

### Exercise 3

#### Project 1: The 100 Doors Puzzle

- You walk through a long hallway which has 100 doors
- Every time you walk the hallway you must close open doors and open closed doors
- You walk the hallway 100 times
- First time you walk you stop and check every door
- Second time you walk you stop and check every second door
- Third time you walk you stop and check every third door
- You keep walking through the hallway until you have walked through the hallway 100 times
- At the end of 100 passes, what doors are opened and what doors are closed?

Use exercise 3.8.1 solution as a starting point and write a program that will output the final states of the doors

#### Hints:

- Use the `ar[100]` to store the door states (0 for closed and 1 for open)
- Use the `toggle()` function to change the door's state
  - Use a nested for loop (i.e. a for loop inside a for loop)
  - The outer loop will simulate walking through the hallway
  - The inner loop will simulate stopping at the doors
- Use the `state()` function to display the final states for the doors

- Please save and submit your source code (.c file) solution.
- Solution file naming convention:
  - `First_name_Last_name-section-number-project-number.c`
  - Please use ( - ) to indicate the section and project number
  - Example: `Haidar_Alaubiody-3-project-1.c`