CT question paper 2024 PPS

Programming For Problem Solving (SRM Institute of Science and Technology)

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SRM

SRM Institute of Science and Technology

College of Engineering and Technology

School of Computing

SRM Nagar, Kattankulathur – 603203, Chengalpattu District, Tamil Nadu

Academic Year: 2024-25 (ODD)

SET 3

Test: CT2
Course Code & Title: 21CSS101J Programming for Problem Solving
Year &Sem: I/I

Date: 10-12-2024
Duration: 100 minutes
Max. Marks: 50

Course Articulation Matrix: ***(to be placed)***

S.No	Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	CO1	2	3										2
2	CO2	2	3										2
3	CO3	2	3										2
4	CO4	2	3										2
5	CO5	2	3										2

Course Outcomes (CO):

CO-3: Create string processing applications with single and multi-dimensional arrays.
CO-4: Create user defined functions with required operations. To implement pointers in applications with dynamic memory requirements.
CO-5: Create programs using the python datatypes, loops, control statements for problem solving.

Part A (10* 1 = 10 Marks)

Sl.No	Question	Marks	BL	CO	PO	PI Code
1	What is the output of the following code? char str[10] = "C Programming"; printf("%c", str[3]); A) C B) P C) r D) o	1	1	3	1,2,12	1.4.1
2	What will atoi("1234") return? A) "1234" B) 1234 C) 12 D) An error	1	1	3	1,2,12	1.3.1
3	When an array is passed to a function, what information must be passed along with it to process the array within the function? (Select all that apply) (MSQ) A) Just the array name B) The array's size C) The data type of array elements D) A pointer to the last element	1	2	3	1,2,12	2.2.3
4	Which of the following is a valid multi-line comment in Python? A) # This is a comment B)/* This is a comment */ C) // This is a comment D) """ This is a comment """	1	2	4	1,2,12	2.2.4
5	Which of the following statements about Python data types are correct? (Select all that apply) A) Python lists are mutable, meaning their elements can be modified after creation. B) Python tuples are mutable and can store elements of any data type. C) Strings in Python are immutable. D) Python dictionaries cannot have duplicate keys.	1	2	4	1,2,12	2.4.1
6	What will be the output of the following code? (MSQ) my_dict = {"apple": 3, "banana": 5} print(my_dict.get("orange", 0)) A) 3 B) 5 C) 0 D) None	1	2	4	1,2,12	2.1.2
7	What will be the shape of the following NumPy array? import numpy as np a = np.array([[1, 2, 3], [4, 5, 6]]) print(a.shape) a)(6,) b)(3,2) c)(2,3) d) (3,)	1	2	5	1,2,12	2.4.2
8	Which of the following are valid ways to create a NumPy array? (Select all that apply) (MSQ) A) np.array([1, 2, 3]) B) np.zeros((3, 3)) C) np.ones[3] D) np.arange(5)	1	2	5	1,2,12	2.4.2

Part-B (3 x 4= 12 Marks)
Answer all the questions

Sl. No	Question	Marks	BL	CO	PO	PI Code
9	Ms. Alice wants to create a program that reads a line of text, which may include spaces and tab characters (excluding newlines), and then prints the count of whitespace characters in the line. Write a program to accomplish this task.	4	2	3	1,2,12	1.4.1

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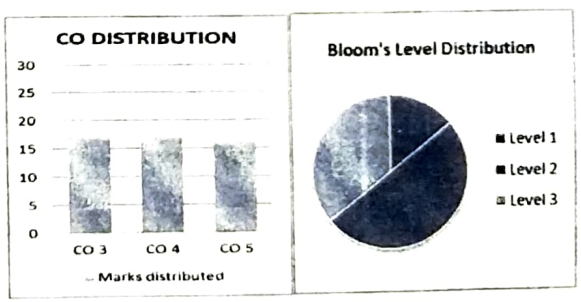
10	Write a Python code to create a 2D array in NumPy, reshape it into a 3D array, and then demonstrate how to access a specific element in the reshaped 3D array.	4	3	4	1,2,12	2.4.2
11	Write a Pandas program create number of lists of Series combine them into a single Series. Sample Output: Original Series of list 0 [Red, Green, White] 1 [Red, Black] 2 [Yellow] One Series 0 Red 1 Green 2 White 3 Red 4 Black 5 Yellow	4	3	5	1,2,12	2.1.3

Part C (3 * 10 = 20 Marks)

