Computer Science (083) Practical File for Class XII

Index for C++ Programming

Name:						Section:	Roll No.:
Last	Date	of	Submission	(Program	No.	1 - 21)	31/07/2014
Last	Date	of	Submission	(Program	No.	22 - 29)	31/09/2014
Last	Date	of	Submission	(Program	No.	30 - 40)	31/10/2014

SN.	Program Description	Concept
1.	Write a program to play the following game: The player guesses a number from 2 to 19 and then the program generates three random numbers from 101 to 199. If the sum of the digits of any of these numbers matches the player's number, then the player is declared a winner otherwise the player looses the game.	C++ Revision (Class XI)
2.	Write a function to generate the nth term in a Fibonacci sequence. Use this function to print first N terms of the sequence.	C++ Revision (Class XI)
3.	Write programs to input the values of x and n and sum up n terms of each of the following series: $\frac{x^{3}}{1-x^{3}+x^{5}-x^{7}+7!}$	C++ Revision (Class XI)
4.	WAP to generate n lines of the following patterns on the computer screen: (i) If n is 4, the output is 121 1234321 (ii) If n is 4, the output is ******* **** ****	C++ Revision (Class XI)
	Write a program in C++ using user defined function to pass n as parameter to function series () which generates and print the following series upto n terms: $2^2+4^2+6^2+8^2+$ N ²	C++ Revision (Class XI)
5.	<pre>Write a program to read a string and print out the following : 1) No. of capital alphabets 2) No. of small alphabets 3) No. of non-alphabets 4) No. of Words (Use suitable functions for each operation)</pre>	C++ Revision (Class XI)
6.	Write a program to read a string and print it after replacing each of its capital alphabets by the corresponding small alphabet and each small alphabet by its corresponding capital alphabet.	C++ Revision (Class XI)
7.	Write a program to input a string. If the string is a palindrome then concatenate "Hello Palindrome ", otherwise concatenate "Hello Non-palindrome " with the given string. Then display the resultant string.	C++ Revision (Class XI)

8.	Write a program in C++ which accepts an integer array and	
	its size as arguments/parameters and exchanges the values	
	of first half side elements with the second half side	
	elements of the array.	
	Example:	C++ Revision
	If an array of eight elements has initial contents as	(Class XI)
	2,4,1,6,7,9,23,10	
	The function should rearrange the array as	
	7,9,23,10,2,4,1,6	
9.	Write a program to input n (<=20) integers in an array and	
3.	then display the array after removing all the duplicate	C++ Revision
	entries from it.	(Class XI)
10	Write a program to input the elements in a matrix of size	
10.	m x n and do the following operations on it.	
	(i) find the row sums	
	(i) find the column sums	C++ Revision
	(iii) find the diagonal sums	(Class XI)
	(iii) find the transpose	(CIASS AI)
	(1) display the upper half	
	(v) display the lower half	
11	(VI) display the lower half	
11.	temperature for each of the seven days of a week and then	
	diaplay a report showing the following.	
	Alspiay a report snowing the following:	
	1. Maximum and minimum morning temperature	
	2. Maximum and minimum noon temperature	C++ Revision
	3. Maximum and minimum evening temperature	(Class XI)
	4. Average morning temperature	
	5. Average noon temperature	
	6. Average evening temperature	
	/. Average temperature of the week	
1.0	(Use a 2D array)	
12.	Write a menu driven program to use a macro, an inline	C++ Revision
	function, and an outline function to find the square of an	(Class XI)
	integer input from the use.	
13.	Write a program to sort a list of character, integers,	C++ Revision
	floats, or strings depending upon the user's choice. Use	(Class XI)
	function overloading to do this.	(,
14.	Write a program to input two numbers n and x and then	
	calculate x ⁿ using a function power() with suitable	C++ Revision
	parameters and return data type. If the value of n is not	(Class XI)
	passed to the function, it should calculate x^{1} .	
15.	Write a program to input two numbers and increment the	C++ Revision
	smaller by 10%. (Use the concept of return by reference).	(Class XI)
16.	Write a program to input Name and Aggregate marks of each	
	of the n (<=20) students of a class using structures. The	
	program should then display this marks list in the ascending	
	order of names or descending order of marks depending upon	
	the user's choice.	Structures
	The lists should be displayed in the following format using	DELUCIULED
	the gotoxy() function:	
	S.No. Name Marks	
17.	Write a program to input two distances in feet and inches	
	and then display the sum of these distances. Use a function	Structures
	for this purpose. The function should take the two distances	

