

CSCE 3513: Homework 5 Report

Data Structures Used:

Pthread - Each vehicle when sent across is handled as a pthread that takes 2 seconds to complete. The pthreads can be set in different conditions to match the specific vehicles' action, such as waiting or signal moving.

Arraylist - All the different cars that are going to cross are placed into an array list of type args (pmstr_t args). This way the vehicles can all have their own data without accidentally overwriting in the assignment phase.

Struct - structs are used to store vehicle type, direct, and id

Pthread_mutex_t lock - The lock is used to keep the pthreads from being affected by each other while changes are being made

Switch - The switch just functioned as a way to differentiate between the options for the different schedules of traffic

Linked-list - A linked list is used to store the waiting list of cars / trucks in the north / south

Pseudocode:

Within the main file, there are several variables set up. I created my own global variable called firstVehicleHasCrossed that ensures the first vehicle has crossed as North. This ensured that vehicles crossed in the correct direction the first time any group started crossing. I also adjusted the main program to be capable of taking int argc, and char *argv[] so the command line was capable of intaking the schedule directly. Next, I created a srand with time so that the rand was truly random. For each option, I created a struct array of vehicles equal to the max number of vehicles that cross the bridge in that schedule. Then, depending on how many vehicles come per arrival, I create a for loop to that number that gets a random float 0 to 1 and a random int 0 or 1. The float is used in an if statement against the carprob to either assign the vehicle type as car or as truck. Next the vehicle argument is inputted into the vehicle_arrival method printing out all

the different vehicles that arrived (their ids, directions, and types). Next, the `p_thread` is created activating the `vehicle_routine` file. Following this first batch of vehicles being sent to their threads, the unlock mutex is called. The prompted delay will then be called (varying from 3 seconds to 25 depending on the option). The pthread is then locked again and the process is repeated creating the next 10 or so vehicles in the schedule. After all vehicles have been created and sent in their pthreads. The for loop iterates through the entire array and joins each vehicles pthread.

Now onto the `vehicle_routine` method. Starting off I checked the vehicle type for car vs truck. Upon seeing a car, I made a `cantcross` variable that checks to see if any of the rules specified for cars being able to start were violated (example: 3 moving cars, any moving trucks, a car moving the opposite direction, any waiting trucks, etc.). Then, I started a while loop with the condition of `can't cross`. Inside the loop the vehicles are checked for direction then sent to the wait condition pthread. I also used my `firstVehicleCrossed` variable to ensure the first vehicle across is North. `Can't cross` is then checked again to potentially break the loop. Next, the crossing begins with the vehicle being added to the moving list and deleted from the waiting list (both of which are linked-lists). The global variables are then updated with waiting car count being decreased and moving cars being increased. Then the print statements are called. The previous moving is then set to the current and moving cars are decreased. Finally, we check the conditions for sending the vehicle pthreads out. These conditions follow the overarching boolean of moving cars being equal to 0. Waiting trucks north take priority for entering the bridge, followed by southern ones, northern cars, and southern cars. The message of the car exiting the bridge is then called and the pthread is unlocked.

On the truck vehicle_routine, the same cancross variable is used, and the code remains mostly similar. The differences begin when we reach the conditional statements under requirement of moving trucks being 0. Trucks retain the priority obviously, but this time they must ensure that the direction of the truck is the opposite of the initial direction, which works because the initial direction is set to south (so the opposite will be North). After the opposite direction trucks are no longer available, the code will take the next available north or south truck (which in this case will be the only direction of trucks left). Once these all have been called, the cars that are in the opposite direction of the last truck are called. Everytime a truck or car is called, the current and previous moving directions changes to the direction of the vehicle crossing. Finally, the print statement describes which vehicles leave.

Output:

Schedule 1:

```
mjbylak@turing:~/csce-3513/Car-Truck-Simulator$ ./bridge_crossing 1
```

```
*****
```

Please select one Schedules from the following six options:

1. 10 : DELAY(10) : 10

car/truck probability: [1.0, 0.0]

2. 10 : DELAY(10) : 10

car/truck probability: [0.0, 1.0]

3. 20

car/truck probability: [0.65, 0.35]

4. 10 : DELAY(25) : 10 : DELAY(25) : 10

car/truck probability: [0.5, 0.5]

5. 10 : DELAY(3) : 10 : DELAY(10): 10

car/truck probability: [0.65, 0.35]

6. 20 : DELAY(15) : 10

car/truck probability: [0.75, 0.25]

Please select [1-6]:*****

Car #0 (northbound) arrived.

