LAB CYCLE-2 (Completion date : On or before 10-10-2017)

1. Print Square, Cube and Square Root of all Numbers from 1 to N using loop
2. Read an integer number and check whether the entered number is Positive, Negative or Zero until user does not want to exit.[Using do while] .
3. Implement a Calculator . Read two integer numbers and an operator like +,-,*,/,% and then print the result according to given operator, it must be a complete calculator program on basic arithmetic operators using switch statement in C .
4. Read an age of 5 person & find out how many of them fall under :
   a) Still a baby- age 0 to 5
   b) Attending school - age 6 to 17
   c) Adult life-age 18 & over
   [Using while loop]
5. Implement a Login Authentication System [using nested if] .

NB: Properly document the programs using comments. Author name and date, purpose of each variable and constructs like loop and functions should be indicated/ documented.

LAB CYCLE-3 (Completion date : On or before 17-10-2017)

6. Implement a Substring Extraction System. Input a string from the user and extract the substring (a portion of the string). [Hint: To get the substring from the string, take from and to (start and end) index of the inputted string] using User Defined Function.

7. Read a value and print its corresponding percentage from 1% to 100% using recursion.
   [
   For example:
   Enter a value to split in percentage: 1340
   1 Percent = 13.40
   2 Percent = 26.80
   3 Percent = 40.20
   4 Percent = 53.60
   ... and so on...
   ]
8. The Tower of Hanoi is a mathematical game or puzzle. It consists of three rods and a number of disks of different sizes, which can slide onto any rod. The puzzle starts with the disks in a neat stack in ascending order of size on one rod, the smallest at the top, thus making a conical shape.
   The objective of the puzzle is to move the entire stack to another rod, obeying the following simple rules:
   i) Only one disk can be moved at a time.
   ii) Each move consists of taking the upper disk from one of the stacks and placing it on top of another stack.
   iii) No disk may be placed on top of a smaller disk.
   Demonstrate this problem.

9. Demonstrate Different Storage Classes in C.

LAB CYCLE-4 (Completion date : On or before 14-11-2017)

10. Given an array of size N consisting of integers. In addition to this you are given an element M .Find and print the index of the last occurrence of this element M in the array if it exists in it, otherwise print -1. Consider this array to be 1 indexed.

11. Consider a scenario where a new deadly virus has infected a large population. A brilliant scientist has discovered a new strain of virus which can cure this disease. Vaccine produced from this virus has various strength depending on 'x_blood' count. A person is cured only if 'x_blood' count in vaccine batch is more than 'x_blood' count of person. A doctor receives a new set of report which contains 'x_blood' count of each infected patient, P stores all vaccine doctor has and their 'x_blood' count. You need to determine if doctor can save all patients with the vaccines he has. The number of vaccines and patients are equal.

    (**Hint**: The input values must be N integer (1<N<10) ,which include :

    1) number of vaccines
    2) vaccine x_blood counts.
    3)'x_blood' count of patients.

    Output: Print a single line containing ′Yes′ or ′No′.)

12. Implement a Video Library Management System using Files and Structures.
    The application must be menu driven. The user should be able to

    a) Add the video library details like Customer_id,Customer_name ,Cd_no,Cd_name, language,Issue_date. These details must be saved into a file ”Video_record”.

    b) Search for the customer who have borrowed the CD whose title is " Despicable Me" and the results should be displayed on a file "Borrow_details".

    c)Display the total no. of CD 's issued from the video library on a particular date. (Hint: Count the no of lines from "Video_ record")

    d) Delete the record from "Video_record" file when the customer returns the CD ”Despicable Me”.

13. Implement a Railway Reservation System. The user should enter the ***from_station*** and the ***to_station*** along with other travel details, and the program should do the following:

    a)First compute the distance using function func_calc_distance with parameters ***from_station*** and ***to_station*** passed to it.
    b)Then compute the tariff using func_calc_tariff
    c) Print the ticket

    (**HINT:** *func_calculate (from_station, to_station)*
    {
    Implement a array of structures ***travel_distance*** which has ***station*** and ***distance_from_TVM*** as members. From this array, distance must be computed.
    }

    func_calc_tariff { distance }

{

Calculate tariff as per the following rule

if distance is <= 100, tariff is Rs 3 per km
if distance is > 100 and <= 200, tariff is Rs 2 per km
if distance is > 200 and <= 300, tariff is Rs 1 per km
}

The application should finally print the ticket with passenger name, from_station, To_station, kilometers, and tariff. This output to be written into a output file for logging.)

14. Input a Student Academic Record (Name,Roll number,Marks of subject: MATHEMATICS, PROGRAMMING IN C, DATA STRUCTURES) of 10 students into a file "student_record".

a) Find the mean 'μ' and standard deviation 'σ' of each subjects.If X is the marks obtained by the student, then Grades are assigned to each subjects, based on the following conditions

i) $X \geq \mu + 1.65\sigma$ would result in an S grade
ii) $\mu + 0.85\sigma \leq X < \mu + 1.65\sigma$ would result in an A grade.
iii) $\mu + 0.12\sigma \leq X < \mu + 0.85\sigma$ would result in a B grade.
iv) $\mu - 0.65\sigma \leq X < \mu + 0.12\sigma$ would result in a C grade.
v) $\mu - 1.3\sigma \leq X < \mu - 0.65\sigma$ would result in a F grade.

b)Print the grades of each student.

c)Plot a histogram of subject 'PROGRAMMING IN C' ,with x axis as subject grade and y axis as the number of students.

NB: Properly document the programs using comments. Author name and date, purpose of each variable and constructs like loop and functions should be indicated/ documented.

NB: FAIR RECORD SUBMISSION DATE WITH SOFT BINDING: 16- 11- 2017