SLNo	Question	Marks	BL	CO	PO	PI Code
12 a	Mr. Adam is a software programmer at Orange Systems. He wanted to assess the trainee's skillset in C language. Hence, he has assigned some tasks to the trainees to complete in the allotted time. Assist them in completing the tasks listed below. (i) Consider the fragment. char str[] = " I am Gr8DON"; str[4] = '\0'; printf("%s", str); What will be the output? Justify the answer. (ii) Write a C program to find the length of a given string without using string functions. Input: "Programming for Problem Solving"	10	3	3	1,2,12	2.1.3
	OR					
12b	i) Explain how arrays are passed to functions in C. Write a code example demonstrating how to pass an array and modify its elements within the function. ii) In a library system, a function updates a book's price based on user feedback. The function takes the book title and new price as inputs and updates the price directly without returning anything. Explain why it's better to use call by reference here. Write a C function to update the book's price using call by reference and check the change in the main program.	10	3	3	1,2,12	2.1.3
13a	i) Write a Python program that accepts a string and counts the number of vowels (a, e, i, o, u) in the string. Do not use any external libraries. ii) Explain how tuples differ from lists in Python. Write a Python program that creates a tuple and attempts to modify one of its elements, then demonstrate the result.	10	3	4	1,2,12	2.1.3
	OR					
13b	Write a Python program that takes a dictionary of students with their names and marks as input. The program should: • Find the student with the highest marks. • Display the student's name and marks. (Use Python's dictionary methods and max() function.)	10	3	4	1,2,12	2.1.3
14a	i) You are a data analyst at a company. Your manager has asked you to look at the salary information for the employees. You have a list of employee names and their salaries. Write a Python program that creates a table (DataFrame) with employee names and their salaries. ii) Following the previous question, your manager now asks you to increase each employee's salary by 10%. Write a Python program to modify the table and display the updated salaries. Data with 10% Salary Increase:\n", df)	10	3	5	1,2,12	2.1.3
	OR					
14b	Perform the following tasks using NumPy: i). Write a NumPy program to create an array containing all even numbers from 120 to 170. ii). Create a NumPy array with 10 elements and update the element at index 5 to 1000. iii). Define a NumPy array a1 with values ['apple', 'mango', 'banana', 'mango']. Then, create a Boolean array b that checks if each element in a1 is 'mango'. Finally, use b to retrieve the elements from a1 that are 'mango'. ii) Create an array of 10 numbers and update the value at index 5 to 1000 iii) Create a numpy array 'a1' and a Boolean array 'b' for values 'mango'	10	3	5	1,2,12	2.1.3

Course Outcome (CO) and Bloom's level (BL) Coverage in Questions



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Academic Year: 2024-25 (ODD)

SET -1

Question Paper

Test: CT2
Course Code & Title: 21CSS101J Programming for Problem Solving
Year &Sem: I/I

Date: -10/12/2024
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Max. Marks: 50

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2	CO2	2	3										2
3	CO3	2	3										2
4	CO4	2	3										2
5	CO5	2	3										2

Course Outcomes (CO):

CO-3: Create string processing applications with single and multi-dimensional arrays.
CO-4: Create user defined functions with required operations. To implement pointers in applications with dynamic memory requirements
CO-5: Create programs using the python data types, loops, control statements for problem solving

Part A (8* 1 = 8 Marks)

Sl.No	Question	Marks	BL	CO	PO	PI Code
1	Given the declaration int arr[3] = {10, 20, 30};, what will be the output of printf("%d", arr[1]);? A) 10 B) 20 C) 30 D) Error	1	1	3	1,2, 12	1.3.1
2	Which function can be used to concatenate two strings in C? A) strcpy() B) strlen() C) strcat() D) strrev()	1	1	3	1,2, 12	1.3.1
3	Which of the following statements about declaring and initializing strings in C are correct? (Choose which ever is applicable) (MSQ) A) char str[5] = "Hello"; B) char str[] = "Hello"; C) char *str = "Hello"; D) char str[5] = {'H', 'e', 'l', 'l', 'o'};	1	1	3	1,2, 12	1.3.1
4	Which of the following is the correct syntax for a single-line comment in Python? A) /* This is a comment */ B) // This is a comment C) # This is a comment D) <!-- This is a comment -->	1	2	4	1,2, 12	1.4.1
5	Which of the following is a correct way to create a list in Python? A) list = (1, 2, 3) B) list = [1, 2, 3] C) list = {1, 2, 3} D) list = <1, 2, 3>	1	2	4	1,2, 12	1.1.2
6	Which of these data structures are immutable in Python? (Select all that apply) (MSQ) A) List B) Tuple C) Set D) String	1	2	4	1,2, 12	2.4.2
7	What is the primary purpose of the NumPy library in Python? A) Data visualization B) Data manipulation C) Numerical computations D) String handling	1	2	5	1,2, 12	2.4.2
8	Which statements about DataFrames in Pandas are correct? (Choose relevant options) (MSQ) A) A DataFrame is a 2-dimensional data structure. B) DataFrames can have labeled rows and columns. C) Each column in a DataFrame must have the same data type. D) DataFrames support arithmetic operations like addition and subtraction.	1	2	5	1,2, 12	2.4.2

