Topic 2: Complexity, CST - 201

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Pseudocode Outline

Tower of Hanoi – Number of Moves for ith Largest Disk

I. Introduction
- Define purpose: Calculate how often the largest disk moves in the 1010 puzzle.
- Clarify input meaning:
    - n: Total number of disks.
    - i: Position of the disk from smallest to largest (1 = smallest, n = largest).

II. User Input
1. Prompt the user to enter the total number of disks (n).
2. Prompt the user to enter the disk position (i), where i ranges from 1 (smallest) to n (largest).

III. Input Validation
1. Check if i is within a valid range:
    - Ensure $1 \leq i \leq n$.
2. If invalid, display an error message and exit or reprompt.

IV. Computation
1. Convert i (from smallest) to the ith largest:
    - ithLargest = n - i + 1
2. Use the formula to calculate the number of moves:
    - moves = 2^(n - ithLargest)

V. Output
1. Display the result to the user:
    - Show how many times the ith largest disk moves.
    - Optionally include the disk number (largest to smallest) for clarity.