	as parameters and return the resultant distance. The program should also use a function Adjust() that adjusts a given distance so that if the number of inches in a distance is more than or equal to 12, it should be properly adjusted into feet.	
18.	Define a class STUDENT that has the following data members: Name, Roll Number, Marks of 5 subjects and member functions to input and display data. It also has a function member to assign stream on the basis of the table given below: <u>Average Marks</u> <u>Stream</u> 96% or more Computer Science 91% - 95% Electronics 86% - 90% Mechanical 81% - 85% Electrical 75% - 80% Chemical 71% - 75% Civil Write a program to define the class STUDENT and input the data (excluding Stream) of n (<=20) students and for each student allot the stream. Display a formatted report using the functions and declarations available in iomanip.h.	Classes and Objects
19.	Define a structure BOOK with the following members: Bno of type integer Bname of type char array of size 20 Author of type char array of size 20 Price of type float Write a menu driven program with separate functions for each of the following for an array of BOOK type. To enter values in the array of BOOK To display the details from an array of BOOK passed through parameter To search for a BOOK from the array upon its Bno and display its details To search for a BOOK from the array upon its Bname and display its details	Classes and Objects
20.	Define a class BOOK with the following specifications: Private members of the class BOOK are BOOK_NO Integer type BOOK_TITLE 20 characters PRICE float TOTAL_COST() A function to calculate the total cost for N number of copies, where N is passed to the function as argument. Public members of the class BOOK are INPUT() Function to read BOOK_NO, BOOK_TITLE, PRICE PURCHASE() Function to ask the user to input the number of copies to be purchased. It invokes TOTAL_COST() and prints the total cost to be paid by the user.	Classes and Objects
21.	Define a class employee with the following specifications: Private members of the class employee are empno Integer type ename 20 characters basic, hra, da float netpay float calculate() A function to find basic +hra +da with float return type.	Classes and Objects

	Public members of the class BOOK are	
	havedata() Function to accept values for empno,	
	ename, basic, hra, da and invoke calculate () to calculate	
	netpay	
	dispdata () Function to display all the data members	
	on the screen.	
22.	Define a class worker with the following specifications:	
	Private members of the class worker are	
	wno integer	
	wname 25 characters	
	hrwrk, wgrate float (hours worked and wagerate per	
	hour)	
	<pre>totwage float (hrwrk *wgrate)</pre>	Classes and
	calcwg() A function to find hrwrk*wgrate with	Classes and
	float return type.	Objects
	Public members of the class are	
	in_data() Function to accept values for wno, wname,	
	hrwrk, wgrate and invoke calcwg () to	
	calculate totwage	
	out_data () Function to display all the data members	
	on the screen.	
	Give detailed function definitions including main().	
23.	Define a class FLIGHT with the following members:	
	Private members:	
	Fino of type int	
	Deplime of type char of size 20	
	Arrtime of type char of size 20	
	Fare of type float	
	Public members	
	word register () member function to enter the values of data	Classes and
	Noid display() member function to display the values of data	Objects
	members	ODJECUS
	Float rfare()member function that returns the value of	
	fare	
	Write a menu driven program with separate functions for each	
	of the following for an array of FLIGHT type:	
	To enter values in the array of FLIGHT	
	To display the details of an array of FLIGHT passed through	
	parameters	
	To display the details of the FLIGHT with the lowest Fare	
24.	Write a program to find out the sum, difference, and product	
	of two rational numbers. Use a class with suitable data and	
	function members to this job. The class should also have two	Constructors
	constructors - one non-parameterised constructor which	and Destructors
	initializes a rational no. to $0/1$ and the other a	
	parameterized constructor to initialize a rational number.	
25.	Define a class Tour in C++ with the description given below	
	Private Members :	
	Tuode or type string	Constructors
	NoolAduits of type integer	and Destructors
	NOULLIAS OF TYPE Integer	
	TetalFare of type integer	
	Public Members ·	
	INDITC MEMDELD .	