Part-B (3 x 4= 12 Marks)

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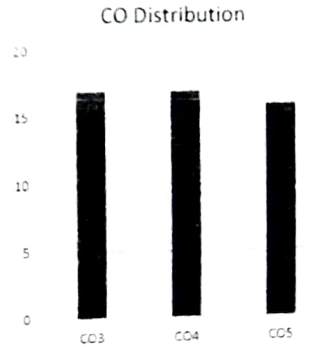
Answer all the questions

Sl. No	Question	Marks	BL	CO	PO	PI Code
9	Implement a function strConcat that concatenates two strings using the streat function. Call this function inside main() and demonstrate its working.	4	3	3	1,2,12	1.4.1
10	Write a Python program to create a set of unique numbers, add an element to the set, and then print the updated set.	4	3	4	1,2,12	2.4.2
11	What is the purpose of NumPy arrays, and how do they differ from Python lists? Give two specific advantages of using NumPy arrays.	4	3	5	1,2,12	2.1.3

Part C (3 * 10 = 30 Marks)

Sl.No	Question	Marks	BL	CO	PO	PI Code
12	a) Discuss five important C string functions and their uses, with examples. **(Marks:5)** b) Elucidate the use of gets() and puts() functions in C programming with examples. **(Marks:5)**	10	3	3	1,2,12	2.1.3
	(OR)					
13	Suppose you are developing a program for a gaming application. You want to modify the player's score in two ways: i)A bonus score is added temporarily during a level for display but does not affect the player's actual score. ii)The player's total score is updated after completing a level, which should permanently reflect in the game data. Implement a function to demonstrate Call by Value for adding a temporary bonus without changing the player's original score. Implement another function to demonstrate Call by Reference for updating the player's total score.	10	3	3	1,2,12	2.1.3
14	Explain Python's conditional and looping statements with examples.	10	3	4	1,2,12	2.4.2
	(OR)					
15	a) Write a Python program to compare the speed of element-wise operations between NumPy arrays and Pandas DataFrames. **(Marks:5)** b) You are working on a student database system where you need to manage a list of student scores. The system should allow you to: i) Create an initial list of 5 student scores. ii) Add a new score to the list when a student completes an extra assignment. iii) Remove the third score from the list due to an invalid entry. iv)Sort the scores in ascending order for ranking purposes. Write a Python program to implement the above requirements. **(Marks:5)**	10	3	4	1,2,12	2.4.2
16	a) Write a program to calculate descriptive statistics (mean, variance, percentile) using NumPy. **(Marks:5)** b) Discuss the attributes of NumPy arrays and demonstrate their usage.**(Marks:5)**	10	3	5	1,2,12	2.1.3
	(OR)					
17	What is slicing in NumPy, and how is it utilized for extracting specific portions of an array? Describe key attributes of a NumPy array such as shape, size, and dtype. Write a Python program to illustrate slicing operations and demonstrate accessing these attributes.	10	3	5	1,2,12	2.1.3

Course Outcome (CO) and Bloom's level (BL) Coverage in Questions



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Academic Year: 2024-25 (ODD)

SET 5

Test: CT2
Course Code & Title: 21CSS101J Programming for Problem Solving
Year &Sem: I/I

Date: 10-12-2024
Duration: 100 mins
Max. Marks: 50

Course Articulation Matrix: *(to be placed)*

S.No	Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	CO1	2	3										2
2	CO2	2	3										2
3	CO3	2	3										2
4	CO4	2	3										2
5	CO5	2	3										2

Course Outcomes (CO):

CO-3: Create string processing applications with single and multi-dimensional arrays.
CO-4: Create user defined functions with required operations. To implement pointers in applications with dynamic memory requirements.
CO-5: Create programs using the python data types, loops, control statements for problem solving.

