VIT

Vellore Institute of Technology

(Deemed to be University under section 3 of UGC Act, 1956)

Continuous Assessment Test 2 – May 2023

Programme	:	B.TECH (SCOPE)	Semester	:	Winter 2022-23
Course Title	:	Structured and Object-Oriented Programming	Code	:	BCSE102L
			Slot	:	G1
Faculty	:	Dr. R. Sendhil Dr. Vijayaprabakaran K Dr. Ilavendhan A Dr. Vallidevi K Dr. S Jahangeer Sidiq Dr. Elakiya E Dr. Palani Thanaraj K	Class Nbr	:	CH2022232300541 CH2022232300534 CH2022232300536 CH2022232300537 CH2022232300540 CH2022232300538 CH2022232300542
Duration	:	1 hour 30 mins	Max. Marks	:	50

Answer all the Questions

Ques. No.	Sub sec	Question Description	Marks
1.		Suppose you have to store the marks obtained by the students of your class using the concept of arrays in C language. Create a pointer to integer which: a) displays the marks obtained by each student. (3 marks) b) displays the base addresses of the individual elements of the array. (3marks) c) display the minimum and maximum marks obtained in the class. (4 marks)	[10]
2.		Imagine you are an embedded engineer working on a camera system. The system needs to be able to rotate snapped images by 90 degrees clockwise. One way to implement this feature is by representing the image as a matrix of pixel values and using matrix manipulation techniques to rotate the image. For example, let's say we have a 5x5 image represented as a matrix of pixel values: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 The rotated image should look like this: 21 16 11 6 1 22 17 12 7 2 23 18 13 8 3, 24 19 14 9 4 25 20 15 10 5 Develop a C program to perform the image rotation operation. Also, keep in mind that the camera system has very less memory and requires space for other camera operations as well. So, develop an efficient program with a dynamic memory allocation method.	[10]

3.	Write a C program that allows the user to perform the following three operations using a heterogenous record named "employee":	[10]
	(a) Add employee details: The program should ask the user to enter the details of 'n' employees such as employee number, name and salary, and store them in an array of structures. The number of employees to be entered should be specified by the user. (3marks)	
	(b) Find the highest salary employee: The program should find the employee with the highest salary and display the employee number, name, and salary. (3 marks)	
	(c) Update employee details: The program should allow the user to update the details of an employee, given the employee number. (4 marks)	
	The program should present the user with a menu of options and allow them to choose an option. After performing the selected operation, the program should return to the menu until the user chooses to exit.	
4.	Develop a C++ program that manages the information of students in a school. Create a Student class that contains private member variables such as name, Id, and marks. Write a friend function to access the private members of the Student class to calculate the total and average marks of each student.	[10]
	Using parameterized constructor, the object of the Student class is created for N number of students.	
	Assume the class consists of 3 students with the following student data:	
	Student ID 1: Name: Alice, Marks: 75, 82, 85 Student ID 2: Name: Bob, Marks: 85, 90, 95 Student ID 3: Name: Charlie, Marks: 60, 70, 80	
5.	Suppose there are 2 persons whose height is measured in terms of feet and inches. Write a C++ program that finds the sum of the heights of two persons in terms of feet and inches. If inches in the result exceeds 12 it must be converted into feet. One Feet is equivalent to 12 inches. Make use of Class with fields as feet and inches in it for storing the individual's height and a parameterized constructor with two arguments for assigning the feet and inches in the two objects created. And a method sum() that finds the sum of the heights of two persons and prints it.	[10]

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