	• A constructor to assign initial values as follows :	
	TCode with the word "NULL"	
	NoorAdults as U	
	NOOIKIds as U	
	Kilometres as U	
	TotalFare as U	
	• A function AssignFare () which calculates and assigns the	
	value of	
	the data member TotalFare as follows	
	For each Adult	
	Fare(Rs) For Kilometres	
	500 >=1000	
	300 <1000 &>=500	
	For each Kid the above Fare will be 50% of the Fare mentioned	
	In the above table	
	For example :	
	TI KITOMETIES IS 650, NOOLAduits - 2 and NOOLKIUS - 5	
	Numefielde + 200 - Neefvide + 150	
	NUMOLAGUIUS 3 300 + NOOLKIAS 1 150	
	1.e. $2^{500} + 5^{100-100}$	
	members	
	TCode Noofldults NoofKids and Kilometres, and invoke the	
	Assign Fare() function	
	• A function ShowTour() which displays the content of all	
	the data	
	rembers for a Tour	
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	the beginning.	
30.	Write a program to input a text file name, read the contents of the file and create a new file named COPY.TXT, which shall contain only those words from the file (which has been specified by the user) that don't end with a vowel. For example, if the original file contains <i>Physical, Mental, or Emotional harm to anyone is a crime.</i> -Anonymous	Text File (Reading and Writing)
	Then the text file COPY.TXT shall contain <i>Physical, Mental, or Emotional harm is</i> . – <i>Anonymous</i>	
31.	Write a program to perform SEARCH and REPLACE operation on a text file. For this, input the name of a text file from the user. Then input two characters and search for the first character in the file and replace it with the second character. Do it for all the occurances of the first character in the text file. (Use a temporary file for this purpose)	Text File (Modification)
32.	<pre>Declare a structure telerec in C++, containing name (20 characters) and telephone number. Write a program to maintain a binary file of telephone records. The program should allow the following functions on the file: 1) To append records in the file. 2) Display the name for a given telephone number. If the telephone number does not exist then display error message "record not found". 3) Display the telephone number(s) for a given name. If the name does not exist then display error message "record not found".</pre>	Binary File (Reading and Writing)
33.	 A blood bank maintains a data file that contains the following information for every donor: Name, Date of Birth, Telephone number, Blood group. Write a program in C++ to do the following: Given a blood group, display name, date of birth and phone number of all the persons of the given blood group. Append records in the file. Input a telephone number and modify the corresponding record. 	Binary File (Reading and Writing)
34.	Create two payroll files COMP1.DAT and COMP2.DAT. Each of the files should have records with the following fields: EmpNo : Integer Name : A string of 20 characters Salary : A floating point number. Both the files should be created in the increasing order of the EmpNo. Your program should then merge the two files and obtain a third file NEWCOMP.DAT. The program should also display the data from all the three files. Do not use arrays for merging and sorting of the files.	Binary File (Reading and Writing)
35.	<pre>Write a menu driven program in C++ to perform the following functions on a binary file "BOOK.DAT" containing objects of the following class: class Book { int BookNo; char Book_name[20]; public:</pre>	Binary File (Reading, Writing, and Modification)

