RV College of Engineering®
Mysore Road, RV Vidyaniketan Post,
Bengaluru - 560059, Karnataka, India

NBA Accredited (UG - 6 Years)

hod.cse@rvce.edu.in
www.rvce.edu.in
Tel: 080-68188199

Department of Computer Science and Engineering

Academic year 2023-2024 (Even Semester)

CIE I: QUESTION PAPER

Course	**Principles of Programming using C**		
Date	May 2024	Maximum Marks	50
Course Code	CS222AI	Duration	90 Min
Sem	II	CIE – I	

SL No.	Questions	M	BT	CO
1.a	The sum of the ages of two sisters is 36 years. 6 years ago, the elder sister was three times as old as the younger one. Find their present ages.	03	L3	CO2
1.b	Write an algorithm and draw a flowchart to find sum of all digits of a given number. For example: **Input:** Enter a number: 12345 **Output:** Sum of digits: 15	07	L3	CO1
2.a	Enumerate the various types of errors encountered in C programs, illustrating each type with an example.	06	L2	CO2
2.b	Write a code snippet in C programming to find largest of three numbers using ternary operator.	04	L3	CO2

3.a	Briefly explain the precedence, associativity and type conversion with respect to an expression evaluation in C Programming. For the given mixed expression below demonstrate the step-by-step evaluation and type conversion with the help of a line diagram.
	int a,b = 2;
	float x = 9.5;
	double y = 10.5;
	long int z = 50;
	double d;
	a = z/b+b*x-y;
		07	L3	CO3

3.b	Differentiate break and continue statements in C programming using an example.	03	L2	CO1
4.a	A company has decided to give bonuses to its employees based on their account balances. They will give a bonus of 2% of the balance to all account holders, regardless of their balance. Female account holders will receive a 5% bonus if their balance is more than 5000. Write a C program to calculate the new balance after applying these bonuses.	05	L3	CO3

4.b	Write a C program to input a weekday number (1-7) and print the corresponding day of the week using a **switch statement**. Assuming day 1 as Monday. **Input:** Enter the weekday number: 3 **Output:** The day of week: Wednesday	05	L3	CO4
5.a	Illustrate the declaration and initialization of one-dimensional arrays in C Programming.	03	L2	CO2
5.b	The local library is organizing a summer reading challenge for children, encouraging them to read as many books as possible. Write a C program that tracks the number of books each child reads over the summer. The program should allow librarians to input the number of books each child has read and display a leader board displaying the maximum books read in descending order. **Input :** Number of Children: 5 Number of books each child read: C1 C2 C3 C4 C5 14 8 12 18 15 **Output:** **C4 C5 C1 C3 C2** Book read count: 18 15 14 12 8	07	L3	CO4

Course Outcomes: After completing the course, the students will be able to:-	
CO 1	Apply logical skills to solve the engineering problems using C programming constructs
CO 2	Evaluate the appropriate method/data structure required in C programming to develop solutions by investigating the problem.
CO 3	Design a sustainable solution using C programming with societal and environmental concern by engaging in lifelong learning for emerging technology.
CO 4	Demonstrate programming skills to solve inter-disciplinary problems using modern tools effectively by exhibiting team work through oral presentation and written reports

BT-Blooms Taxonomy, CO-Course Outcomes, M-Marks

Marks Distribution	Particulars		CO1	CO2	CO3	CO4	L1	L2	L3	L4	L5	L6
	Test	Max Marks	--	16	22	12	--	09	41	--	--	--

Department of Computer Science and Engineering

Academic year 2023-2024 (Even Semester)

CIE 2: QUESTION PAPER

Course	**Principles of Programming using C**		
Date	June 2024	Maximum Marks	50
Course Code	CS222AI	Duration	90 Min
Sem	II	CIE – II	

Sl.No.	Questions	M	BT	CO
1.a	Write a C program to concatenate two strings without using the strcat function. Describe the approach you used.	06	L2	CO2
1.b	Discuss various functions used to perform string input operations.	04	L2	CO1
2.a	In a store there are 20 items. A shopkeeper wants to place these items alphabetically in a rack. Write a C program to store these items and sort them using bubble sort technique	06	L3	CO3
2.b	What is a function in C? Explain the difference between a function declaration and a function definition.	04	L2	CO2
3.a	Explain how to pass a multi-dimensional array to a function in C. Provide an example function that prints the primary diagonal elements of a 2D array.	06	L3	CO3
3.b	Discuss the role of the "const" keyword when passing an array to a function Illustrate with an example.	04	L2	CO2
4.a	Describe the concept of recursion in C. Write a recursive function to calculate the n^{th} Fibonacci number.	06	L3	CO3
4.b	Differentiate between : a) Actual and formal parameters. b) Scope of the variables and Lifetime	4	L3	CO2
5	Design a program for Hotel Management system. Define and declare a structure Hotel(H_Name, H_city, Number of rooms and room charges), Customer(C_Name, C_Address, Phone_no, DOB). Design a structure 'Reservation' and 'Payment' to book the hotel rooms and to process the payment of the customer respectively. Write a function to perform following: 1. Display the list of Hotels in a particular city. 2. Print the reservation details 3. Print the payment receipt.	10	L4	CO4