Car #1 (southbound) arrived.

Car #2 (southbound) arrived.

Car #3 (southbound) arrived.

Car #4 (northbound) arrived.

Car #5 (northbound) arrived.

Car #6 (northbound) arrived.

Car #7 (southbound) arrived.

Car #8 (northbound) arrived.

Car #9 (northbound) arrived.

Vehicles on the bridge: [Car #9,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): [Car #8,Car #6,Car #5,Car #4,Car #0,]

Waiting Vehicles (Southbound): [Car #7,Car #3,Car #2,Car #1,]

Vehicles on the bridge: [Car #4,Car #9,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): [Car #8,Car #6,Car #5,Car #0,]

Waiting Vehicles (Southbound): [Car #7,Car #3,Car #2,Car #1,]

Vehicles on the bridge: [Car #5,Car #4,Car #9,]

Now 3 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): [Car #8,Car #6,Car #0,]

Waiting Vehicles (Southbound): [Car #7,Car #3,Car #2,Car #1,]

Car #9 exited the bridge.

Car #4 exited the bridge.

Car #5 exited the bridge.

Vehicles on the bridge: [Car #8,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): [Car #6,Car #0,]

Waiting Vehicles (Southbound): [Car #7,Car #3,Car #2,Car #1,]

Vehicles on the bridge: [Car #6,Car #8,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): [Car #0,]

Waiting Vehicles (Southbound): [Car #7,Car #3,Car #2,Car #1,]

Vehicles on the bridge: [Car #0,Car #6,Car #8,]

Now 3 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #7,Car #3,Car #2,Car #1,]

Car #8 exited the bridge.

Car #6 exited the bridge.

Car #0 exited the bridge.

Vehicles on the bridge: [Car #2,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #7,Car #3,Car #1,]

Vehicles on the bridge: [Car #3,Car #2,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #7,Car #1,]

Vehicles on the bridge: [Car #1,Car #3,Car #2,]

Now 3 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #7,]

Car #2 exited the bridge.

Car #3 exited the bridge.

Car #1 exited the bridge.

Vehicles on the bridge: [Car #7,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): []

Car #7 exited the bridge.

Car #10 (southbound) arrived.

Car #11 (southbound) arrived.

Car #12 (southbound) arrived.

Car #13 (northbound) arrived.

Car #14 (northbound) arrived.

Car #15 (southbound) arrived.

Car #16 (southbound) arrived.

Car #17 (southbound) arrived.

Car #18 (southbound) arrived.

Car #19 (northbound) arrived.

Vehicles on the bridge: [Car #19,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): [Car #14,Car #13,]

Waiting Vehicles (Southbound): [Car #18,Car #17,Car #16,Car #15,Car #12,Car #11,Car #10,]

Vehicles on the bridge: [Car #12,Car #19,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): [Car #14,Car #13,]

Waiting Vehicles (Southbound): [Car #18,Car #17,Car #16,Car #15,Car #11,Car #10,]

Vehicles on the bridge: [Car #15,Car #12,Car #19,]

Now 3 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): [Car #14,Car #13,]

Waiting Vehicles (Southbound): [Car #18,Car #17,Car #16,Car #11,Car #10,]

Car #19 exited the bridge.

Car #12 exited the bridge.

Car #15 exited the bridge.

Vehicles on the bridge: [Car #13,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): [Car #14,]

Waiting Vehicles (Southbound): [Car #18,Car #17,Car #16,Car #11,Car #10,]

Vehicles on the bridge: [Car #14,Car #13,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #18,Car #17,Car #16,Car #11,Car #10,]

Car #13 exited the bridge.

Car #14 exited the bridge.

Vehicles on the bridge: [Car #10,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #18,Car #17,Car #16,Car #11,]

Vehicles on the bridge: [Car #16,Car #10,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #18,Car #17,Car #11,]

Vehicles on the bridge: [Car #17,Car #16,Car #10,]

Now 3 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #18,Car #11,]

Car #10 exited the bridge.

Car #16 exited the bridge.

Car #17 exited the bridge.

