MCA FIRST SEMESTER

'Problem Solving Using C Lab - KCA-151'

Practical Assignments

1. WAP using **switch-case** to find the number of days in a particular month of a given year. The leap year check should also be considered.
2. WAP using **switch-case** to check whether a given year is a leap year or not. Case-1 will include **multiple if** statements, case-2 will use a **single if** statement having logical operators and case-3 will use **ternary operator(?:)**.
3. WAP to determine whether a given character is a Capital letter, a small case letter or a digit **using its ASCII value range**.
4. Admission to a professional course is subject to the following conditions:
   a) Marks in Maths >= 60
   b) Marks in Physics >= 50
   c) Marks in Chemistry >= 40
   d) Total marks in all three subject >= 200

   Or

   Total marks in Maths and Physics >= 150

   Given the marks in three subjects, WAP to process the application to list the eligible candidates. **The program should end on user's choice.**
5. Write a program to print the following triangles: The number of rows should be entered through the keyboard.

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Floyd's Triangle 1 2 3 4 5 6 7 8 9 10	**Floyd's Triangle** 1 0 1 1 0 1 0 1 0 1 1 0 1 0 1	0 1 0 1 2 1 0 1 2 3 2 1 0 1 2 3 4 3 2 1 0 1 2 3 4	**Pascal's Triangle** 1 1 1 1 2 1 1 3 3 1 1 4 6 4 1

6. WAP to compute and print a multiplication table upto 10 for numbers in a given range as shown below:

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
12	12	24	36	48	60	72	84	96	108	120
13	13	26	39	52	65	78	91	104	117	130
14	14	28	42	56	70	84	98	112	126	140

7. WAP using **switch-case** to perform the following tasks: **1)** To find whether a given number is an element of the Fibonacci series; **2)** To print the Fibonacci series up to that given number.
8. Write a function **checkPrime( )** to check whether a given number is a Prime number or not and then WAP using this function to print all the Prime numbers in a given range.
9. Write a function **checkArmstrong( )** to check whether a given number is an Armstrong number or not and then WAP using this function to print all the Armstrong numbers in a given range.
10. WAP to find the prime factors of a given number.
11. WAP to reduce the sum of the digits of a given number to a single digit.
12. Write programs for the following using **iteration** and **recursion** through **switch-case**.
    a) Sum of first n natural numbers
    b) Factorial of a given number.
    c) Power of a given number (For e.g. $2^3 = 8$, $2^{-3} = 0.125$, $2^0 = 1$).
    d) Fibonacci series.
13. WAP to implement Linear Search in an array.
14. WAP to print the Largest and the Smallest element in an array.
15. WAP to print the sum of the Diagonal elements of a given square matrix.
16. WAP to find the transpose of a given matrix.
17. WAP to find the addition and subtraction of two matrices.
18. WAP to find the multiplication of two matrices of different orders.
19. WAP to implement possible arithmetic operations in pointers using an array.
20. WAP to print the implement the following string manipulation functions: strlen(), strcat(), strcpy(), strcmp() and strrev().
21. WAP to implement malloc(), calloc(), realloc() and free() functions.
22. WAP to implement the use of **.**(dot) and **->**(arrow) operators in a structure.
23. Write a menu driven program in C to create a structure **employee** having fields **empid**, **empname**, **empsalary**. Accept the details of 'n' Employees from user and perform the following operations using functions.
    - Search employee by employee ID
    - Display all employees
    - Display names of employees having Salary > 10000.
24. WAP to implement the working of different modes of file opening (r, w, a, r+, w+, a+)

25. WAP to display the contents of a file on the console window using command line arguments in C i.e. to emulate the **type** command of DOS.

26. WAP to copy the contents of file to another using command line arguments in C i.e. to emulate the **copy** command of DOS.

27. WAP to program to draw a circle inside a square using graphics functions in C.

28. WAP to program to implement the following graphics functions: line(), circle(), rectangle(), drawelliplse(), fillellipse(), setbgcolor(), setcolor(), outtextxy(), drawpoly(), fillpoly().