Part A (8* 1 = 08 Marks)

Sl. No	Question	Marks	BL	CO	PO	PI Code
1	**What will be the correct output of the following code?** **#include <stdio.h>** **int main()** **{** **char str[] = "IndiaBeatAustralia";** **printf("%c %c ", *(str+5), str[5]);** **return 0;** **}** (a) B e (b) a B (c) B B (d) None of them are correct	1	2	3	1	1.4.1
2	**'\0' in strings is known as** (a) Null vector (b) Null character (c) Zero vector (d) None of these	1	1	3	1	1.3.1
3	**Which of the following ways are correct to declare and initialize a string?** (MSQ) (a) char var_name[] = {'I','N','D','I','A','\0'}; (b) char var_name[] = "INDIA"; (c) char var_name[] = {'I','N','D','I','A'}; (d) None of them are correct	1	2	3	2	2.2.3
4	**Which of the following statement(s) would give an error during execution of the following code?** **tup = (20,30,40,50,80,79)** **print(tup) #Statement 1** **print(tup[3]+50) #Statement 2** **print(max(tup)) #Statement 3** **tup[4]=80 #Statement 4** (a) Statement 1 (b) Statement 2 (c) Statement 3 (d) Statement 4	1	4	4	2	2.4.2
5	**NumPy arrays can be ___.** a) Indexed b) Sliced c) Iterated d) None of the mentioned	1	1	4	1	1.3
6	**What will be the output of the following Python code?** **def maximum(x, y):** **if x > y:** **return x** **elif x == y:** **return 'The numbers are equal'** **else:** **return y** **print(maximum(2, 3))** (MSQ) A) 2 B) 3 C) Numbers are equal D) None of the mentioned	1	4	5	2	2.2.2
7	**Amongst which of the following is / are used to analyze the data in pandas.** a) Dataframe b) Series c) List d) None of the above mentioned	1	1	5	1	1.3
8	**Which among the following function is used to create DataFrame** (MSQ) a) DataFrame() b) NewFrame() c) CreateDataFrame() d) None of the above mentioned	1	1	5	1	1.3.1

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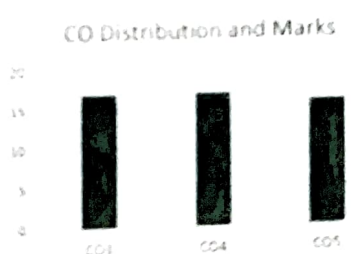
Part-B (3 x 4= 12 Marks)
Answer all the questions

Sl. No	Question	Marks	BL	CO	PO	PI Code
09	Write a program to find the factorial of an integer using recursion.	4	3	3	2	2.1.3
10	Write a user defined function in Python named Puzzle (W, N) which takes the argument Was an English word and N as an integer and returns the string where every Nth alphabet of the word W is replaced with an underscore ("_"). For example: if W contains the word "TELEVISION" and N is 3, then function should return the string "TE_EV_SI_N"	4	4	4	2	2.1.3
11	How will you create a Numpy array of first 10 natural numbers? Create two numpy arrays (One array will contain first five natural numbers. Second array will contain first five prime numbers.). Perform addition, subtraction and multiplication operations of these arrays. Print the results of all operations.	4	3	5	2	2.1.3

Part C (3 * 10 = 30 Marks)

Sl. No	Question	Marks	BL	CO	PO	PI Code
12	(a) Ronaldo and Messi are really good friends. However, they are confused about the definition of leap year. So, you are assigned the task to solve this confusion. For this purpose, make a function to determine whether the given input year is leap year or not (5) (b) Write a program to add two 6 x 6 matrices (5)	10	4	3	2	2.4.2
	(OR)					
13	(a) In case of strings, there are standard functions like strcpy() to copy one string into another. Write your own function to copy the string into another string (Use pointer variables in this case). (b) Similar to the part (a), write a user defined function to find the length of string. Use pointers while doing this	10	3	3	2	2.1.3
14	(a) What are Tuples and discuss about its built-in functions (3) (b) Given the following tuple (7) ('C','o','m','p','u','t','a','t','i','o','n','a','l','l','a','n','g','u','a','g','e') Write a Python program to carry out the following operation • Add an ! at the end of the tuple • Convert a tuple to a string • Extract ('p','o') from the tuple • Find out the number of occurrence of 'l' in the tuple • Check whether 'a' exists in the tuple • Convert the tuple to a list • Delete characters 'a','l','o','e' from the tuple	10	4	4	2	2.1.3
	(OR)					
15	(a) A user-defined function trafficLight() that accepts input from the user, displays an error message if the user enters anything other than RED, YELLOW and GREEN. Function light() is called and the following is displayed depending upon return value from light() • "STOP, Life is more important than speed" if the value returned by light() is 0 • "PLEASE GO SLOW " if the value returned by light() is 1 • "You may go now " if the value returned by light() is 2 (b) A user-defined function light() that accepts a string as input and returns • 0 when the input is RED, • 1 when the input is YELLOW and • 2 when the input is GREEN. The input should be passed as an argument. (c) Display "BETTER LATE THAN NEVER" after the function trafficLight() is executed.	10	4	4	2	2.4.2
16	(a) Write a program that constructs a 3D array of dimensions 4 x 2 x 3. Initialize the array to some values. Find the maximum value along each axis (7) (b) Discuss the significance of Numpy in Python (3)	10	3	5	2	2.1.3
	(OR)					
17	(a) What are the features of Pandas? (3) (b) Write a program to create a class that represents complex numbers containing real and imaginary parts and then use it to perform complex number addition, subtraction, multiplication and division (7).	10	3	5	2	2.1.3

