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CSE1 Group-2 Subgroup-B Even

Indian Institute of Information Technology, Surat
Department of Computer Science & Engineering
End Semester Lab Examination, 1st Sem, 2025-26
Fundamentals of Computer and C Programming (CS101)

Timing: 11:00 AM to 1:00 PM **Date: Nov 25, 2025** **Marks: 25**

Instructions:

- Work on the computer assigned to you. You should log-in with the **exam** user whose details are given on the board.
- You will have **45 minutes** to code the solutions to both the problems.
- After 45 minutes, you must stop coding. **Do not modify** your code after this time.
- The remaining time will be used for a **viva** (oral examination). Lab instructors will evaluate your code and ask questions about your solution and related concepts.
- You will be graded on:
    - **Correctness:** Does the program work as specified? Does it handle all the edge cases? Code that does not compile at the end of 45 minutes will receive a **zero** for the 'correctness' portion.
    - **Adherence to instructions:** Does the program follow all instructions, such as writing functions with specified function prototypes or using specified structures? Does the program print appropriate user instructions and error messages?
    - **Best practices:** Code clarity, proper indentation, use of comments, and variable naming.
- Since we do not have an uninterrupted power supply, please save your work frequently.
- You may (and should!) carry pen and blank paper with you, but no other devices including phones, smartwatches, and calculators are allowed.
- You must write your solutions in C. You may include any library that is present on your system. Lab instructors will not debug or help compile your code.

1. Decimal to Quaternary **(10)**

Write a C program that asks a user to enter a single integer `n`. If `n <= 0`, report an error. Otherwise print digits of quaternary (base-`4`) notation of `n` in **reverse** order.

E.g.: On input `101` you should output `1121` and on input `4` you should output `01`.

2. Palindrome Check **(15)**

Write a C program that checks if an integer array is a palindrome using a recursive function that operates on pointers.

- Read an integer `n` and an `int` array of `n` numbers from the user.
- You may assume that the user will input `0<n<1000`.
- Use a **recursive** function `int is_palin(int *start, int *end)` that recursively determines whether the array between(including) memory locations `start` and `end` is a palindrome. It should return `1` if this "interval" is a palindrome and `0` otherwise.
- Print `Is a Palindrome` if the function returns `1`, otherwise print `Not a Palindrome`.

E.g.: On input `n=3` and `array=1 0 1` you should print `Is a Palindrome` and on input `n=2` and `array=1 -1` you should print `Not a Palindrome`.