Vehicles on the bridge: [Car #18,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #11,]

Vehicles on the bridge: [Car #11,Car #18,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): []

Car #18 exited the bridge.

Car #11 exited the bridge.

Finished execution.

Schedule 2:

mjbylak@turing:~/csce-3513/Car-Truck-Simulator\$./bridge_crossing 2

Please select one Schedules from the following six options:

1. 10 : DELAY(10) : 10

car/truck probability: [1.0, 0.0]

2. 10 : DELAY(10) : 10

car/truck probability: [0.0, 1.0]

3. 20

car/truck probability: [0.65, 0.35]

4. 10 : DELAY(25) : 10 : DELAY(25) : 10

car/truck probability: [0.5, 0.5]

5. 10 : DELAY(3) : 10 : DELAY(10): 10

car/truck probability: [0.65, 0.35]

6. 20 : DELAY(15) : 10

car/truck probability: [0.75, 0.25]

Please select [1-6]:*****

Truck #0 (northbound) arrived.

Truck #1 (northbound) arrived.

Truck #2 (northbound) arrived.

Truck #3 (southbound) arrived.

Truck #4 (southbound) arrived.

Truck #5 (southbound) arrived.

Truck #6 (northbound) arrived.

Truck #7 (southbound) arrived.

Truck #8 (southbound) arrived.

Truck #9 (northbound) arrived.

Vehicles on the bridge: [Truck #0,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Truck #9,Truck #6,Truck #2,Truck #1,]

Waiting Vehicles (Southbound): [Truck #8,Truck #7,Truck #5,Truck #4,Truck #3,]

Truck #0 exited the bridge.

Vehicles on the bridge: [Truck #8,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Truck #9,Truck #6,Truck #2,Truck #1,]

Waiting Vehicles (Southbound): [Truck #7,Truck #5,Truck #4,Truck #3,]

Truck #8 exited the bridge.

Vehicles on the bridge: [Truck #1,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Truck #9,Truck #6,Truck #2,]

Waiting Vehicles (Southbound): [Truck #7,Truck #5,Truck #4,Truck #3,]

Truck #1 exited the bridge.

Vehicles on the bridge: [Truck #3,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Truck #9,Truck #6,Truck #2,]

Waiting Vehicles (Southbound): [Truck #7,Truck #5,Truck #4,]

Truck #3 exited the bridge.

Vehicles on the bridge: [Truck #2,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Truck #9,Truck #6,]

Waiting Vehicles (Southbound): [Truck #7,Truck #5,Truck #4,]

Truck #10 (southbound) arrived.

Truck #11 (northbound) arrived.

Truck #12 (southbound) arrived.

Truck #13 (southbound) arrived.

Truck #14 (southbound) arrived.

Truck #15 (northbound) arrived.

Truck #16 (southbound) arrived.

Truck #17 (southbound) arrived.

Truck #18 (northbound) arrived.

Truck #19 (northbound) arrived.

Truck #2 exited the bridge.

Vehicles on the bridge: [Truck #4,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Truck #19,Truck #18,Truck #15,Truck #11,Truck #9,Truck #6,]

Waiting Vehicles (Southbound): [Truck #17,Truck #16,Truck #14,Truck #13,Truck #12,Truck #10,Truck #7,Truck #5,]

Truck #4 exited the bridge.

Vehicles on the bridge: [Truck #6,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Truck #19,Truck #18,Truck #15,Truck #11,Truck #9,]

Waiting Vehicles (Southbound): [Truck #17,Truck #16,Truck #14,Truck #13,Truck #12,Truck #10,Truck #7,Truck #5,]

Truck #6 exited the bridge.

Vehicles on the bridge: [Truck #5,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Truck #19,Truck #18,Truck #15,Truck #11,Truck #9,]

Waiting Vehicles (Southbound): [Truck #17,Truck #16,Truck #14,Truck #13,Truck #12,Truck #10,Truck #7,]

Truck #5 exited the bridge.

Vehicles on the bridge: [Truck #9,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Truck #19,Truck #18,Truck #15,Truck #11,]

Waiting Vehicles (Southbound): [Truck #17,Truck #16,Truck #14,Truck #13,Truck #12,Truck #10,Truck #7,]

Truck #9 exited the bridge.