Course Outcome (CO) and Bloom's level (BL) Coverage in Questions



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Registration Number	R	A	2	4	1	1	0	5	6	0	1	0	0	8	0

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SET 3

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Year &Sem: I/I

Date: 30-09-2024
Duration: 1hr 40 mins
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1	CO1	2	3										2
2	CO2	2	3										2
3	CO3	2	3										2
4	CO4	2	3										2
5	CO5	2	3										2

Course Outcomes (CO):

CO-1: Solve problems through computer programming. Express the basic data types and variables in C

CO-2: Use appropriate data types in simple data processing applications. To create programs using the concept of arrays.

Part A (10* 1 = 10 Marks)

Sl.No	Question	Marks	BL	CO	PO	PI Code
1	Which of the following is a valid variable declaration in C? A) int 1number; B) float number@; C) char name; D) double #value;	1	1	1	1	1.4.1

2	Find the output
	int a = 10;
	int b = 5;
	int c;
	c = a + b * 2;
	printf("%d", c);
	A) 20
	B) 15
	C) 25
	D) 10
		1	1	1	1	1.3.1

3	Which of the following statements correctly assigns the value 10 to a variable named count? A) int count = 10; B) count = 10; C) 10 = count;	1	2	1	2	2.2.3
	D) count == 10;					
4	Which operator is used to increment a variable by 1 in C? A) ++ B) + C) += D) --	1	2	1	2	2.2.4
5	Which of the following expressions will evaluate to a boolean true (non-zero) value? A) 5 && 0 B) 0 || 10 C) 0 + 0 D) -5 * 0	1	2	1	2	2.4.1
6	Which loop is faster in C Language? A) for B) while C) do while D) All work at same speed	1	2	2	2	2.1.2

7	How many times i value is checked in the following C program?
	#include <stdio.h>
	int main()
	{
	int i = 0;
	while (i < 3)
	i++;
	printf("In while loop\n");
	}
	a) 2 b) 3 c) 4 d) 1
		1	2	2	2	2.1.3

8	What will be the output of the following C code?
	#include<stdio.h>
	void main()
	{
	int a=3;
	int b= ++a + a++ + --a;
	printf("Value of b is %d", b);
	}
	a) Value of b is 12 b) Value of b is 13
	c) Value of b is 10 d) Undefined behavior
		1	2	1	2	2.4.3

9	What will be the result of the expression 5 != 5? A) 1 B) 0 C) 5 D) -1	1	2	1	2	2.4.1

10	Find the output
	int i = 10;
	printf("%d %d", i++, ++i);
	A) 10 12 B) 11 11 C) 11 12 D) 10 11
		1	2	1	2	2.4.2

Part-B (5 x 4= 20 Marks)
Answer all the questions

Sl. No	Question	Marks	BL	CO	PO	PI Code
11	With suitable examples, compare and contrast Relational Operators and Logical Operators in C	4	2	1	1	1.4.1
12	Write an algorithm that takes the user's income and two expenses as input and calculates the savings	4	3	1	1	1.3.1

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13	Debug the code given below so as to generate the desired output "Better Luck"
	#include <stdio.h>
	int main()
	{
	int i;
	printf("Enter any number\n");
	scanf("%d",i);
	switch(i)
	{
	case 1:
	printf("Do\n");
	break;
	case 2:
	printf("Well\n");
	break;
	case 3:
	printf("Do Better\n");
	break;
	default case:
	printf("Better Luck\n");
	}
	}
		4	4	2	2	2.4.2

