COURSE TITLE	**FINTECH PROGRAMMING LANGUAGE I**
COURSE CODE	**05FN0202**
COURSE CREDITS	**4**

Objective:

1 To impart a thorough understanding of Array – Declaration and Initialization of an Array
2 To impart a thorough understanding of string, Assigning Value to String
3 To design and implement various data structure algorithms.
4 To develop a small application using file programming to save data permanently.
5 To develop function to find the sum of digits of a given number.

Course Outcomes: After completion of this course, student will be able to:

1 Students can comprehend loops and array fundamentals, including declaration, initialization, and element manipulation. They'll evaluate the advantages and drawbacks of arrays, distinguishing between 1-D and 2-D arrays with practical examples. By mastering these concepts, learners will enhance their problem-solving abilities in programming contexts.
2 Students can grasp the basics of strings, covering declaration, initialization, and assignment of values. They'll learn to read strings from users and pass them to functions, understanding the role of pointers in string manipulation. Additionally, they'll explore various string functions and complete assignments to solidify their comprehension.
3 Student can understand concept of Structure and Union, Difference between Structure and Union, Declaration of Structure with example, Practical of Structure, Declaration of Union with example, Practical of union.
4 Students can study functions, including declaration, types, and parameter passing methods. They'll also learn file handling basics, covering opening, writing to, reading from, and closing files, alongside practical assignments to reinforce learning.
5 Students can learn the basics of arrays, including declaration, initialization, and manipulation, along with exploring string operations such as reading user input, passing to functions, and utilizing string functions. Additionally, the course delves into the nuances of structures and unions, highlighting their differences and practical applications.

Pre-requisite of course: Fundamental of C Programming

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
3	0	2	50	30	20	25	25

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Contents : Unit	Topics	Contact Hours
1	**Introduction to Arrays in C** Declaration and Initialization of an Array, Input and Output Array Elements., Advantages and Disadvantages of Arrays., Types of Arrays	12
2	**Functions and Strings** Introduction to String: o Declaration and Initialization of a String. String Operations: o Assigning Values to String., o Reading String from the User. o Passing String to a Function. o String and Pointers. String Functions. Assignment on String.	12
3	**Structure and Union** Introduction to Structure and Union. Difference Between Structure and Union. Structure: o Declaration of Structure with Example., o Practical of Structure. Union: o Declaration of Union with Example. o Practical of Union.	11
4	**Functions and File Handling** Functions: o Function Declaration and Definition. o Types of Functions: User-Defined and Library Functions. o Passing Parameters to Functions: Call by Value and Call by Reference. o Function Arguments and Return Values., File Handling: o Introduction to File Handling. o File Operations: ? Opening a File. ? Writing to a File. ? Reading from a File. ? Closing a File. Assignment on Functions and File Handling.	10
Total Hours		**45**

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	**Unit 1** 1. Create a function to check if a given number is prime or not. 2. Write a function to calculate the factorial of a given number. 3. Implement a function to find the Fibonacci sequence up to a specified number of terms. 4. Design a function to calculate the area of a circle with a given radius. 5. Develop a function to convert temperature from Celsius to Fahrenheit or vice versa. 6. Write a program to find the smallest number in a one-dimensional array. 7. Implement a function to calculate the sum of all elements in a one-dimensional array. 8. Find the Largest number in a one-dimensional array. 9. Define a structure named "Employee" to store information about employees including their name, employee ID, and salary. Create variables for three employees and display their information. 10. Create a structure named "Book" to store information about books including their title, author, and price. Write a function to display the details of a book.	15

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
2	**Unit 2** 1. Design a structure named "Student" to store student information including name, roll number, and marks in three subjects. Write a function to calculate the average marks of a student. 2. Write a program that takes a string input from the user and prints its length using the strlen function. 3. Create a program that concatenates two strings provided by the user using the strcat function and displays the resulting concatenated string. 4. Develop a program that prompts the user to enter a sentence and then counts the number of vowels (a, e, i, o, u) using the strchr function. 5. Implement a program that reverses a given string entered by the user using the strrev function and displays the reversed string. 6. Write a program that takes a sentence as input from the user, converts all lowercase characters to uppercase using the strupr function, and displays the modified sentence. 7. Create a C program with a function declaration and definition to calculate the factorial of a given number. Demonstrate both call by value and call by reference methods for passing parameters. 8. Write a C program that reads text from the user and writes it to a file. Implement functions for opening, writing to, and closing the file. 9. Develop a C program that reads data from a file and displays it on the console. Implement functions for opening, reading from, and closing the file. 10. Design a C program that calculates the sum of elements in an array passed to a function. Use a library function to display the sum. 11. Write a C program that accepts two numbers and performs arithmetic operations such as addition, subtraction, multiplication, and division using separate user-defined functions for each operation. Return the result to the main function and display it.	15
Total Hours		**30**

Textbook :

1 The C Programming Language, Brian W. Kernighan and Dennis M. Ritchie, Prentice Hall, 1998

References:

1 Programming in C, Programming in C, Stephen G. Kochan, Addison-Wesley, 2004

2 C Programming Absolute Beginner's Guide, C Programming Absolute Beginner's Guide, Greg Perry and Dean Miller, Que Publishing, 2007

3 C Programming: A Modern Approach, C Programming: A Modern Approach, K.N. King, W.W. Norton & Company, 2008

4 C Primer Plus, C Primer Plus, Stephen Prata, Pearson, 2011

Suggested Theory Distribution:

The suggested theory distribution as per Bloom’s taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery					
Remember / Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Higher order Thinking / Creative**
20.00	30.00	25.00	15.00	10.00	0.00

Instructional Method:

1 Board Work
2 PPT
3 Demo

Supplementary Resources:

1 https://www.geeksforgeeks.org/c-programming-language/
2 https://cplusplus.com/doc/tutorial/

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