MOHAMMED SATHAK A J COLLEGE OF ENGINEERING

Siruseri IT park, OMR, Chennai - 603103

LESSON PLAN

Department of Electrical and Electronics Communication Engineering

Name of the Subject	INTRODUCTION TO C PROGRAMMING	Name of the handling Faculty	Mrs JEBA MALAR
Subject Code	OCS752	Year / Sem	IV/VII
Acad Year	2022-2023	Batch	2019-2023

Course Objective

- To develop C Programs using basic programming constructs
- To develop C programs using arrays and strings
- To develop applications in C using functions and structures

Course Outcome

CO1: Develop algorithmic solutions to simple computational problems

CO2: Write and execute Simple Programs by hand and then implementing the same

CO3:Structure simple C programs for solving problems using control statements

CO4:Understand the data representation using arrays and strings operations

CO5:Develop applications using functions and pointers

CO6:Develop Simple applications using structure

Lesson Plan

Sl. No.	Topic(s)	T / R* Book	Periods Required	Mode of Teaching (BB / PPT / NPTEL / MOOC / etc)	Blooms Level (L1-L6)	CO	PO
UNIT I INTRODUCTION							
1	Structure of C program- Basics: Datatypes	T1-Chapter 2	1	BB	L1	CO1	PO1
2	Constants, Variables, Keywords, Operators, Precedence and Associativity	T1-Chapter 2	1	BB	L1	CO1	PO2
3	Expressions, Input/Output statements, Assignment statements	T1-Chapter 2	1	BB	L2	CO1	PO2
4	Decision-making statements, Switch statement	T1-Chapter 3	1	BB	L2	CO1	PO3
5	Looping statements,	T1-Chapter 3	1	BB	L2	CO1	PO3
6	Pre-processor directives	T1:Chapter 10	1	BB	L2	CO1	PO2
7	Compilation process Exercise Programs- Ex. Prog 1 : Check whether the required amount can be withdrawn based on the available balance	R2	1	PPT,TURBO C	L3	CO3	PO12
8	Exercise Programs: Ex. Prog. 2 : Menu driven program to find the area of different shapes.	R2	1	PPT,TURBO C	L3	CO3	PO12
9	Exercise Programs: Ex. Prog. 3 : Find the sum of even numbers.	R2	1	PPT,TURBO C	L3	CO2	PO12