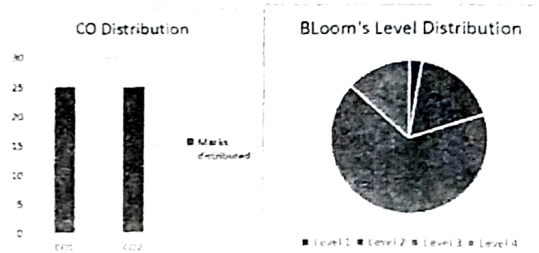
14	Fill the code given and explain how the desired output will be generated.
	#include <stdio.h>
	
	int ____ {
	int ____;
	printf("Enter the upper limit: ");
	scanf("%d", &limit);
	
	for (int i = 1; i ____ limit; ____) {
	if (i % 2 ____0) {
	printf("%d ", i);
	}
	}
	
	printf("\nLoop finished.\n");
	return 0;
	}
		4	4	2	2	2.4.2

15	A countdown timer program takes an input time T in seconds. It sets the current time to T and starts a loop. Each second, it shows the time left, waits for 1 second, and reduces the time by 1. When the time reaches zero, it displays "Time's up!"	4	3	1, 2	2	2.1.3

Part C (2 * 10 = 20 Marks)

Sl.No	Question	Marks	BL	CO	PO	PI Code
16	Write an algorithm and program that reads an integer from the user. If the integer is positive, multiply it by 2; if it's negative, subtract 3 from it; (Hint: Use suitable operator)	10	3	1	2	2.1.3
	(OR)					
17	A company calculates the salary of an employee based on the category of the employee. For daily wage employees, their salary is based on the number of hours worked and the rate per hour. On the other hand, regular employees have a more structured salary calculation, which takes into account several components such as basic pay, allowances, and additional benefits. For example, a regular employee's salary includes a fixed basic pay, which is then increased based on factors like a predefined percentage of Dearness Allowance (DA), a specific House Rent Allowance (HRA), and a medical allowance. Each of these components contributes to the final salary calculation. The correct calculation is applied based on the employee type, with the appropriate salary elements factored in for each type of employee. Write an algorithm and program for the scenario	10	3	1	2	2.1.3
18	Write a C program that prompts the user to enter the amount in USD and the exchange rate to EUR. The program should calculate and display the equivalent amount in EUR. Add a feature that ensures the exchange rate is positive; if the user enters a negative value, the program should display an error message.	10	3	2	2	2.1.3
	(OR)					
19	Devise a program that calculates the final price of a product based on user input and applies a discount based on the price range.	10	3	2	2	2.1.3

Course Outcome (CO) and Bloom's level (BL) Coverage in Questions



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SRM

SRM Institute of Science and Technology

College of Engineering and Technology

School of Computing

SRM Nagar, Kattankulathur – 603203, Chengalpattu District, Tamil Nadu

Academic Year: 2024-25 (ODD)

SET 1

Test: CT1
Course Code & Title: 21CSS101J Programming for Problem Solving
Year &Sem: 1/1

Date: 30-09-2024
Duration: 1hr 40 mins
Max. Marks: 50

Course Articulation Matrix: *(to be placed)*

S.No	Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	CO1	2	3										2
2	CO2	2	3										2
3	CO3	2	3										2
4	CO4	2	3										2
5	CO5	2	3										2

Course Outcomes (CO):

CO-1: Solve problems through computer programming. Express the basic data types and variables in C

CO-2: Use appropriate data types in simple data processing applications. To create programs using the concept of arrays

Part A (10* 1 = 10 Marks)

Sl.No	Question	Marks	BL	CO	PO	PI Code
1	Mention the starting point of c program execution. (a)#include (b)void main() (c)Opening curly braces '{' (d)None of these	1	1	1	1	1.4.1
2	How Many Keywords are there in C? (a)31 (b)32 (c)64 (d)63	1	1	1	1	1.3.1

3	Identify the output
	void main()
	{
	float a=654.1239;
	printf("%0.3f",a);
	}
	(a)Compiler error
	(b)654.123900
	(c)654.123
	(d)654.124
		1	2	1	2	2.2.3

4	Which operator is used to compare two values? (a)Logical operator (b)Relational operator (c)Assignment operator (d)None of these	1	2	1	2	2.2.4
5	After executing the code segment given below what will be the value of a? a = 10 + 2 * 12 / (3*2) + 5; (a)31 (b)19 (c)11 (d)29	1	2	1	2	2.4.1
6	Which loop statement is faster in C Language? A) for B) while C) do while D) All work at same speed	1	2	2	2	2.1.2

7	In the given code segment, how many times the value of i is checked?
	i = 0;
	while (i < 3) i++;
	a) 2
	b) 3
	c) 4
	d) 1
		1	2	2	2	2.4.2

8	Value stored in b after executing the code segment given below
	int a=3;
	int b= ++a + a++ + --a;
	a) 12
	b) 13
	c) 10
	d) Cannot be decided
		1	2	1	2	2.4.2

