

## Task Description: Towers of Hanoi Simulation

### Objective:

Implement a console-based simulation of the Towers of Hanoi puzzle using the provided stack implementation. The program should visually represent the state of three pegs and the disks on them as they are moved according to the rules of the game.

### Requirements:

#### Initialization:

- At the start of the program, prompt the user to enter the number of disks to place on peg 1.
- Initialize three pegs using the provided stack implementation. Peg 1 should contain the specified number of disks (smallest at the top and largest at the bottom), and pegs 2 and 3 should be empty.

#### Gameplay:

- Implement the algorithm to solve the Towers of Hanoi puzzle for the given number of disks.
- The program should visually display the state of each peg after every move. Use a simple text representation where disks of different sizes are represented by numbers or strings of varying lengths.

#### User Interaction:

- After displaying the current state of the pegs, the program should wait for the user to press a key before proceeding to the next move. This allows the user to follow the solution at their own pace.

#### End of Game:

- Once all disks have been moved to peg 3, display a congratulatory message to the user.

#### Code Structure:

- Use the provided stack functions for all operations related to peg and disk manipulations.

- Ensure your code is well-organized and commented, as you will explain your implementation during the viva exam.

### Group Work:

- You may work in groups of up to 3 students. Collaboration is encouraged to divide the workload and bring different ideas together.

### Time Allowed:

- You have 1 hour to complete this task. Manage your time wisely to implement the features and test your program.

### Viva Exam:

- Be prepared to discuss your code and the choices you made during the development process in a viva exam following the submission. Understand the underlying algorithm and be ready to explain any part of your program.

### Submission:

- Submit the complete source code using the CUI Students Portal. Ensure that your code runs without errors to meet the evaluation criteria.

### Evaluation Criteria:

- Correctness of the algorithm implementation.
- Effective use of the provided stack functions.
- Clarity and organization of the code. Well-commented code.
- Ability to explain your code and the choices made during the viva exam.

This task will test your ability to integrate and apply data structures in a practical problem-solving scenario. Good luck!