in the array of character ‘+’. It means the sum of negative numbers for the character ‘-‘ | |  | |
|  | Write three versions of function line.The first version takes no parameter and displays a line of 10 asterisks.The second version takes an integer paramater and displays a line of n asterisks.The third version takes an integer and a character as paramater and displays a line of given character of n length. | |  | |
|  | Write two versions of an overloaded function sum().This first version takes one parameter of integer array and returns the sum of all element of the array.The second versions takes two parameter of integer array and character ’E’ or ‘O’  If the character is ‘E’it returns the sum of even elements of the array and if the charater is’O’.it returns the sum of odd elements.In case of any other character it returns 0(zero).s | |  | |
|  | Write a program that inputs a number from user and calculates its factorial recursively. | |  | |
|  | Write a program that input two integers and calculates first number raised to the power of second number recursively | |  | |
|  | Write a function that inputs a decimal number and convert it to binary digits. | |  | |
|  | Write a function that converts binary to decimal. | |  | |
|  | Write a program that counts the number of zeros, odds, and even numbers. | |  | |
|  | Write a function that prints a triangle of stars. | |  | |
|  | Write a program that enters an number from the users and displays Fibonacci numbers from 1 to given number using function. | |  | |
|  | Write a program that accepts two integers. Create a function that tells whether or not the first integer is a multiple of the second. | |  | |
|  | Write a program that inputs two numbers in main function and passes them to a function.The function displays first number raised to the power of second number.For example,if the user enters 2 and4,it displays 16. | |  | |
|  | Write a program that uses a function EQ() to find whether four integers a, b, c, d passed to the function statisfy the equation a3+b3+c3=d3 or not.The function returns 0 if the above equation is satisfied the returns-1 otherwise. | |  | |
|  | Write a program that prompts the users to enter a number and reverse it.Write a function Reverse() to reverse the number For Example,if the users enters 2765, te function should reverse it so that it become 5672.The function should accepts the number as an inputs parameter and returns te reverse number.Write a program that inputs a number in main() function and passes it to a function.The function displays whether number is prime or not. | |  | |
|  | Write a function LCM() that receives two integer arguments and returns LCM. | |  | |
|  | Write a program that calls two function Draw-Horizontal and Draw-vertical to construct a rectangle.Also write functions Draw-Horizontal to draw two parallel Horizontal lines and the function Draw-vertical to draw two vertical lines. | |  | |
|  | Write a function that returns the smallest of three floating point number. | |  | |
|  | Write a program that inputs five numbers and passes them to a function one at a time. The function returns true if the integers is even and false otherwise. | |  | |
|  | Write a program that calculates Fionacci series of a number using recursive function. | |  | |
|  | **Chapter No:10** | |  | |
|  | Write a program that nputa an integer number and a float number. It displays the absolute value of both numbers. | |  | |
|  | Write a program that inputs a floating point number and display cosine, sine, tangent, log and base 10 log of the given number. | |  | |
|  | Write a program that inputs two integer number and displays the result of first number raise o the power of second number using built in function. | |  | |
|  | **Chapter No:11** | |  | |
|  | Write a program that inputs a number in an integer variable. It stores the addresss of the variable in a pointer and then displays the value and address of the variable. | |  | |
|  |  | |  | |
|  | Write a program that input five integers in an array and display them using a pointer. | |  | |
|  | Write a program that input five floating-point values in an array and display the values in reverse order. | |  | |
|  | Write a program that inputs a string value from the user and displays it using pointer. | |  | |
|  | Write a program that declares and initializes a strng. It inputs a character from the user and searches the character in the array. | |  | |
|  | . | |  | |
|  | Write a program that inputs two integers and passes them to a function using pointers. The function exchanges the values and the program finally displays the values. | |  | |
|  | Write a program that declares an integer in the main() function . It also declares two functions. One function input the value defined in the main() function. The second function doubles the value of that variable. | |  | |
|  | Write a program that declares a structure to store the record of a book. It defines a structure variable, inputs the values and displays them using pointer. | |  | |
|  | Write a program that declares a structure to store the record of a student. It declares a structure variable. It passes the structure variable to a function using pointer to input data. It again passes it to another function using pointer to dsplay the data. | |  | |
|  | Write a program that declares the structure to store hours, minutes and seconds. It declares a structure variable. It inputs number of seconds from the user and passes seconds to function by value and structure variable using pointer. The function converts the seconds into hours, minutes and seconds and stores it in the structure. The main() function finally dsplays the time on the screen. | |  | |
|  | Write a program that uses new operator to create an integer, inputs value in it and then display that value. | |  | |