Vehicles on the bridge: [Truck #7,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Truck #19,Truck #18,Truck #15,Truck #11,]

Waiting Vehicles (Southbound): [Truck #17,Truck #16,Truck #14,Truck #13,Truck #12,Truck #10,]

Truck #7 exited the bridge.

Vehicles on the bridge: [Truck #18,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Truck #19,Truck #15,Truck #11,]

Waiting Vehicles (Southbound): [Truck #17,Truck #16,Truck #14,Truck #13,Truck #12,Truck #10,]

Truck #18 exited the bridge.

Vehicles on the bridge: [Truck #10,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Truck #19,Truck #15,Truck #11,]

Waiting Vehicles (Southbound): [Truck #17,Truck #16,Truck #14,Truck #13,Truck #12,]

Truck #10 exited the bridge.

Vehicles on the bridge: [Truck #19,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Truck #15,Truck #11,]

Waiting Vehicles (Southbound): [Truck #17,Truck #16,Truck #14,Truck #13,Truck #12,]

Truck #19 exited the bridge.

Vehicles on the bridge: [Truck #13,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Truck #15,Truck #11,]

Waiting Vehicles (Southbound): [Truck #17,Truck #16,Truck #14,Truck #12,]

Truck #13 exited the bridge.

Vehicles on the bridge: [Truck #11,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Truck #15,]

Waiting Vehicles (Southbound): [Truck #17,Truck #16,Truck #14,Truck #12,]

Truck #11 exited the bridge.

Vehicles on the bridge: [Truck #12,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Truck #15,]

Waiting Vehicles (Southbound): [Truck #17,Truck #16,Truck #14,]

Truck #12 exited the bridge.

Vehicles on the bridge: [Truck #15,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Truck #17,Truck #16,Truck #14,]

Truck #15 exited the bridge.

Vehicles on the bridge: [Truck #14,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Truck #17,Truck #16,]

Truck #14 exited the bridge.

Vehicles on the bridge: [Truck #16,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Truck #17,]

Truck #16 exited the bridge.

Vehicles on the bridge: [Truck #17,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): []

Truck #17 exited the bridge.

Finished execution.

Schedule 3:

mjbylak@turing:~/csce-3513/Car-Truck-Simulator\$./bridge_crossing 3

Please select one Schedules from the following six options:

1. 10 : DELAY(10) : 10

car/truck probability: [1.0, 0.0]

2. 10 : DELAY(10) : 10

car/truck probability: [0.0, 1.0]

3. 20

car/truck probability: [0.65, 0.35]

4. 10 : DELAY(25) : 10 : DELAY(25) : 10

car/truck probability: [0.5, 0.5]

5. 10 : DELAY(3) : 10 : DELAY(10): 10

car/truck probability: [0.65, 0.35]

6. 20 : DELAY(15) : 10

car/truck probability: [0.75, 0.25]

Please select [1-6]:*****

Truck #0 (southbound) arrived.

Truck #1 (northbound) arrived.

Car #2 (southbound) arrived.

Car #3 (southbound) arrived.

Truck #4 (northbound) arrived.

Car #5 (southbound) arrived.

Truck #6 (northbound) arrived.

Car #7 (southbound) arrived.

Truck #8 (northbound) arrived.

Car #9 (southbound) arrived.

Car #10 (southbound) arrived.

Car #11 (southbound) arrived.

Truck #12 (southbound) arrived.

Car #13 (northbound) arrived.

Truck #14 (northbound) arrived.

Truck #15 (northbound) arrived.

Car #16 (southbound) arrived.

Truck #17 (southbound) arrived.

Truck #18 (southbound) arrived.

Truck #19 (southbound) arrived.

Vehicles on the bridge: [Truck #1,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Truck #15,Truck #14,Car #13,Truck #8,Truck #6,Truck #4,]

Waiting Vehicles (Southbound): [Truck #19,Truck #18,Truck #17,Car #16,Truck #12,Car #11,Car #10,Car #9,Car #7,Car #5,Car #3,Car #2,Truck #0,]

Truck #1 exited the bridge.

Vehicles on the bridge: [Truck #19,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Truck #15,Truck #14,Car #13,Truck #8,Truck #6,Truck #4,]

Waiting Vehicles (Southbound): [Truck #18,Truck #17,Car #16,Truck #12,Car #11,Car #10,Car #9,Car #7,Car #5,Car #3,Car #2,Truck #0,]

Truck #19 exited the bridge.

