**COURSE FILE**

**PROGRAMMING FOR PROBLEM SOLVING LAB**

**COURSE CODE : 19CS1701**



#### DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

## 2019-20

**Faculty In-Charge HOD**

**Dept.of CSE Dept.of CSE**

## SYLLUBUS

**Programming For Problem Solving Lab**

## Code:19CS1701

## Externals:60Marks L T P C

**Internal:40 Marks 0 0 4 2**

**Objectives:**

* To introduce the basic concepts of Computing environment, number systems and flowcharts
* To familiarize the basic constructs of C language – data types , operators and expressions
* To understand modular and structured programming constructs in C
* To learn the usage of structured data types and memory management using pointers
* To learn the concepts of data handling using pointers

**Course Outcomes:**

* Develop efficient algorithms for solving a problem.
* Use the various constructs of a programming language viz. conditional, iteration ,arrays,strings,pointers, structures and recursion.
* Implement the algorithms in “C” language.
* Handling File in “C”.

**Week 1**

Tutorial 1: Problem solving using computers:  
Lab1: Familiarization with programming environment

**Week 2**

Tutorial 2: Variable types and type conversions:

Lab 2: Simple computational problems using arithmetic expressions

1. Write a C program to find the area of a circle using the formula: Area = PI \* r\*r
2. Write a C program to find the area and volume of sphere. Formulas are: Area =4\*PI\*R\*R Volume = 4/3\*PI\*R\*R\*R.
3. Write a C program to convert Celsius to Fahrenheit.

Formula: C= (F-32)/1.8.

1. Write a C program to read in two integers and display one as a percentage of the other. Typically your output should look like

20 is 50.00% of 40 assuming that the input numbers where 20 and 40. Display the percentage correct to 2 decimal places.

**Week 3**

Tutorial 3: Branching and logical expressions:

Lab 3: Problems involving if-then-else structures

1. Write a C program to find the maximum from given three nos.
2. Write a C program to find that the accepted no is Negative, Positive or Zero.
3. Write a program which reads two integer values. If the first is lesser print the message **“up”**. If the second is lesser, print the message **“down”** if they are equal, print the message **“equal”** if there is an error reading the data, print a message containing the word **“Error”.**
4. Write a C program that prints the given three integers in ascending order using if – else.

**Week 4 & 5**

Tutorial 4: Loops, while and for loops:

Lab 4: Iterative problems e.g., sum of series

1. Write a C program to find the sum of first 100 odd nos. and even nos.
2. Write a C program to display first 100 prime nos.
3. Write a C program to read in a three digit number produce following output

(Assuming that the input is 347) 3 hundreds, 4 tens, 7 units

1. Write a C program to display Fibonacci series
2. Write a C program to calculate the following

i.sum=1-x2/2! +x4/4!-x6/6!+x8/8!-x10/10!+……….,

ii.sum=x-x3/3!+x5/5!.........................,

iii.sum=1+x/1!+x^2/2!+x^3/3!..............,

1. Write a C program to find the roots of a Quadratic equation.
2. Given as input three integers representing a date as day, month, year, print the number day, month and year for the next day's date. Typical input: “28 2 1992” Typical output: “Date following 28:02:1992 is 29:02:1992”

**Week 6**

Tutorial 6: 2D arrays and Strings

Lab 6: Matrix problems, String operations

1. Write a C program to perform the basic Matrix operations

i) Addition ii) Subtraction iii) Multiplication iv) Transpose.

1. Write a C program to determine if the given string is a palindrome or not
2. Write a C program to count the lines, words and characters in a given text

**Week 7**

Tutorial 7: Functions, call by value:

Lab 7: Simple functions

1. Write a C Function for the following task
2. Calculating Factorial
3. Find value of a given Fibonacci term
4. Swapping the values of two variables
5. Write a C program that uses functions to perform the following operations:
6. To insert a sub-string in to a given main string from a given position.
7. To delete n Characters from a given position in a given string.