|  | Write a program that inputs length from the user and declares an array of integers of the length specified by the user. The program then inputs in array and didplay them. | |  | |
|  | **Chapter No:12** | |  | |
|  | Write a program that inputs the name of user using cin.getline() function and displays it on the screen. | |  | |
|  | Write a program that inputs a string from the user and displays its length. | |  | |
|  | Write a program that inputs a sentence and displays the number of uppercase and lowercase consonants,uppercase and lowercase vowels in sentence. | |  | |
|  | Write a program that inputs two strings from the user and compares them using strcmp function.The program displays whether the first string is less than, equal to or greater than second string. | |  | |
|  | Write a program tat inputs two strings from the user and compares them using srcmp function.It also inputs the number of character to be compared The program displays whether the first string is less than,equal to or preater than second string. | |  | |
|  | Write afunction that checks whether two arrays of characters are identical or not. | |  | |
|  | **Chapter No:13** | |  | |
|  | Write a program that declares a class with one integer data member and two member functions in() and out() to input and output in data member. | |  | |
|  | Write a class Marks that three data members to store three marks. Write three member functions in() to input marks, sum() to calculate and return the sum and avg() to calculate and return the average marks. | |  | |
|  | Write a class circle with one data member radius. Write three member functions get radius() to set radius value with parameter value, area() to display radius and circum() to calculates and display circumferences of circle. | |  | |
|  | Write a class Book with three data members BookID. Pages and Price. It also contains the following member function.   * The get() function is used to input values. * The show() functions is used to display values. * The set() function is used to set the value of data members using parameters. * The getPrice() function is used to return the value of Price.   The Program should create two objects of the class and input values of these objects. The program displays the detail of the most costly book. | |  | |
|  | Write a class Result that contains roll no, name and marks of three subjects. The marks are stored in an array of integers. The class also contains the following member functions:   * The input() function is used to input values in data members. * The show() functions is used to display values of data members. * The total() function returns the total marks of a student * The avg() function return the average marks of a student.   The program should create an object of the class and call the member functions. | |  | |
|  | Write a class Array that contains an array of integers to store five values. It also contains the following member functions:   * The fill() function is used to fill the array with values from the user. * The display() functions is used to display values of array. * The max() function shows the maximum value in array. * The min() function shows the minimum value n the array.   All member functions should be defined outside the class. | |  | |
| 69. | Write a class that displays a simple message on the screen whenever an object of that class is created. | |  | |
| 70. | Write a class that contains two integer data members which are initialized to 100 when an object is created. It has a member function avg that displays the average of data members. | |  | |
|  | Write a class that has marks and grade as data members. A constructor with two parameters initializes data members with the given values and member function show displays the values of data members. Create two objects and displays the value. | |  | |
|  | Write a class TV that contains attributes of Brand Name,Mdel and retail Price.Write a method to display all attributes and a method to change the attributes.Also write a constructer to initialized all the attributes. | |  | |
|  | Write a class that has num and ch as data members. A Constructor with no parameter initializes num to 0 and ch to ‘x’. A constructor with two parameters initializes data members with the given values and member function shows displays the value of data members. | |  | |
|  | Write a class Book that has attributes for pages, price,and title.It has two function to inputs the values and displays the value .Create three objects of the class and inputs values. | |  | |
|  | Write a class ‘Travel’ that has the attributes of kilometer and hours .A constructor with no parameter initialize both data members to 0.A member function grt() inputs the values and function show () displays the value .It has a member function get() that takes an object of type Travel to add the kilometer and hours of calling object and parameter. | |  | |
|  | Write a class ‘Travel’that has the attributes of kilometer and hours.A constructer with no parameter initialized both data members to 0.A member function get() inputs the values and function show() displays the value .It has member function get() that takes an object of type Travel to add the kilometer and hours of calling object and parameter and returns an object with added values. | |  | |
|  | Write a program that counts the number of objects created of a particular class. | |  | |
|  | Write a program that creates three objects of class student .Each object of class must be assigned a unique roll number .(Hint:Use static data member for unique roll number.) | |  | |
|  | Write a program that counts the number of objects created of particular class. The program must be able to display the result even if no object is created. | |  | |