Vehicles on the bridge: [Truck #4,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Truck #15,Truck #14,Car #13,Truck #8,Truck #6,]

Waiting Vehicles (Southbound): [Truck #18,Truck #17,Car #16,Truck #12,Car #11,Car #10,Car #9,Car #7,Car #5,Car #3,Car #2,Truck #0,]

Truck #4 exited the bridge.

Vehicles on the bridge: [Truck #0,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Truck #15,Truck #14,Car #13,Truck #8,Truck #6,]

Waiting Vehicles (Southbound): [Truck #18,Truck #17,Car #16,Truck #12,Car #11,Car #10,Car #9,Car #7,Car #5,Car #3,Car #2,]

Truck #0 exited the bridge.

Vehicles on the bridge: [Truck #6,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Truck #15,Truck #14,Car #13,Truck #8,]

Waiting Vehicles (Southbound): [Truck #18,Truck #17,Car #16,Truck #12,Car #11,Car #10,Car #9,Car #7,Car #5,Car #3,Car #2,]

Truck #6 exited the bridge.

Vehicles on the bridge: [Truck #12,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Truck #15,Truck #14,Car #13,Truck #8,]

Waiting Vehicles (Southbound): [Truck #18,Truck #17,Car #16,Car #11,Car #10,Car #9,Car #7,Car #5,Car #3,Car #2,]

Truck #12 exited the bridge.

Vehicles on the bridge: [Truck #8,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Truck #15,Truck #14,Car #13,]

Waiting Vehicles (Southbound): [Truck #18,Truck #17,Car #16,Car #11,Car #10,Car #9,Car #7,Car #5,Car #3,Car #2,]

Truck #8 exited the bridge.

Vehicles on the bridge: [Truck #17,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Truck #15,Truck #14,Car #13,]

Waiting Vehicles (Southbound): [Truck #18,Car #16,Car #11,Car #10,Car #9,Car #7,Car #5,Car #3,Car #2,]

Truck #17 exited the bridge.

Vehicles on the bridge: [Truck #14,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Truck #15,Car #13,]

Waiting Vehicles (Southbound): [Truck #18,Car #16,Car #11,Car #10,Car #9,Car #7,Car #5,Car #3,Car #2,]

Truck #14 exited the bridge.

Vehicles on the bridge: [Truck #18,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Truck #15,Car #13,]

Waiting Vehicles (Southbound): [Car #16,Car #11,Car #10,Car #9,Car #7,Car #5,Car #3,Car #2,]

Truck #18 exited the bridge.

Vehicles on the bridge: [Truck #15,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Car #13,]

Waiting Vehicles (Southbound): [Car #16,Car #11,Car #10,Car #9,Car #7,Car #5,Car #3,Car #2,]

Truck #15 exited the bridge.

Vehicles on the bridge: [Car #13,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #16,Car #11,Car #10,Car #9,Car #7,Car #5,Car #3,Car #2,]

Car #13 exited the bridge.

Vehicles on the bridge: [Car #3,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #16,Car #11,Car #10,Car #9,Car #7,Car #5,Car #2,]

Vehicles on the bridge: [Car #2,Car #3,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #16,Car #11,Car #10,Car #9,Car #7,Car #5,]

Vehicles on the bridge: [Car #5,Car #2,Car #3,]

Now 3 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #16,Car #11,Car #10,Car #9,Car #7,]

Car #3 exited the bridge.

Car #2 exited the bridge.

Car #5 exited the bridge.

Vehicles on the bridge: [Car #7,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #16,Car #11,Car #10,Car #9,]

Vehicles on the bridge: [Car #9,Car #7,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #16,Car #11,Car #10,]

Vehicles on the bridge: [Car #11,Car #9,Car #7,]

Now 3 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #16,Car #10,]

Car #7 exited the bridge.

Car #9 exited the bridge.

Car #11 exited the bridge.

Vehicles on the bridge: [Car #16,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #10,]

Vehicles on the bridge: [Car #10,Car #16,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): []

Car #16 exited the bridge.

Car #10 exited the bridge.

Finished execution.

