

Report: Simulating Traffic Bridge

Overview

The code simulates the movement of cars over a bridge by utilizing pthreads and semaphores, for synchronization. Cars are coming from both the right sides with a maximum of 5 cars allowed to be on the bridge at any given time.

Components

Semaphores

- "bridge": Controls access to the bridge allowing up to 5 cars at once.
- "mutex": A semaphore for exclusion that's currently not in use.

Global Variables;

- "rightCount": Keeps track of the number of cars approaching from the right.
- "leftCount": Keeps track of the number of cars approaching from the left.

Functions

- "passing(_Bool isLeft, int id)": Simulates a car crossing over the bridge.
- "right(void* args)": Thread responsible for managing right side cars.
- "left(void* args)": Thread responsible for managing left side cars.

Main Function

1. Initializes semaphores.
2. Takes user input regarding the number of right side cars.
3. Creates threads and waits for them to complete their execution.
4. Destroys semaphores and threads as needed.

Synchronization

Bridge Access

- Utilizes the semaphore named "bridge" to regulate controlled access to the bridge.