

KL University

Department of Basic Engineering sciences

C PROGRAMMING & DATA STRUCTURES LAB(15ES102)

List of Experiments for The A.Y. 2015-16

Topic	Experiment Number	Experiment Name
Introduction	1	Write a program to find simple interest when principle amount, rate of interest & no. of years are given.
		For certain electrical circuit with an inductance L and resistance R and the capacitance C the damped natural frequency is given by $f = \sqrt{\frac{1}{LC} - \frac{R^2}{4C^2}}$ Develop a program to calculate the frequency for the given values of L,R,C
		In inventory management, the economic order quantity for single item is given by $EOQ = \sqrt{\frac{2 \times \text{demand rate} \times \text{setup costs}}{\text{holding cost per item per unit time}}}$ and the optimal time between orders $TBO = \sqrt{\frac{2 \times \text{setup costs}}{\text{demand rate} \times \text{holding cost per item per unit time}}}$ Develop a Program to compute EOQ and TBO, given demand rate(items per unit time), setup costs(per order) , and the holding cost (per item per unit time)
Conditional statements	2	Write a program to check whether a given year is a leap year.
		Develop a program that will read marks of a student in 3 subjects and display Grade of student according to his/her Average marks using if-else ladder where <ul style="list-style-type: none"> • Average > 80 then Grade = A • Average between 61 & 80 then Grade = B • Average between 51 & 60 then Grade = C • Average between 41 & 50 then Grade = D • Average between 35 & 40 then Grade = E • Marks < 35 then 'F' (Fail)

		<p>Write a C Program to input Employee Id and basic pay of an employee and then print Employee Id, HRA and Special allowance. Consider HRA is 20% of basic or Rs. 7000/ whichever is less and Special allowance is 10% of basic pay whenever basic exceeds Rs 10000, Otherwise it is 5% of basic pay.</p> <p>Write a program to read a character from the user and then find out whether it is vowel or consonant using else-if ladder and switch statement.</p>										
Conditional statements	3	<p>Using else-if ladder and switch statement write a program to read two integer operands and one arithmetic operator from the user and then perform that operation on given operands and print the calculated value.</p> <p>Develop a program for current billing System based on the given requirements using if else ladder.</p> <table border="1"> <thead> <tr> <th><u>Units Consumed</u></th> <th><u>Rate of Charge</u></th> </tr> </thead> <tbody> <tr> <td>0-200</td> <td>Rs. 0.50 per unit</td> </tr> <tr> <td>201- 400</td> <td>Rs. 0.65 per unit in excess of 200 units</td> </tr> <tr> <td>401- 600</td> <td>Rs. 0.80 per unit in excess of 400 units</td> </tr> <tr> <td>601 and above</td> <td>Rs. 1.00 per unit in excess of 600 units</td> </tr> </tbody> </table>	<u>Units Consumed</u>	<u>Rate of Charge</u>	0-200	Rs. 0.50 per unit	201- 400	Rs. 0.65 per unit in excess of 200 units	401- 600	Rs. 0.80 per unit in excess of 400 units	601 and above	Rs. 1.00 per unit in excess of 600 units
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Control statements	4	<p>Write a program to generate Lucas sequence. The Lucas sequence is 2, 1, 3, 4, 7, 11, 18, 29 so on.</p> <p>Develop a menu drive program for the following requirements</p> <ol style="list-style-type: none"> Find the given number is even or odd Find the given number is prime or not Find the given number is Armstrong or not Find the given number is Palindrome or not <p>Develop a menu drive program for the following requirements</p> <ol style="list-style-type: none"> Find the LCM of given two numbers Find the GCD of given two numbers Find the factorial of a given positive number 										
Arrays and Strings	5	<p>Develop a program to perform following operations on matrices.</p> <ol style="list-style-type: none"> Find the sum of given two matrices. Find the difference of given two matrices. Find the transpose of a given matrix. <p>Develop a program to perform following operations on given String/s.</p> <ul style="list-style-type: none"> • strlen • strcpy • strcat • strrev • strcmp • strcmpi •strupr •strlwr 										

		<p>Develop a program to count the number of vowels, consonants, digits, spaces, other symbols and words in a given text and find the percentage of vowels, consonants, digits, spaces, other symbols of the same text.</p> <p>Develop a program to sort given n number of strings in below mentioned order using functions.</p> <ul style="list-style-type: none"> • Sort strings in alphabetical order • Sort strings based on their length <p>Develop a program that takes a string as input and displays the string after removing the repeated characters.(Consider lower case character and upper case character is same)</p>
functions	6	<p>Develop a program to multiply two matrices using function.</p> <p>Develop a program to find given matrix is symmetric or not using function.</p> <p>Develop a program to find the factorial of a given positive integer using recursion.</p> <p>Write a program to print the n terms of Fibonacci series without using control statements(using recursive functions)</p>
Structures	7	<p>Develop a program to read N students details and sort the structures as per total marks obtained by them, by creating a structure to store the following details. Roll number, name, marks1, marks2, marks3</p> <p>Develop a program using an array of structures to create a student structure with Name, Dept Name, date of joining, read data for N number of students and then find the following.</p> <ul style="list-style-type: none"> • Count how many number of students joined on a given date. • Find the date on which date more number of students was joined.
Searching	8	Develop a program to implement Linear Search and Binary Search using any sorting technique (both recursive and iterative versions).
Sorting	9	Implement quick sort algorithm to sort the given list of N values.
Stacks	10	Implement the array representation of Stack Data structure.
Queues	11	Implement the array representation of Linear Queue and Circular Queue .
Single Linked List	12	Implement the Single Linked List with insert, delete, find and add-after operations
Binary Search Tree	13	Implement the Binary Search Tree with insertion, deletion and traversal operations