Suggested Activity: Assignment / ~~Case Studies / Tuorials/ Quiz / Mini Projects / Model Developed/others Planned if any~~ 1.Write a C program to check whether the number is palindrome number or not a palindrome number. Test Data : Input a three digit number : 1221 Expected Output : The given number is : 1221 The given number is palindrome number 2.Write a program in C to calculate factorial of a given number. Test Data : Input the given number :7 Expected Output : The factorial of a given number is : 5040							
Evaluation method :Basic Programs 25 marks							
UNIT II ARRAYS							
10	Introduction to Arrays – One dimensional arrays: Declaration – Initialization -	T1:Chapter 5	1	BB	L2	CO4	PO1
11	Accessing elements Operations: Traversal, Selection,	T1:Chapter 5	1	BB	L2	CO4	PO2
12	Insertion, Deletion, Searching	T1:Chapter 5	1	BB	L2	CO4	PO2
13	Two dimensional arrays: Declaration –Initialization -	T1:Chapter 5	1	BB	L2	CO4	PO1
14	Accessing elements, Operations: Read – Print	T1:Chapter 5	1	BB	L2	CO4	PO2
15	Sum – Transpose	T1:Chapter 5	1	BB	L2	CO4	PO2
16	Sorting operations	T1:Chapter 5	1	BB	L2	CO4	PO2
17	Exercise Programs: Ex. Prog. 1 : Print the number of positive and negative values present in the array – Ex. Prog. 2 :Sort the numbers using bubble sort	R2	1	PPT,TURBO C	L3	CO2	PO3
18	Ex. Prog. 3 : Find whether the given is matrix is diagonal or not. and industrial case studies	R2	1	PPT,TURBO C	L3	CO2	PO3
Suggested Activity: Assignment / ~~Case Studies / Tuorials/ Quiz / Mini Projects / Model Developed/others~~ Planned if any 1. Write a program in C to read n number of values in an array and display it in reverse order. Test Data : Input the number of elements to store in the array :3 Input 3 number of elements in the array : element - 0 : 10 element - 1 : 20 element - 2 : 30 Expected Output : The values store into the array are : 10 20 30 The values store into the array in reverse are : 30 20 10							
Evaluation method :Exercise programs 25 marks							
UNIT III STRINGS							
19	Introduction to Strings	T1:Chapter 6	1	BB	L2	CO4	PO1
20	Reading and writing a string	T1:Chapter 6	1	BB	L2	CO4	PO2
21	String operations (without using built-in string functions): Length ,Compare ,Concatenate,Copy and Reverse	T1:Chapter 6	1	BB	L2	CO4	PO3
22	Substring,Insertion,Indexing,	T1:Chapter 6	1	BB	L2	CO4	PO3
23	Deletion,Replacement,Array of strings	T1:Chapter 6	1	BB	L2	CO4	PO3
24	Introduction to Pointers,Pointer operators	T1:Chapter 7	1	BB	L2	CO5	PO1
25	Pointer arithmetic	T1:Chapter 7	1	BB	L2	CO5	PO2
26	Exercise programs:To find the frequency of a character in a string	R2	1	PPT,TURBO C	L3	CO4	PO5
27	To find the number of vowels, consonants and white spaces in a given text ,Sorting the names	R2	1	PPT,TURBO C	L3	CO5	PO5
Suggested Activity: Case Studies							
Evaluation method :Sorting and searching 25 marks							

UNIT IV FUNCTIONS							
28	Introduction to Functions	T1:Chapter 4	1	BB	L2	CO5	PO1
29	Types: User-defined and built-in functions	T1:Chapter 4	1	BB	L2	CO5	PO2
30	Function prototype, Function definition and Function call	T1:Chapter 4	1	BB	L2	CO5	PO2
31	Parameter passing:Pass by value and Pass by reference	T1:Chapter 4	1	BB	L2	CO5	PO2
32	Built-in functions (string functions)	T1:Chapter 4	1	BB	L2	CO5	PO3
33	Recursive functions	T1:Chapter 4	1	BB	L2	CO5	PO3
34	Exerciseprograms1:Calculate the total amount of power consumed by 'n' devices(passing an array to a function)	R2	1	PPT,TURBO C	L5	CO5	PO5
35	Exercise programs 2: Menu-driven program to count the numbers which are divisible by 3,5 and by both(passinganarraytoafunction)	R2	1	PPT,TURBO C	L4	CO5	PO5
36	Exercise programs 3:Replace the punctuations from a given sentence by the space character (passing an array to a function)	R2	1	PPT,TURBO C	L4	CO5	PO5
Suggested Activity: QUIZ							
Evaluation method :Arrays concepts 25 marks							
UNIT V STRUCTURES							
37	Introduction to structures :Declaration	T1:Chapter 8	1	BB	L2	CO6	PO2
38	Initialization ,Accessing the members	T1:Chapter 8	1	BB	L2	CO6	PO2
39	Nested Structures	T1:Chapter 8	1	BB	L2	CO6	PO2
40	Array of Structures	T1:Chapter 8	1	BB	L2	CO6	PO2
41	Structures and functions	T1:Chapter 8	1	BB	L2	CO6	PO5
42	Passing an entire structure	T1:Chapter 8	1	BB	L2	CO6	PO3
43	Exercise programs :Compute the age of a person using structure and functions(passing a structure to a function)	T1:Chapter 8	1	PPT, TURBO C	L4	CO6	PO12
44	Compute the number of days an employee came late to the office by considering his arrival time for 30 days (Use array of structures and functions)	T1:Chapter 8	1	PPT, TURBO C	L6	CO6	PO12
45	Compute the number of days an employee came late to the office by considering his arrival time for 30 days (Use array of structures and functions)	T1:Chapter 8	1	PPT, TURBO C	L6	CO6	PO12
Suggested Activity: MCQ							
Evaluation method: Google forms 25 marks							
Content Beyond the Syllabus Planned							
1	Sorting- Topics covered for Insertion and selection sort.						