9	What is the output of the program.?
	#include<stdio.h>
	int main()
	{
	printf("Hello Boss.");
	}
	A) Hello Boss.
	B) Hello Boss
	C) No output
	D) Compiler error
		1	2	1	2	2.4.2

10	Choose the correct output of the program?
	int main()
	{
	register a=10;
	{
	register a = 15;
	printf("%d ", a);
	}
	printf("%d ", a);
	return 20;
	}
		1	2	1	2	2.4.2

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	A) 15 20 B) 15 10 C) 10 15 D) 15 15					

Part-B (5 x 4= 20 Marks)
Answer all the questions

Sl. No	Question	Marks	BL	CO	PO	PI Code
11	**With suitable examples discuss the concept of variables in C.**	4	2	1	1	1.4.1
12	**Devise an algorithm to read the age of two of your friends and find the sum, product and difference of their ages.**	4	3	1	1	1.3.1

13	**Debug the code given below so as to generate the desired output 1 2 4 5.**
	#include<stdio.h>
	void main()
	{
	for(int i=1;i<5;i++)
	{
	if(i==3)
	{
	break;
	}
	printf("%d\n",i);
	}
	}
		4	4	2	2	2.4.2

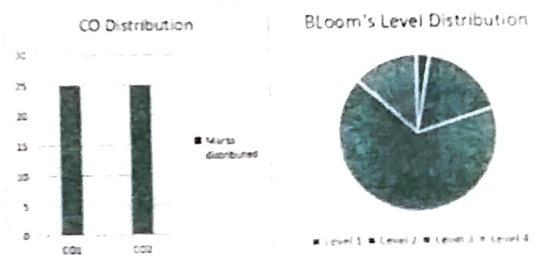
14	**Complete the program by filling in the missing parts in some statements.**
	#include<_____>
	void main()
	{
	int m;
	printf("Input m value");
	scanf("_____", &m);
	_____(m)
	{
	_____0:
	printf("Autumn");
	break;
	case 6:
	printf("Summer");
	break;
	case 5:
	printf("Spring");
	_____
	case 1:
	printf("Winter");
		4	4	2	2	2.4.2

15	You are assigned to create a program for a school that calculates the average marks of students in a class.	4	3	1, 2	2	2.1.3

Part C (2 * 10 = 20 Marks)

Sl.No	Question	Marks	BL	CO	PO	PI Code
16	Design an algorithm and implement the same using C program for carrying out the following tasks • Read age, year of study, section, 10^{th} marks, 12^{th} marks. • Product of age and year of study • Sum and Difference of 10^{th} and 12^{th} marks • Double the age without using the multiplication operator (Hint: use the shift operator)	10	3	1	2	2.1.3
	(OR)					
17	Write a C program that reads an integer from the user and performs the arithmetic operations sequentially. The program should output a single final result. 1. Add 10 to the number. 2. Multiply the result by 2. 3. Subtract 5 from the result. 4. Divide the result by 3 (integer division).	10	3	1	2	2.1.3
18	Write a C program that checks two given temperatures and returns true if one temperature is less than 0 and the other is greater than 100, otherwise, it returns false.	10	3	2	2	2.1.3
	(OR)					
19	Write a C program and an algorithm to help your CR in determining the average age of your class.	10	3	2	2	2.1.3

Course Outcome (CO) and Bloom's level (BL) Coverage in Questions



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SRM

SRM Institute of Science and Technology

College of Engineering and Technology

School of Computing

SRM Nagar, Kattankulathur – 603203, Chengalpattu District, Tamil Nadu

Academic Year: 2024-25 (ODD)

SET 5

Test: CT1
Course Code & Title: 21CSS101J Programming for Problem Solving
Year &Sem: I/I

Date: 30-09-2024
Duration: 1hr 40 mins
Max. Marks: 50

Course Articulation Matrix: *(to be placed)*

S.No	Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	CO1	2	3										2
2	CO2	2	3										2
3	CO3	2	3										2
4	CO4	2	3										2
5	CO5	2	3										2

Course Outcomes (CO):

CO-1: Solve problems through computer programming. Express the basic data types and variables in C

CO-2: Use appropriate data types in simple data processing applications. To create programs using the concept of arrays.