	//function to diaplay Deals details	
	//lunction to display Book details	
	void snowdetails();	
	//lunction to return Book_no	
	<pre>int Rbook_no() {return Book_no;}</pre>	
	//function to return Book_name	
	int Rbook_name() {return Book_name;}	
	};	
	1. Append Records	
	2. Modify a record for a given book no.	
	(Use seekg(), tellg() for this purpose)	
	3. Delete a record with a given book no.	
	4. Search for a record with a given Book name	
	5. Display a sorted list of records (sort on Book No.)	
	6. Display a sorted list of records (Sort on Book Name)	
	Note: (i) Use dynamic array for sorting of the file.	
	(ii) Use gotoxy() to display the formatted reports.	
	(iii) The program should be password protected.	
36.	Write a program to create a linked list in which each node	Data Structures
	contains the roll number and name of a student. Then perform	(Self
	search operations for name as well as roll no. on this list.	Referential
		Structures)
37.	Write a menu driven program which allows the user to perform	
	the following operations on a one dimensional array:	Data Structures
	Insertion, deletion, sorting (selection, insertion),	(Arrays)
	display.	_
38.	Write a menu driven program to search an integer in a list	
	of integers using any of the following techniques.	Data Structures
	(i) Linear Search	Data Structures
	(ii) Binary Search	(ALLAYS)
	Use bubble sort to sort the list, if required.	
39.	Write a program in C++ using user defined function to pass	
	1 d array, its size and an integer as a parameter and find:	
	• Whether the integer number is present in the array or	Data Structures
	not and display appropriate message	(Arrays)
	• If the number is present then find its frequency and	_
	print it	
40.	Write a program to input integer data in two arrays. Sort	
	one of the arrays in ascending order and the other in	
	descending order. Then merge them into a third array so that	Data Structures
	the data in the third array is in ascending order. The	(Arrays)
	program should then display the data from all the three	
	arrays.	
41.	Write a function in C++ which accepts an integer array and	
	its size as arguments/parameters and assigns the elements	
	into a two-dimensional array of integers in the following	
	format:	
	If the array is 1, 2, 3, 4, 5, 6 If the array is 1, 2, 3	
	The resultant 2-D array is: The resultant 2-D array	Data Structures
	is:	Data Structures
	1 2 3 4 5 6 1 2 3	(ALLAYS)
	1 2 3 4 5 0 1 2 0	
	1 2 3 4 0 0 1 0 0	
	1 2 3 0 0 0	
	1 2 0 0 0 0	
	10000.	

42.	Suppose a company keeps a single dimensional array YEAR[100]	
	such that YEAR[K] contains the number of employees appointed	
	in year K. Write a C++ which stores random number of	
	employees (0 - 50) in the array and then performs the	
	following tasks:	Data Structures
	a) To find each of the years in which no employee was	(Array)
	appointed.	(minay)
	b) To find the number of years in which no employee was	
	appointed.	
	c) To find the number of employees who were appointed 5	
	years ago or before.	
43.	Write a menu driven program which allows the user to perform	
	the following operations on a stack (Array implementation):	Data Structures
	1) Push	(Arrav Stack)
	2) Pop	(<u>1</u>
	3) Display	
44.	Write a menu driven program which allows the user to perform	
	the following operations on a queue (Array implementation):	Data Structures
	1) Insert 2) Delete	(Array Queue)
	2) Derete	
15	Write a monu driven program which allows the user to perform	
-0.	the following operations on a stack (Linked	
	implementation).	Data Structures
	1) Push	(Linked Stack)
	2) Pop	(1111104 004011)
	3) Display	
46.	Write a menu driven program which allows the user to perform	
	the following functions on a queue (Linked implementation):	Data Otanatana
	1) Insert	Data Structures
	2) Delete	(LINKEd Queue)
	3) Display	
47.	Write a program using a stack to input a number and display	
	it as a product of its prime factors in the descending order.	
	E.g., if the number input is 252, then the output should be	Data Structures
	7 x 3 x 3 x 2 x 2.	(Stack)
	(The smallest factor of any number is guaranteed to be a	
	prime)	

Index for SQL

Name:

Section:

Roll No.:

Consider the tables given below and answer the questions that follow:

rable: <u>Employee</u>							
No	Name	Salary	Zone	Age	Grade	Dept	
1	Mukul	30000	West	28	А	10	
2	Kritika	35000	Centre	30	А	10	
3	Naveen	32000	West	40		20	
4	Uday	38000	North	38	С	30	
5	Nupur	32000	East	26		20	
6	Moksh	37000	South	28	В	10	
7	Shelly	36000	North	26	А	30	

Table: Energlands

Table: Department

Dept	DName	MinSal	MaxSal	HOD
10	Sales	25000	32000	1
20	Finance	30000	50000	5
30	Admin	25000	40000	7

Write SQL commands to:

Create Table / Insert Into

1. Create the above tables and insert tuples in them.

Simple Select

- 2. Display the details of all the employees.
- 3. Display the Salary, Zone, and Grade of all the employees.
- 4. Display the records of all the employees along with their annual salaries. The Salary column of the table contains monthly salaries of the employees.
- 5. Display the records of all the employees along with their annual salaries. The Salary column of the table contains monthly salaries of the employees. The new column should be given the name "Annual Salary".