2	Analysis of algorithms can be done for searching and sorting Analysis of algorithm is the process of analyzing the problem-solving capability of the algorithm in terms of the time and size required (the size of memory for storage while implementation). However, the main concern of analysis of algorithms is the required time or performance. Generally, we perform the following types of analysis − Worst-case − The maximum number of steps taken on any instance of size a. Best-case − The minimum number of steps taken on any instance of size a. Average case − An average number of steps taken on any instance of size a. Amortized − A sequence of operations applied to the input of size a averaged over time.

Text Books

1	Reema Thareja, "Programming in C", Oxford University Press, Second Edition, 2016

Reference Books

1	Kernighan, B.W and Ritchie,D.M, "The C Programming language", Second Edition, Pearson Education, 2006
2	Paul Deitel and Harvey Deitel, "C How to Program", Seventh edition, Pearson Publication
3	Juneja, B. L and Anita Seth, "Programming in C", CENGAGE Learning India pvt. Ltd., 2011
4	Pradip Dey, Manas Ghosh, "Fundamentals of Computing and Programming in C", First Edition, Oxford University Press, 2009

Website / URL References

1	NPTEL Problem solving through Programming in C https://nptel.ac.in/courses/106/105/106105171/ Coursera
2	C for Everyone: Structured Programming https://www.coursera.org/learn/c-structured-programming
3	C for Everyone: Programming Fundamentals https://www.coursera.org/learn/c-for-everyone

Blooms Level

Level 1 (L1) : Remembering	Lower Order Thinking	Fixed Hour Exams	**Level 4 (L4) : Analysing**		Higher Order Thinking	Projects / Mini Projects
Level 2 (L2) : Understanding			**Level 5 (L5) : Evaluating**			
Level 3 (L3) : Applying			**Level 6 (L6) : Creating**			

Mapping syllabus with Bloom's Taxonomy LOT and HOT

Unit No	Unit Name	L1	L2	L3	L4	L5	L6	LOT	HOT	Total
Unit 1	INTRODUCTION	2	4	3	0	0	0	9	0	9
Unit 2	ARRAYS	0	7	2	0	0	0	9	0	9
Unit 3	STRINGS	0	7	**2**	**0**	**0**	**0**	9	0	9
Unit 4	FUNCTIONS	0	6	0	2	1	0	6	3	9
Unit 5	STRUCTURES	0	6	0	1	0	2	6	3	9
Total		2	30	7	3	1	2	39	6	45
Total Percentage		4.444	66.67	15.56	6.667	2.222	4.444	86.67	13.33	100

CO PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	**1**	**3**	**2**											
CO2												2		
CO3												2		
CO4	**3**	**7**	**3**											
CO5	**2**	**4**	**2**		**4**									
CO6		**4**	**1**		**1**							3		

Avg	**1**	**3**	**1.3**		**0.833**							1.166		
Justification for CO-PO mapping														
CO1	**Apply simple mathematical concepts and Design algorithmic way of problem solving**													
CO2	**Formulate the algorithm into executable c code**													
CO3	**Apply control flow statement for solving the problem**													
CO4	**Apply logic to solve simple problem statement using array and string operations**													
CO5	**Recognize the need of function concepts and apply the concept of pointers**													
CO6	**Recognize the need of structure and develop programs using structure**													
3		**High level**			**2**		**Moderate level**			**1**		Low level		
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Head of the Department :Dr.J.Jeha														