Course Outcomes: After completing the course, the students will be able to:-	
CO 1	Apply logical skills to solve the engineering problems using C programming constructs
CO 2	Evaluate the appropriate method/data structure required in C programming to develop solutions by investigating the problem.
CO 3	Design a sustainable solution using C programming with societal and environmental concern by engaging in lifelong learning for emerging technology.
CO 4	Demonstrate programming skills to solve inter-disciplinary problems using modern tools effectively by exhibiting team work through oral presentation and written reports

BT-Blooms Taxonomy, CO-Course Outcomes, M-Marks

Marks Distribution	Particulars		CO1	CO2	CO3	CO4	L1	L2	L3	L4
	Test	Max Marks	4	18	18	10	-	18	22	10

RV College of Engineering®
Mysore Road, RV Vidyaniketan Post,
Bengaluru - 560059, Karnataka, India

NBA Accredited (UG - 6Years)

hod.cse@rvce.edu.in
www.rvce.edu.in
Tel: 080-68188199

Department of Computer Science and Engineering

Academic year 2023-2024 (Even Semester)

IMPROVEMENT CIE: QUESTION PAPER

Course	**Principles of Programming using C**		
Date	July 2024	Maximum Marks	10M + 50M
Course Code	CS222AI	Duration	120 Min
Sem	II	CIE – Improvement CIE	

Sl.No.	Questions	M	BT	CO
	PART-A (Quiz)			
1.	The parameters used in a function call are called _____and the parameters used in a function definition are called _____	1	L1	CO1
2.	Write a suitable C code to define the size of an array as symbolic constant.	1	L2	CO1
3.	Given a function prototype void func(int, int); Write C statement to call this function with arguments 50 and 10	1	L2	CO1
4.	List any two Applications of arrays.	1	L1	CO1
5.	Write an example C code to indicate the two ways of initializing a pointer as a null pointer.	2	L2	CO1

6.	Given the following recursive function, what will be the output of the function call recurse(1234)?
	`void recurse (int n) {`
	`  if (n < 10) {`
	`  printf("%d", n);`
	`  return;`
	`  }`
	`  else {`
	`  printf("%d", n % 10);`
	`  recurse (n / 10);`
	`  }}`
		2	L3	CO2

7.	What is the output of the following program?
	`#include <stdio.h>`
	`void func(int *x) {`
	`  *x = 10; }`
	`int main() {`
	`  int a = 5;`
	`  func(&a);`
	`  printf("%d", a);`
	`  return 0;`
	`}`
		2	L3	CO2

	PART-B (Test)			
Sl.No.	**Questions**	**Marks**	**BT**	**CO**
1a.	Discuss the various ways of storing values in Arrays in C with suitable examples.	5	L2	CO1
1b.	Write a C program to multiply two mxn matrices and display the result in Matrix form.	5	L3	CO2
2.	Differentiate between the types of Recursions. Write a suitable menu driven C program using functions to find the Factorial of a given number: a) Without recursion b) With Recursion.	(3+7)=10	L3	CO3
3.	Discuss passing Single dimension Arrays to Functions. Illustrate the same for searching a value in an array implementing Linear Search approach writing complete C program.	10	L4	CO4
4.	Differentiate between Call by Value and Call by Reference. Illustrate the same by writing functions in C to swap the value of two variables using both the approaches. Write the suitable main () program in C to exercise the functionalities.	10	L3	CO3
5a.	Summarize in a tabular form the concept of Pointer Arithmetic for the operations: Assignment, Addition of an integer, Subtraction of an integer, Comparison of Pointers, Subtraction of pointers.	05	L2	CO2
5b.	Illustrate the concept of Pointers and Arrays with the C Program to find the average of n numbers in arrays.	05	L3	CO2

Course Outcomes: After completing the course, the students will be able to:-	
CO 1	Apply logical skills to solve the engineering problems using C programming constructs
CO 2	Evaluate the appropriate method/data structure required in C programming to develop solutions by investigating the problem.
CO 3	Design a sustainable solution using C programming with societal and environmental concern by engaging in lifelong learning for emerging technology.
CO 4	Demonstrate programming skills to solve inter-disciplinary problems using modern tools effectively by exhibiting team work through oral presentation and written reports

