| Faculty: **N Abid Ali Khan** Asst Prof – Dept of ECE | L: T: P (Hrs./week): **0:0:2+**1 | SEE Marks: **50** | Course Code: **U21ES121CS** | | |
|---|---|---|---|---|---|
| Credits: **1** | Year: **First** | Branch: **ECE** | Section: **A** | CIE Marks: **30** | Duration of SEE: **3 Hours** |

## List of Programs for PPS Sem External Examination [From Unit – 1, 2 & 3]

| Sl. No | Aim of the Program |
|---|---|
| 1. | Construct a C program to read 4 numbers and print the biggest by using if-else syntax. Allow the user to repeat until the user is willing to stop. |
| 2. | Accept the first semester CGPA details of one-student and print the student's Grade by using else-if ladder. Allow the user to repeat until the user is willing to stop. |
| 3. | Construct a C program to accept today's date in dd/mm/yyyy format and print tomorrow's date using else-if. Allow the user to repeat until the user is willing to stop. |
| 4. | Write a C program to accept the current time and update the time by One second, displaying the updated time in both 12 hours and 24 hours format. Allow the user to repeat until the user is willing to stop. |
| 5. | Write a C program to perform choice-based user arithmetic using switch-case syntax for 2 floating point numbers by accepting the choice using non-formatted input function. Allow the user to repeat until the user is willing to stop. |
| 6. | Write a C program to accept a value 'n' in radians and print the sum of first 'n'-terms of Taylor series expansion of sin(x). |
| 7. | Write a C program to check if the given number is Armstrong number or not using do while loop construct. Allow the user to repeat until the user is willing to stop. |
| 8. | Accept 'n' and check if it is a Prime using for loop syntax. The user may repeat until willing to stop. |
| 9. | Print Hallow Diamond and Diamond filled with '*' of N lines. |
| 10. | Write a C program to accept 3 numbers and print the biggest of given 4 numbers using a user defined function. Allow the user to repeat until the user is willing to stop. |
| 11. | Write a program to accept a number 'n' and check whether it is a strong number or not using a function. |
| 12. | Accept a number 'n' and print the next nearest and the previous nearest prime number using a function. |
| 13. | Write a C program that accepts 'N' natural number and print all the combinations of representing it as the sum of 2 prime numbers. Use the concept of functions. |
| 14. | C program to print 'n' lines of pascal's triangle. |
| 15. | Write a C user defined function to check if the given number is Strong Number. Allow the user to repeat until the user is willing to stop. |
| 16. | Write a C program to accept the coefficients of the quadratic equation ax2+bx+c=0; and print roots. Allow the user to repeat until the user is willing to stop. |

| 17. | Write a C program to accept 2 positive numbers and print all prime factors. Use the concept of functions. |
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| 18. | Factorial of a given number 'n' with & without recursion. |
| 19. | Fibonacci series of up to 'n' with & without recursion. |
| 20. | LCM and GCD of given two numbers with & without recursion. |
| 21. | Check whether the number is palindrome with & without recursion. |
| 22. | C program to maintain 'n' courses marks of one student and print the courses the student has secured max, min marks. Use linear Search. |
| 23. | Write a program to accept 'n' students marks in one course and print roll number wise ranks and rank-wise roll-numbers. Apply bubble sort. |
| 24. | A course has been opted by 'n' students in section – A and 'm' students in section C. Accept the marks of the students in section-wise and apply selection sort for sorting. And, later compare which section's student has secured highest marks? |
| 25. | Write a C program to apply Binary search of finding the first, last and all occurrences of a given 'key' in 'n' integer dataset. |
| 26. | Write a C program to do multiplication of two matrices A and B or order m x n and p x q. |
| 27. | Write a C program demonstrating the usage of call-by-value and call-by-reference. |
| 28. | Write a C program to maintain N integer samples at compile time and perform the selection sort using a function. Print the elements of the array before and after sorting. |
| 29. | Construct a C function that must operate on a 1D array such that all the elements which are multiples of R must come first. |

## List of Programs for PPS Sem External Examination [From Unit – 4 & 5]

| Sl. No. | Aim of the Program |
|---|---|
| 30. | Demonstrate how to create 'N' integer element 1-D Array at run-time, printing the maximum, minimum and average of data. Also perform bubble sort. |
| 31. | Write a C program to read 'N' elements of integers at runtime and using a function perform linear search and selection sort, printing the elements before and after sorting in main. |
| 32. | Write a C program to create Two 2D matrices at run-time and using a function perform the matrix multiplication. |
| 33. | Write a C program to accept two integer sets 'A' & 'B' of 'm' & 'n' items dynamically at runtime and using functions construct: a) C = A U B & b) D = A ∩ B |
| 34. | Write a C program to accept two integer sets 'A' & 'B' of 'm' & 'n' items dynamically at runtime and using functions construct: a) C = A – B &  b) D = B – A |
| 35. | Write a C program to accept a string and using a Function:<br>a) Check if the string is Palindrome or Not.<br>b) Construct a recursive function for it. |
| 36. | Write a C program to accept a multi-token string at run-time and:<br>a) Construct the entire string in uppercase form using a function.<br>b) Implement a function to count how many times a specific character exists by Linear Search. |
| 37. | Write a C program to accept a multi-token string at run-time and using function, display the entire string by rearranging the characters in alphabetical ascending order in main. Use bubble sort. |
| 38. | Write a C program to maintain 'n' students CGPA details by allocating the memory at run-time and using a function, return the top three roll number, displaying it in main. |
| 39. | Write a C program to maintain array of strings at run-time and using a function, rearrange the strings in lexicographic order. |