Conditional Select using Where Clause

- 6. Display the details of all the employees who are below 30 years of age.
- 7. Display the names of all the employees working in North zone.
- 8. Display the salaries of all the employees of department 10.

Using NULL

- 9. Display the details of all the employees whose Grade is NULL.
- 10. Display the details of all the employees whose Grade is not NULL.

Using DISTINCT Clause

- 11. Display the names of various zones from the table Employee. A zone name should appear only once.
- 12. Display the various department numbers from the table Employee. A department number should be displayed only once.

Using Logical Operators (NOT, AND, OR)

- 13. Display the details of all the employees of department 10 who are above 30 years of age.
- 14. Display the details of all the employees who are getting a salary of more than 35000 in the department 30.
- 15. Display the names and salaries of all the employees who are working neither in West zone nor in Centre zone.
- 16. Display the names of all the employees who are working in department 20 or 30.
- 17. Display the details of all the employees whose salary is between 32000 and 38000.
- 18. Display the details of all the employees whose grade is between 'A' and 'C'.

Using IN Operator

- 19. Display the names of all the employees who are working in department 20 or 30. (Using IN operator)
- 20. Display the names and salaries of all the employees who are working neither in West zone nor in Centre zone. (Using IN operator)

Using BETWEEN Operator

- 21. Display the details of all the employees whose salary is between 32000 and 38000. (Using BETWEEN operator)
- 22. Display the details of all the employees whose grade is between 'A' and 'C'. (Using BETWEEN operator)

Using LIKE Operator

- 23. Display the name, salary, and age of all the employees whose names start with 'M'.
- 24. Display the name, salary, and age of all the employees whose names end with 'a'.
- 25. Display the name, salary, and age of all the employees whose names contain 'a'
- 26. Display the name, salary, and age of all the employees whose names do not contain 'a'
- 27. Display the details of all the employees whose names contain 'a' as the second character.

Using Aggregate functions

- 28. Display the sum and average of the salaries of all the employees.
- 29. Display the highest and the lowest salaries being paid in department 10.
- 30. Display the number of employees working in department 10.

Using ORDER BY clause

- 31. Display the details of all the employees in the ascending order of their salaries.
- 32. Display the details of all the employees in the descending order of their names.
- 33. Display the details of all the employees in the ascending order of their grades and within grades in the descending order of their salaries.

Using GROUP BY clause

- 34. Display the total number of employees in each department.
- 35. Display the highest salary, lowest salary, and average salary of each zone.

36. Display the average age of employees in each department only for those departments in which average age is more than 30.

Using UPDATE, DELETE, ALTER TABLE

- 37. Put the grade B for all those whose grade is NULL.
- 38. Increase the salary of all the employees above 30 years of age by 10%.
- 39. Delete the records of all the employees whose grade is C and salary is below 30000.
- 40. Delete the records of all the employees of department 10 who are above 40 years of age.
- 41. Add another column HireDate of type Date in the Employee table.

Creating and Using VIEWs

- 42. Create a view West_Zone which displays the records of employees working in West zone only.
- 43. Create a view Above_30 which displays the records of only those employees who are above 30 years of age.
- 44. Display the data from the view West_Zone.
- 45. Display the records of the employees from the view Above_30 who work in the Sales department.
- 46. Using the view West_Zone increase the salary of all the employees by 12%.

JOIN of two tables

- 47. Display the details of all the employees who work in Sales department.
- 48. Display the Name and Department Name of all the employees.

DROP TABLE, DROP VIEW

- 49. Drop the views created above.
- 50. Drop the tables Employee and Department.