Schedule 4:

mjbylak@turing:~/csce-3513/Car-Truck-Simulator\$./bridge_crossing 4

Please select one Schedules from the following six options:

1. 10 : DELAY(10) : 10

car/truck probability: [1.0, 0.0]

2. 10 : DELAY(10) : 10

car/truck probability: [0.0, 1.0]

3. 20

car/truck probability: [0.65, 0.35]

4. 10 : DELAY(25) : 10 : DELAY(25) : 10

car/truck probability: [0.5, 0.5]

5. 10 : DELAY(3) : 10 : DELAY(10): 10

car/truck probability: [0.65, 0.35]

6. 20 : DELAY(15) : 10

car/truck probability: [0.75, 0.25]

Please select [1-6]:*****

Truck #0 (southbound) arrived.

Truck #1 (southbound) arrived.

Truck #2 (northbound) arrived.

Car #3 (southbound) arrived.

Car #4 (northbound) arrived.

Truck #5 (southbound) arrived.

Car #6 (northbound) arrived.

Truck #7 (northbound) arrived.

Car #8 (northbound) arrived.

Car #9 (southbound) arrived.

Vehicles on the bridge: [Truck #2,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Car #8,Truck #7,Car #6,Car #4,]

Waiting Vehicles (Southbound): [Car #9,Truck #5,Car #3,Truck #1,Truck #0,]

Truck #2 exited the bridge.

Vehicles on the bridge: [Truck #0,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Car #8,Truck #7,Car #6,Car #4,]

Waiting Vehicles (Southbound): [Car #9,Truck #5,Car #3,Truck #1,]

Truck #0 exited the bridge.

Vehicles on the bridge: [Truck #7,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Car #8,Car #6,Car #4,]

Waiting Vehicles (Southbound): [Car #9,Truck #5,Car #3,Truck #1,]

Truck #7 exited the bridge.

Vehicles on the bridge: [Truck #1,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Car #8,Car #6,Car #4,]

Waiting Vehicles (Southbound): [Car #9,Truck #5,Car #3,]

Truck #1 exited the bridge.

Vehicles on the bridge: [Truck #5,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Car #8,Car #6,Car #4,]

Waiting Vehicles (Southbound): [Car #9,Car #3,]

Truck #5 exited the bridge.

Vehicles on the bridge: [Car #4,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): [Car #8,Car #6,]

Waiting Vehicles (Southbound): [Car #9,Car #3,]

Vehicles on the bridge: [Car #8,Car #4,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): [Car #6,]

Waiting Vehicles (Southbound): [Car #9,Car #3,]

Vehicles on the bridge: [Car #6,Car #8,Car #4,]

Now 3 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #9,Car #3,]

Car #4 exited the bridge.

Car #8 exited the bridge.

Car #6 exited the bridge.

Vehicles on the bridge: [Car #3,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #9,]

Vehicles on the bridge: [Car #9,Car #3,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): []

Car #3 exited the bridge.

Car #9 exited the bridge.

Car #10 (northbound) arrived.

Car #11 (southbound) arrived.

Car #12 (southbound) arrived.

Car #13 (southbound) arrived.

Car #14 (southbound) arrived.

Car #15 (northbound) arrived.

Truck #16 (southbound) arrived.

Car #17 (southbound) arrived.

Car #18 (southbound) arrived.

Truck #19 (northbound) arrived.

Vehicles on the bridge: [Truck #19,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Car #15,Car #10,]

Waiting Vehicles (Southbound): [Car #18,Car #17,Truck #16,Car #14,Car #13,Car #12,Car #11,]

Truck #19 exited the bridge.

Vehicles on the bridge: [Truck #16,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Car #15,Car #10,]

Waiting Vehicles (Southbound): [Car #18,Car #17,Car #14,Car #13,Car #12,Car #11,]

Truck #16 exited the bridge.

Vehicles on the bridge: [Car #15,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): [Car #10,]

Waiting Vehicles (Southbound): [Car #18,Car #17,Car #14,Car #13,Car #12,Car #11,]

Vehicles on the bridge: [Car #10,Car #15,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #18,Car #17,Car #14,Car #13,Car #12,Car #11,]

Car #15 exited the bridge.

Car #10 exited the bridge.

Vehicles on the bridge: [Car #11,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #18,Car #17,Car #14,Car #13,Car #12,]

Vehicles on the bridge: [Car #12,Car #11,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #18,Car #17,Car #14,Car #13,]

Vehicles on the bridge: [Car #13,Car #12,Car #11,]

Now 3 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #18,Car #17,Car #14,]

Car #11 exited the bridge.