**Chapter No.14**

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|  | Write a program that overloads increment operatter to work with user defined objects. |  |
|  | Write a program that overloads increment operator to work with user-defined objects.The overloaded function should return an object after incrementing the data member. |  |
|  | Write a program that overloads that postifix increment operator to work with user –defined objects. |  |
|  | Write a program that overloads binary addition operator. |  |
|  | Write a program that overloads arithemtic addition operator +for concatenating two string values. |  |
|  | Write a program that overloads the comparison operators= =to work with String class .The result of comparison must be 1 if two strings are of same length and 0 otherwise. |  |
|  | Write a program tat overloads arithmetic assignment operator to work with use-defined objects |  |

**Chapter No.15**

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|  | Write a program on specifing a derived class. |  |
|  | Write a program on accessing construction of parent class. |  |
|  | Write a class person that has the attributes of id,name and address.It has a constructer to initialized, a member function to input an d a member function to display data member .Create another class Student that inherits Person class.It has additional attributes of roll number and marks.It also has member function to input and display its data members. |  |
|  | Write a program on function overriding. |  |
|  | Write a base class Computer that contains data member s of wordSize(in bits, memberSize(in megabytes),storageSize(in megsbytes) and speeed (in megabytes).Drive a Laptop class that is kind of Computer but also specifies the objects length,width,height and weight. Member function for both classses should includes a default constructer,a constructer to initializes all components and a function to display data member. |  |
|  | Write a program that declares two classes and defines a relationsip between them using public inheritance. |  |
|  | Write a program on protected inheritance. |  |
|  | Write a program on private inheritance. |  |
|  | Write a program on multilevel inheritance. |  |
|  | Write a class Person that hasattributes of id, name and address .It has a constructer to initialized ,a member function to input and a member function to display data member .Create 2nd class Student that inherits Person class.It has additional attributes of Roll numbers and marks It also has member function to input and display its data member.Create 3rd class scolarship that inherits Student class.It has additional attributes of scholarship name and amount. It also has member functions to input and display its data members. |  |
|  | Write a program on multiple inheritance. |  |
|  | Write a program on constructor without parameter. |  |
|  | Write a program constructor on with a parameter. |  |
|  | Write a program on ambigunity in multiple inheritance. |  |
|  | Write a pro gram on removing ambiguity. |  |
|  | Write a class Result that has an array of three integers as attributes.It has a member function to input and a member function to display average of array elements. Create another class Student that inherits Result clss.Ithas additional attributes of Roll number,name and an object of type Result.It also has member functions to input and diplay its data member. |  |

**Chapter No.16**

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|  | Write a class with an integer data member,a function to input and a function to display it. Creates an object of the class using pointer and class its member functions |  |
|  | Write a class that contains an attributes name, a function to input and a function to display name.Creates array of pointers in which each element referes to object of the class. |  |
|  | Write a program on pointers and inheritence. |  |
|  | Write a program on virtual function. |  |
|  | Write a program on pure virtual function and abstract class. |  |
|  | Write a program on virtual base class. |  |

**Chapter No.17**

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|  | Write a template that accepts two numeric values and displays the maximum number. |  |
|  | Write a function template that accepts a value of any type and then displays it. |  |
|  | Write a template for finding minimum value in an array |  |
|  | Write a class template that stores five values of any type in an array. |  |

**Chapter No.18**

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|  | **Write a program to open a file using open function.** |  |
|  | Write a program that writes three character in afile using formatted I/O. |  |
|  | Write a program that inputes the names of five cities and stores them in a file city .txt. |  |
|  | Write a program that reads the contants of te test.txt and displays on screen. |  |
|  | Write a program that displays all records from city.txt prepared in previous example. |  |
|  | Write a program that stored five lines of strings in a file and then displays them on te screen by reading these lines. |  |
|  | Write a program that inputs five characters from the user and stores them in a file. |  |
|  | Write a program that reads the characters froam a text file and display them on screen. |  |
|  | Write a program tat reads the characters from a text file .It counts totals number of characters ands total number of vowels in the file. |  |
|  | Write a program that inputs five integers and stores it in a file using binary I/O.s |  |
|  | Write a program that uses a structure variable to inputs records of three students and stores it in students.txt.in binaryI/O. Each record consists of Roll No,Name and Markss. |  |
|  | Write a program that records stored in students.txt file and displays them. |  |
|  | Write a program that creates a file to stores name and email of the user using structure. |  |
|  | Writes a program that stores an object to a file country.txt using binaryI\O. |  |
|  | Write a program that reads the contents of country of .txt and displays on the screen. |  |
|  | Write a program that manages a telephone directory. |  |
|  | Write a program that prints a file on the printers as well as on the screen. |  |
|  | **Write a program in which we count lines from a file.** |  |
|  | **Write a program in which we count word from a file.** |  |