BT-Blooms Taxonomy, CO-Course Outcomes, M-Marks

Marks Distribution	Particulars		CO1	CO2	CO3	CO4	L1	L2	L3	L4
	Quiz	Max Marks	6	4	-	-	2	4	4	-
	Test	Max Marks	5	15	20	10	-	10	30	10

USN | | | | | | | | | |

RV COLLEGE OF ENGINEERING®

(An Autonomous Institution Affiliated to VTU)

II Semester B. E. Regular / Supplementary Examinations August-2024

PRINCIPLES OF PROGRAMMING USING C

Time: 03 Hours *Maximum Marks: 100*

Instructions to candidates:

1. Answer all questions from Part A. Part A questions should be answered in first three pages of the answer book only.
2. Answer FIVE full questions from Part B. In Part B question number 2 & 11 are compulsory. Answer any one full question from 3 and 4, 5 and 6, 7 and 8, 9 and 10, and 11 lab components (compulsory).

PART-A

			M	BT	CO

1	1.1	What is the output of the following program?
		`#include < stdio.h >`
		`void foo(int *);`
		`int main ()`
		`{`
		`int i = 10;`
		`foo((&i) + +);`
		`}`
		`void foo(int * p)`
		`{`
		`printf("%d\n",* p);`
		`}`
			1	2	1

	1.2	Write any two uses of C Structures.	1	1	1
	1.3	What is the size of an integer array declared as *int arr*[5] in bytes?	1	2	2
	1.4	If the two strings are identical, then *strcmp*() function returns _____.	1	1	1
	1.5	What is the difference between function definition and function declaration? Give an example.	1	1	1
	1.6	A function which calls itself is called a _____ function.	1	2	2
	1.7	Insertion of an element at the middle of a linked list requires the modification of how many pointers?	1	3	3

	1.8	What is the output of the following program?
		`#include < stdio.h >`
		`void foo(int *);`
		`int main ()`
		`{`
		`int i = 10, *p = &i;`
		`foo(p + +);`
		`}`
		`void foo(int *p)`
		`{`
		`printf("%d\n", *p);`
		`}`
			1	3	3

	1.9	*void *malloc (size_tn)* returns _____.	1	2	1
	1.10	Find the value $a << 3$, when $a = 7$.	1	3	3

PART-B

2	a	Joseph is now $1/4^{th}$ times as old as his mother Ketty. Four years hence, his mother will be three times as old as her son. Calculate the age of his mother Ketty (in years).	04	2	1
	b	Write an algorithm and a flowchart to swap two numbers without using temporary variable.	05	2	1
	c	Discuss the process of compiling and running a C program with a neat diagram.	05	2	1
3	a	Explain the working of break and continue statements by writing a *C* program.	07	2	2
	b	Write a *C* program to enter the temperature M and print the following message according to the given temperature by using the else if ladder statement. $M <= 35$ "*Result : Fail*" $35 < T <= 50$ "*Result : C Grade*" $50 < T <= 80$ "*Result : B Grade*" $T > 30$ "*Result : S Grade*"	07	2	2
		OR			
4	a	Write a *C* program to read a 1*D* array from the user and find the largest and smallest of n numbers and also print its position.	07	2	2
	b	Write a *C* Program using switch to Simulate the calculator using arithmetic operators (+,−,*,/,%) declaring the appropriate type of variables required for the evaluation.	07	3	2
5	a	Explain the following string handling functions with suitable example: i) strlen() ii) strcpy()	07	3	3
	b	Write *C* functions to perform the following operations: i) Sum of Primary Diagonal Elements ii) Transpose of Matrix	07	2	3
		OR			
6	a	Write a *C* program to find the factorial of the given number using recursion.	07	3	3
	b	Explain the following with an example: i) Pass by value ii) pass by reference	07	3	3
7	a	Write a *C* program to create the structure called complex with real and imaginary as members and perform the addition of two numbers.	07	1	2
	b	Explain with example, how structures are initialized.	07	3	3
		OR			
8	a	Write a program to reverse the string using pointers.	07	3	3
	b	What will happen if we add or subtract an integer to or form pointer variable explain with appropriate example.	07	3	3

9	a	Differentiate between static and dynamic memory allocation using a *C* program.	07	1	2
	b	Write a *C* program to calculate the sum of *N* numbers, entered by user using *calloc*().	07	3	2
		OR			
10	a	Explain the functions used in file operations with an example.	07	1	2
	b	Write a *C* Program to demonstrate working of *malloc* ().	07	3	4
		LAB COMPONENT			
11	a	Develop a *C* program that reads N integer numbers and arrange them in descending order using selection sort technique.	10	4	4
	b	Develop a *C* program to compute average marks of '*n*' students (Name, Roll_No, Test Marks) and search a particular record based on 'Roll_No'.	10	4	4