VASAVI COLLEGE OF ENGINEERING *(AUTONOMOUS)*, HYDERABAD

Accredited by NAAC with A++ Grade

B.E. I-Semester Main & Backlog Examinations, Jan./Feb.-2024

Programming for Problem Solving

(N : CSE & AIML O : Civil, EEE, ECE, Mech. & IT)

Time: **3 hours**   Max. Marks: **60**

*Note: Answer all questions from **Part-A** and any FIVE from **Part-B***

Part-A (10 × 2 = 20 Marks)

Q. No.	Stem of the question	M	L	CO	PO
1.	Find the hexadecimal and octal equivalent of the following decimal number 1594.	2	2	1	1

2.	What is the output of the following C code?
	#include<stdio.h>
	void main()
	{
	int x = 10 , y =20, z=5;
	z += ++x * ++y;
	printf("x=%d, y=%d, z=%d", x, y, z);
	}
		2	2	1	1

3.	What is the significance of switch statement in C? Write the syntax.	2	1	2	1

4.	What is the output of the following C code?
	#include<stdio.h>
	void main()
	{
	int x =15;
	while (--x > 0)
	{
	if (x %3 == 0)
	    continue;
	else
	    printf("%d\t",x);
	}}
		2	2	2	1

5.	Declare a 2-dimensional array of double type to store the attendance percentage of 13 sections in a college with each section having 65 students. And also initialize all the array elements with 0 value.	2	2	3	1
6.	Write a recursive function to calculate x^n	2	2	3	1
7.	Write the C code to accept the string from the command line and display its length.	2	2	4	1

8.	Explain any 2 string manipulation functions with suitable examples..	2	1	4	1
9.	Differentiate between structure and union.	2	2	5	1
10.	What is the output of the following C code?	2	2	5	1

```
enum week{Mon, Tue, Wed, Thur, Fri, Sat, Sun};
int main() {
enum week day;
day = Wed;
printf("%d",day);
return 0; }
```

Part-B (5×8 = 40 Marks)

11. a)	Draw a flow chart to read the diameter of a circle through the keyboard and calculate & print the area and circumference of the circle.	4	2	1	1,2,3
b)	The basic salary of an employee is entered through the keyboard. Write a C program to find the Gross salary of an employee. DA is 60% of basic, HRA is 20% of basic and bonus is 15% of basic. Gross salary = basic + DA+ HRA+ bonus.	4	3	1	1,2,3
12. a)	Explain the storage classes available in C using suitable examples.	4	1	2	1
b)	In boxing the weight class of a boxer is decided as per the following table. Write a C program that receives weight as input and prints out the boxer's weight class.(use else if)	4	2	2	1,2,3

Weight in Kilograms	Weight Class
Less than 50	Flyweight
50 to 60	Bantamweight
61 to 70	Featherweight
71 to 80	Middleweight
Above 80	Heavy weight

13. a)	Explain bubble sort with the help of a suitable example.	4	2	3	1
b)	What is linear search technique? Write a program that accepts the roll numbers of the students who have participated in the CS-Fest as input from the user. Also, given a specific student roll number as input, search if the given student roll number is present in the participants list or not using linear search technique.	4	3	3	1,2,3
14. a)	What is dynamic memory allocation? Explain the functions used for dynamic memory management with suitable examples.	4	1	4	1
b)	Given two strings s1 and s2 as inputs from the user, write a C Program to check whether string s2 is a substring of string s1 using user defined function.	4	3	4	1,2,3

For example: If the input string s1 is "Vasavi College" and string s2 is "Vasavi".

Output: s2 is a substring of s1.

			M	L	CO	PO

15.	a)	Define the Structure 'Student' with attributes roll_no, name, marks in PPS subject. Write a C program to determine the following
		    i) Read the details of 'n' students.
		    ii) Display the details of 'n' students.
		    iii) Display the details of student who obtained maximum marks in PPS subject.
			4	3	5	1,2,3

	b)	Write a program to open the file "File1.txt" and write some text into it. The text is to be accepted from the user. After writing, the contents should be again read from the file "File1.txt" and displayed on the monitor.	4	3	5	1,2,3
16.	a)	What are the steps to create and run a C program? Explain with the help of a neat diagram.	4	1	1	1
	b)	Write a C program to accept a number as input from the user and include a function to find the sum of all individual digits of the given number which is passed as the parameter.	4	3	2	1,2,3
17.		Answer any *two* of the following:				
	a)	Given 2 matrices A and B of size m rows and n columns. Consider matrix A contains the quiz-1, quiz-2, quiz-3 marks of 6 courses and matrix B contains the Assignment-1, Assignment -2, Assignment -3 marks of 6 courses. Write a program to compute the average mark of all 3 quizzes, average mark of all 3 assignments for every course and finally compute the sum of average quiz mark and average assignment mark of all 6 courses and display the result in a matrix R. (matrix R has the sum of average quiz marks and average assignment marks of every course).	4	3	3	1,2,3
	b)	Write a function to accept the pointer to an array of integers and the size of the array as parameters and sort the array elements using selection sort and display them.	4	3	3	1,2,3
	c)	What is a nested structure? How are the members of nested structure accessed? Explain with the help of an example.	4	2	5	1

M : Marks;   L: Bloom's Taxonomy Level;   CO; Course Outcome;   PO: Programme Outcome

i)	Blooms Taxonomy Level – 1	20%
ii)	Blooms Taxonomy Level – 2	40%
iii)	Blooms Taxonomy Level – 3 & 4	40%

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