Car #12 exited the bridge.

Car #13 exited the bridge.

Vehicles on the bridge: [Car #14,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #18,Car #17,]

Vehicles on the bridge: [Car #18,Car #14,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #17,]

Vehicles on the bridge: [Car #17,Car #18,Car #14,]

Now 3 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): []

Car #14 exited the bridge.

Car #18 exited the bridge.

Car #17 exited the bridge.

Car #20 (southbound) arrived.

Truck #21 (northbound) arrived.

Truck #22 (northbound) arrived.

Car #23 (southbound) arrived.

Truck #24 (northbound) arrived.

Car #25 (southbound) arrived.

Car #26 (southbound) arrived.

Truck #27 (northbound) arrived.

Car #28 (southbound) arrived.

Car #29 (northbound) arrived.

Vehicles on the bridge: [Truck #21,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Car #29,Truck #27,Truck #24,Truck #22,]

Waiting Vehicles (Southbound): [Car #28,Car #26,Car #25,Car #23,Car #20,]

Truck #21 exited the bridge.

Vehicles on the bridge: [Truck #22,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Car #29,Truck #27,Truck #24,]

Waiting Vehicles (Southbound): [Car #28,Car #26,Car #25,Car #23,Car #20,]

Truck #22 exited the bridge.

Vehicles on the bridge: [Truck #24,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Car #29,Truck #27,]

Waiting Vehicles (Southbound): [Car #28,Car #26,Car #25,Car #23,Car #20,]

Truck #24 exited the bridge.

Vehicles on the bridge: [Truck #27,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Car #29,]

Waiting Vehicles (Southbound): [Car #28,Car #26,Car #25,Car #23,Car #20,]

Truck #27 exited the bridge.

Vehicles on the bridge: [Car #29,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #28,Car #26,Car #25,Car #23,Car #20,]

Car #29 exited the bridge.

Vehicles on the bridge: [Car #23,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #28,Car #26,Car #25,Car #20,]

Vehicles on the bridge: [Car #20,Car #23,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #28,Car #26,Car #25,]

Vehicles on the bridge: [Car #25,Car #20,Car #23,]

Now 3 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #28,Car #26,]

Car #23 exited the bridge.

Car #20 exited the bridge.

Car #25 exited the bridge.

Vehicles on the bridge: [Car #28,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #26,]

Vehicles on the bridge: [Car #26,Car #28,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): []

Car #28 exited the bridge.

Car #26 exited the bridge.

Finished execution.

Schedule 5:

mjbylak@turing:~/csce-3513/Car-Truck-Simulator\$./bridge_crossing 5

Please select one Schedules from the following six options:

1. 10 : DELAY(10) : 10

car/truck probability: [1.0, 0.0]

2. 10 : DELAY(10) : 10

car/truck probability: [0.0, 1.0]

3. 20

car/truck probability: [0.65, 0.35]

4. 10 : DELAY(25) : 10 : DELAY(25) : 10

car/truck probability: [0.5, 0.5]

5. 10 : DELAY(3) : 10 : DELAY(10): 10

car/truck probability: [0.65, 0.35]

6. 20 : DELAY(15) : 10

car/truck probability: [0.75, 0.25]

Please select [1-6]:*****

Truck #0 (southbound) arrived.

Truck #1 (northbound) arrived.

Car #2 (northbound) arrived.

Car #3 (southbound) arrived.

Car #4 (southbound) arrived.

Car #5 (northbound) arrived.

Truck #6 (southbound) arrived.

Car #7 (northbound) arrived.

Car #8 (northbound) arrived.

Truck #9 (northbound) arrived.

Vehicles on the bridge: [Truck #9,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Car #8,Car #7,Car #5,Car #2,Truck #1,]

Waiting Vehicles (Southbound): [Truck #6,Car #4,Car #3,Truck #0,]

Truck #9 exited the bridge.

Vehicles on the bridge: [Truck #6,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Car #8,Car #7,Car #5,Car #2,Truck #1,]

Waiting Vehicles (Southbound): [Car #4,Car #3,Truck #0,]

Car #10 (northbound) arrived.

Car #11 (southbound) arrived.

Car #12 (northbound) arrived.

Truck #13 (northbound) arrived.

Car #14 (southbound) arrived.

Truck #15 (southbound) arrived.