**Week 8**

Tutorial 5: 1D Arrays: searching, sorting:

Lab 5: 1D Array manipulation

1. C program that reads N integer numbers and searches for a given number using linear search
2. C program that reads N integer numbers and searches for a given number using binary search
3. C program that reads N integer numbers and finds the sum
4. C program that reads N integer numbers and arrange them in ascending order using Bubble Sort
5. C program that reads N integer numbers and arrange them in ascending order using Merge Sort
6. C program that reads N integer numbers and arrange them in ascending order using Quick Sort

**Week 9**

Tutorial 10: Recursion, structure of recursive calls

Lab 10: Recursive functions

1. Write the following recursive C Function

Factorial of a given number

Nth Fibonacci number

Reverse of a given String

Reverse of a give Number

**Week 10**

Tutorial 11: Pointers, structures and dynamic memory allocation

Lab 11: Pointers and structures

1. Write a C program to maintain a record of “n” student details using an array of structures with four fields (Roll number, Name, Marks, and Grade). Assume appropriate data type for each field. Print the marks of the student, given the student name as input.
2. Define structure called cricket that will describe the information player name, team name, batting average. Using cricket, declare an array player with 10 elements and write program to read information about all 10 players and print team wise list containing names of the player with their batting average
3. Write a program using pointers to compute the sum of all elements in an array
4. Write a program to print the elements of a structure using pointers.

**Week 11**

Tutorial 12: File handling:

Lab 12: File operations

1. Write a C program that creates an Employee text file? Records Are empid, empname, designation, qualification, salary, experience, Research work, address, city phone?
2. Write a C program that manipulates the above text file. The program must implements the operation to modify a record, delete a record and append new records

**TIME TABLE**

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| --- | --- | --- |
| **COURSE: Programming For Problem Solving Lab**  **(19CS1701)** | | |
| **A.Y 2019-20-SEM1-E1- ECE** | | |
| **FACULTY NAME:B.LATHA** | | |
| **CLASS ROOM** | **DAY** | **TIME** |
| AB2-001 | WEDNESDAY &MONDAY | 2-4 |
| AB2-210 | THURSDAY &FRIDAY | 2-4 |

** RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES, BASAR**

**(A.Y.19- 2020)**

**Computer Science & Engineering**

**Subject Name: PPS**

**Date: 03/09/19 Time: 3 Hrs**

**Exam:PPS LAB internal Max Marks: 40**

**Answer Any Two Questions 2\*20=40**

**SET-1**

1.Write a C program to find the maximum from given three nos.

2. Write a C program to determine if the given string is a palindrome or not

3. To delete n Characters from a given position in a given string.

4. C program that reads N integer numbers and arrange them in ascending order using Bubble Sort

**SET-2**

**1.** C program that reads N integer numbers and searches for a given number using binary search

2. Write a program using pointers to compute the sum of all elements in an array

3. Write a C program to display first 100 prime nos.

4. Write a C program to calculate the following sum=1-x2/2! +x4/4!-x6/6!+x8/8!-x10/10!+……….,

** RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES, BASAR**

**(A.Y.19- 2020)**

**Computer Science & Engineering**

**Subject Name: PPS**

**Date: 25/10/19 Time: 3 Hrs**

**Exam:PPS LAB EXTERNAL Max Marks: 60**

**SET-1**

1.Write a C program that uses functions to perform the following operations To insert a sub-string in to a given main string from a given position.

2. C program that reads N integer numbers and arrange them in ascending order using Quick Sort

3. Write a C program to maintain a record of “n” student details using an array of structures with four fields (Roll number, Name, Marks, and Grade). Assume appropriate data type for each field. Print the marks of the student, given the student name as input.

4. Write a C program to find the sum of first 100 odd nos. and even nos.

**SET-2**

**1.** Write a C program to read in a three digit number produce following output

(Assuming that the input is 347) 3 hundreds, 4 tens, 7 units

2.Given as input three integers representing a date as day, month, year, print the number day, month and year for the next day's date. Typical input: “28 2 1992” Typical output: “Date following 28:02:1992 is 29:02:1992”

3. C program that reads N integer numbers and searches for a given number using binary search

4. Define structure called cricket that will describe the information player name, team name, batting average. Using cricket, declare an array player with 10 elements and write program to read information about all 10 players and print team wise list containing names of the player with their batting average