**Class XII**

**Sub: Computer Science (Practical)**

**Programme List (2019-20)**

**INDEX**

|  |  |
| --- | --- |
| **Classes & Objects** | Sign |
| 1. Write a program to implement a class named employee having the following specifications : |  |
| Private members : |  |
| * + empno   integer |  |
| * + ename ,address, pincode string |  |
| * + basic, hra, da float(da =30% of basic salary ,hra=70% of basic salary) |  |
| * + netpay float |  |
| * + ctotal() A function to calculate the netpay as basic+ hra+ `da with float return type |  |
| Public Members : |  |
| * takedata() A function to read empno, ename,address,pincode, basic and invoke ctotal() to calculate total. |  |
| * showdata() A function to display all the data members on the screen |  |
| * retempno()- A Function to return empno |  |
| * retname()- A function to return employee name |  |
| Display the following menu for at least 5 employees:   1. To accept data of 5 employees 2. To display payslip of 5 employees 3. To accept empno aand display relevant data 4. To accept employee name and display relevant data |  |
| 1. Define a class named student in C++ with following description:   Private members:   * rollno integer * name string of 20 characters * marks in 5 subjects integer * total and perc float   Public members:   * Function getdata() to read the details of student . * Function putdata() to calculate and display total and perc. * int retrollno() –Accessor function to return rollno * int findname()- Accessor function to return name of the student   Display the following menu for at least 3 students:   1. To display the record of the student based on rollno 2. To display the record of the student based on name |  |
| **Function Overloading**  3. Write a program to display area of a circle ,rectangle of a triangle showing polymorphism implemented using function overloading. |  |
| Inheritance(Multilevel Inheritance) |  |
| 1. Write a program to accept personal details, sports details and educational details of the candidate and to find out, if he qualifies for the selection or not. |  |
| The program should have following specifications : |  |
| 1. First Class named personal should have roll no, name and age as data members and two functions to accept and print the data. |  |
| 1. Second class named, sports should have sports name and grade as data members and two functions to accept and print the data.  The function that accepts the data should return the grade of the candidates. This class should inherit personal class. |  |
| 1. Third class name education should have subject and marks as data members and two functions to accept and print the data. The function that accepts the data should return the marks. This class should inherit sports class. |  |
| 1. Fourth class should inherit education and should return either s (for select candidates) or n depending upon the following candidates: |  |
| a. If grade = a and marks > 60 return s |  |
| * 1. If grade = b and marks > 75 return s |  |
| * 1. If grade = c and marks > 90 return s |  |
| * 1. In other conditions return n |  |
| 1. main() program should make use of above mentioned classes and print the data and final result. |  |
| File Handling  Text Files Operations |  |
| 1. Write a program to read an already existing text file and Print the following information: |  |
| 1. Number of Words |  |
| 1. Number of 3 letter words |  |
| 1. Write a program to accept a string and write into text file in toggle case i.e. Lower case characters into Uppercase and vice versa. |  |
| 1. Write a program to read an already existing text file and Print the following information: |  |
| * 1. Number of Words |  |
| * 1. Number of Characters |  |
| * 1. Number of lines |  |
| 1. Write an interactive C++ program to read a text file and display the following : 2. Lines starting with a vowel 3. Number of lines starting with a digit |  |
| BINARY File Operations |  |
| 1. Create a menu driven program to implement the following operations in the binary file for the class student with the field names roll no, name, marks in five subjects and average marks. The class also have related functions to display data, accept data and calculate average. The operations to implement are: |  |
|  Addition of records |
|  Deletion of Records |
|  Searching records based on a field |
|  View all records   * Modificationof the records |
| ARRAYS |  |
| 1. Create a menu driven program to implement the following operations on a 2D array using functions :  |  |  | | --- | --- | | 1. Accept the matrix |  Display matrix | |  Transpose matrix |  Upper Triangles | |  Lower Triangles |  Diagonal element | |  Row Sum and Column Sum |  Row Product and Column Product | |  |
| 1. Create a program using function to accept an integer array and its size as arguments and the function should rearrange the array in such a way that the values of alternate locations of the array are exchanged .(assume the size of the array to be even). |  |
| 1. Create a program using function to find and display the array elements at odd position and at even position. |  |
| 1. Create a program using function to display the content of 2d array ,with each column content in reverse order. |  |
| SEARCHING AND SORTING |  |
| 14. Write a program to implement Bubble Sort to an integer array input in a program. |  |
| 15. Write a program to implement Selection Sort to an integer array input in a program. |  |
| 16. Write a program to implement Insertion Sort to an integer array input in a program. |  |
| 17. Write a program to search an element in an 1D array input by user and passed as argument to the function using concept of Binary Search. |  |
| 18. Write a program to search an element in an 1D array input by user and passed as argument to the function using concept of Linear Search. |  |
| 19. Write a program to merge two 1D arrays into one array according to following information. Given array A in Ascending order, array B in descending order , Create an array C in ascending order that would contain all the elements of A and B in the sorted order. |  |
| STACK AND QUEUES  20. A linked Stack is required to store integer numbers. Write a program capable of performing the following operations:-  a)Push    b). Pop  c.) Display the Stack Status |  |
| 21. Write a program which uses a self referential structure student that contain roll no, name & marks to create a linked list of N students. |  |
| 22. Write a Program to implement Stack as an array for integer elements with all necessary operations/functions. |  |
| 23. Write a Program to implement Queue as an array for integer elements with insertion, deletion and display function. |  |
| 24. Write a Program to implement a Linked Queue to store the information about a student with insertion, deletion and display function. |  |
| 25. Write a Program to implement a Dynamic Stack to store the integer elements with insertion, deletion and display function. |  |
| 26. Write a Program to implement a Static Circular Queue to store numbers  using insertion, deletion and display function. |  |
| SQL – 5 tables |  |