CS 3413

Assignment 5

Due Date: October 16th, 2020 at 9:30 am

ASSIGNMENT IS TO BE COMPLETED INDIVIDUALLY BY ALL STUDENTS!

Solution written in C is to be submitted via D2L. All I/O is through standard I/O.

For this solution you should NOT use mutexes. Instead, you are to use seminit(), sem_wait() and sem_post().

An old bridge across a river has only one lane so cars can travel in just one direction at a time. If a car wants to cross the river, then the driver must first check that no other car is currently crossing in the opposite direction. If a car is coming in the opposite direction, then the driver must wait for it to finish crossing first before going. Write a pthread program that avoids deadlocks and starvation!

Your main function can read input (stdin) in the following format (tab delimited) to simulate scenarios where each car is a thread:

```
Car       Direction Arrival   Duration
Jim       N         2     5
Mary      N         6     5
Sue       S         8     5
Mark      N         10    5
```

While running, your program outputs the direction that traffic is moving on the bridge and the driver as each car exits the bridge. For the above example, we will have:

```
Direction: North
Jim
Mary
Mark
Direction: South
Sue
```