Part A (10* 1 = 10 Marks)

Sl.No	Question	Marks	BL	CO	PO	PI Code

1	What will be the value of x after executing the following code?
	int x = 10;
	x += x++ + ++x;
	a) 30
	b) 32
	c) 31
	d) 20
		1	1	1	1	1.4.1

2	What is the result of the following expression: 10 % 3 + 2 * 5? a) 3 b) 4 c) 8 d) 1	1	1	1	1	1.3.1

3	What is the output of the following code?
	int a = 1;
	int b = 2;
	int c = 3;
	printf("%d", a == b == c);
	a) 0
	b) 1
	c) 2
	d) 3
		1	2	1	2	2.2.3

4	What is the value of y after executing this code?
	int x = 5, y = 10;
	y += (x < y) ? (x + 2) : (y - 2);
	a) 17
	b) 15
	c) 10
	d) 12
		1	2	1	2	2.2.4

5	Which of the following is NOT a basic data type in C? A) int B) char C) string D) float	1	2	1	2	2.4.1

6	What will the output of the following code be?
	int j = 1;
	for (int k = 0; k < 3; k++) {
	j *= 2;
	}
	printf("%d\n", j);
	A) 1
	B) 2
	C) 4
	D) 8
		1	2	2	2	2.1.1

7	Which of the following loops will always execute at least once? A) for loop B) while loop C) do-while loop D) None of the above	1	2	2	2	2.4.2
8	What will happen if you try to use a variable before initializing it? A) The program will compile without errors. B) It will result in a compile-time error. C) It may contain a garbage value. D) The variable will automatically initialize to zero.	1	2	1	2	2.4.2
9	Which of the following is an example of a logical operator? A) + B) && C) = D) /	1	2	1	2	2.4.2
10	What is the result of the expression !0 in C? A) 0 B) 1 C) -1 D) Undefined	1	2	1	2	2.4.2

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Part-B (5 x 4= 20 Marks)
Answer all the questions

Sl. No	Question	Marks	BL	CO	PO	PI Code
11	With suitable examples describe the various data types in C.	4	2	1	1	1.4.1
12	Device an algorithm to improve the score by 10 of a player if the player scores above 50.	4	3	1	1	1.3.1

13	Debug the code and generate the output 0 1 1 2 3 5
	#include <stdio.h>
	
	int main() {
	int first = 0, second = 1, next;
	printf("Fibonacci Series: ");
	for (int i = 1; i <= 6; i++) {
	if (i <= 1) {
	next = i;
	} else {
	next = first + second;
	first = second;
	second = next;
	}
	printf("%d ", next);
	}
	return 0;
	}
		4	4	2	2	2.4.2

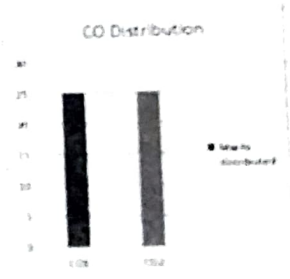
14	Fill the code given and explain how the desired output will be generated.
	#include <stdio.h>
	
	int main() {
	int limit, sum = 0;
	
	printf("Enter the upper limit: ");
	scanf("%d", _____);
	
	for (int i = 2; i <= limit; _____) {
	sum += i; // Add even number to sum
	printf("Current even number: %d, Cumulative sum: %d\n", _____, _____);
	}
	
	printf("The sum of even numbers up to %d is: %d\n", _____, sum);
	return 0;
	}
		4	4	2	2	2.4.2

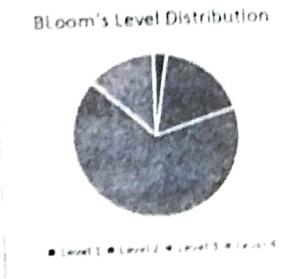
15	Create a tax calculator program that applies different tax rates based on income brackets and marital status.	4	3	1, 2	2	2.1.3

Part C (2 * 10 = 20 Marks)

Sl.No	Question	Marks	BL	CO	PO	PI Code
16	A shop has a promotion where every third item you buy is free. You decide to buy 5 items priced at $10 each. Calculate the total amount you will pay.	10	3	1	2	2.1.3
	(OR)					
17	A teacher is arranging desks in a classroom. She has 8 desks and wants to arrange them in rows. If each row has 2 desks, how many complete rows can she set up?	10	3	1	2	2.1.3
18	You are building a system to monitor daily temperatures. If you receive temperature readings for a week, write a C program to check if any day's temperature exceeds 30 degrees Celsius.	10	3	2	2	2.1.3
	(OR)					
19	You are writing a program to apply discounts to a shopping cart. If the cart has various items, and items over $100 receive a 10% discount, while items below $100 do not get any discount, calculate the total price after discounts.	10	3	2	2	2.1.3

Course Outcome (CO) and Bloom's level (BL) Coverage in Questions





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