| 40. | Demonstrate the concept of arrays as structure members by creating "Student" structure with name (multi-token), 3-digit-roll number and Marks in 6 courses as members. And display:<br>    a) In which course the student has got highest marks?<br>    b) In which course the student has got least marks?<br>    c) Display the students Grade based on percentage. |
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| 41. | Demonstrate the concept of array of structures with arrays as members by creating 'n' "Student" structures with name (multi-token), 3-digit-roll number and Marks in 6 courses as members, displaying:<br>    a) The course-wise better performer.<br>    b) The overall Topper Name. |
| 42. | Demonstrate the concept of passing a structure into a function that accesses the employee structure with name, 4-digit employee ID and salary as input and Display the Details in Upper Case. |
| 43. | Demonstrate the concept of passing an array of structure into a function that accesses 'N' student's structure with name, and Marks in 6 Courses as input and assigns the roll numbers from 401 onwards based on alphabetical order of student's names. |
| 44. | C program to maintain a student structure with 3-digit roll number, marks in 6 courses, gender, name and percentage. Create, N student records dynamically allocating memory and using a functions, shuffle the records, displaying before & after as per:   a) Roll Numbers.           b) Names. |
| 45. | Write a C program to open an existing file "data.txt" and:<br>    a) Count number of words, sentences and lines.<br>    b) Create another file with user intended file name and copy the contents of data.txt into this newly created file by converting the entire text into upper-case format. |
| 46. | Write a C program to read existing two files data1.txt, and data2.txt and merge the contents by creating another new file data3.txt. Later, cross verify the contents in all files. |
| 47. | Write a C program to read an existing file "data.txt" and, using a function reconstruct the entire file by deleting only spaces. |
| 48. | Write a C program to read data from "data.txt" using a function delete a specific alphabet inside the file. |
| 49. | Demonstrate usage of command line arguments to accept N integer data samples, printing the big & Small |
| 50. | Demonstrate the usage of pointer to a function to perform choice based arithmetic operations on given two number M and N by invoking the function at run-time. |

# List of Exchange Programs

| Sl. No. | Aim of the Program |
|---|---|
| 1. | Print the Floyd's triangle up to N lines. |
| 2. | Write a C program to accept a number N and print the sum of its digits using while loop |
| 3. | Construct a C program to read a natural number and check if the entered number is Perfect number or not using while loop. |
| 4. | Write a C program to accept a value 'n' in radians and print the sum of first 'n'-terms of Taylor series expansion of cos(x). |
| 5. | Prime number prog using as efficient logic as possible. |
| 6. | Accept two numbers and print: GCD and LCM using for loop |
| 7. | Print 'n' Fibonacci series without using recursion. |
| 8. | C program to print factorial of a number without recursion. |
| 9. | Taylor series expansion of $e^x$ printing the sum of first 'n' terms |
| 10. | Write a C program to display the numbers from 1 to 'n'; and, from 'n' to 1 using recursion. |
| 11. | To print the sum of the digits of a number with & without recursion. |
| 12. | Print if the entered number is Prime number with & without recursion. |
| 13. | Implement improved bubble sort for sorting the rainfall recorded 'n' samples with a 2-digits precision. Later, print the highest and the least readings noted. |
| 14. | Write a C program to apply linear search of finding the first, last and all occurrences of a given 'key' in 'n' integer dataset. |
| 15. | Write a C program to accept two matrices A and B or order m x n and p x q and perform the matrix addition and subtraction. |
| 16. | Write a C program to maintain N student's course marks (for a max of 100) and using a function, add grace marks only for those students whose marks are in between 36 to 39 to round to 40, without changing the other student's marks. |
| 17. | Implement improved bubble sort for sorting the rainfall recorded 'n' samples with a 2-digits precision. Later, print the highest, least readings noted along with calculation of mean, variance, and SD. |
| 18. | Write Recursive functions for:<br>    a) Decimal to Radix-R<br>    b) All elements which are multiples of R must be last. |
| 19. | Write a C program to read the square matrix at runtime and print the trace of the matrix. |
| 20. | Write a C program to maintain a multi-token string at run-time dynamically and using a recursive function, count Tokens in it. |