Truck #16 (southbound) arrived.

Car #17 (northbound) arrived.

Truck #18 (southbound) arrived.

Car #19 (southbound) arrived.

Truck #6 exited the bridge.

Vehicles on the bridge: [Truck #1,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Car #17,Truck #13,Car #12,Car #10,Car #8,Car #7,Car #5,Car #2,]

Waiting Vehicles (Southbound): [Car #19,Truck #18,Truck #16,Truck #15,Car #14,Car #11,Car #4,Car #3,Truck #0,]

Truck #1 exited the bridge.

Vehicles on the bridge: [Truck #0,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Car #17,Truck #13,Car #12,Car #10,Car #8,Car #7,Car #5,Car #2,]

Waiting Vehicles (Southbound): [Car #19,Truck #18,Truck #16,Truck #15,Car #14,Car #11,Car #4,Car #3,]

Truck #0 exited the bridge.

Vehicles on the bridge: [Truck #13,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Car #17,Car #12,Car #10,Car #8,Car #7,Car #5,Car #2,]

Waiting Vehicles (Southbound): [Car #19,Truck #18,Truck #16,Truck #15,Car #14,Car #11,Car #4,Car #3,]

Truck #13 exited the bridge.

Vehicles on the bridge: [Truck #18,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Car #17,Car #12,Car #10,Car #8,Car #7,Car #5,Car #2,]

Waiting Vehicles (Southbound): [Car #19,Truck #16,Truck #15,Car #14,Car #11,Car #4,Car #3,]

Truck #18 exited the bridge.

Vehicles on the bridge: [Truck #15,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Car #17,Car #12,Car #10,Car #8,Car #7,Car #5,Car #2,]

Waiting Vehicles (Southbound): [Car #19,Truck #16,Car #14,Car #11,Car #4,Car #3,]

Car #20 (southbound) arrived.

Car #21 (northbound) arrived.

Truck #22 (southbound) arrived.

Truck #23 (northbound) arrived.

Car #24 (southbound) arrived.

Car #25 (southbound) arrived.

Truck #26 (northbound) arrived.

Truck #27 (northbound) arrived.

Car #28 (northbound) arrived.

Truck #29 (northbound) arrived.

Truck #15 exited the bridge.

Vehicles on the bridge: [Truck #29,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Car #28,Truck #27,Truck #26,Truck #23,Car #21,Car #17,Car #12,Car #10,Car #8,Car #7,Car #5,Car #2,]

Waiting Vehicles (Southbound): [Car #25,Car #24,Truck #22,Car #20,Car #19,Truck #16,Car #14,Car #11,Car #4,Car #3,]

Truck #29 exited the bridge.

Vehicles on the bridge: [Truck #16,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Car #28,Truck #27,Truck #26,Truck #23,Car #21,Car #17,Car #12,Car #10,Car #8,Car #7,Car #5,Car #2,]

Waiting Vehicles (Southbound): [Car #25,Car #24,Truck #22,Car #20,Car #19,Car #14,Car #11,Car #4,Car #3,]

Truck #16 exited the bridge.

Vehicles on the bridge: [Truck #23,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Car #28,Truck #27,Truck #26,Car #21,Car #17,Car #12,Car #10,Car #8,Car #7,Car #5,Car #2,]

Waiting Vehicles (Southbound): [Car #25,Car #24,Truck #22,Car #20,Car #19,Car #14,Car #11,Car #4,Car #3,]

Truck #23 exited the bridge.

Vehicles on the bridge: [Truck #22,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Car #28,Truck #27,Truck #26,Car #21,Car #17,Car #12,Car #10,Car #8,Car #7,Car #5,Car #2,]

Waiting Vehicles (Southbound): [Car #25,Car #24,Car #20,Car #19,Car #14,Car #11,Car #4,Car #3,]

Truck #22 exited the bridge.

Vehicles on the bridge: [Truck #26,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Car #28,Truck #27,Car #21,Car #17,Car #12,Car #10,Car #8,Car #7,Car #5,Car #2,]

Waiting Vehicles (Southbound): [Car #25,Car #24,Car #20,Car #19,Car #14,Car #11,Car #4,Car #3,]

Truck #26 exited the bridge.

Vehicles on the bridge: [Truck #27,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Car #28,Car #21,Car #17,Car #12,Car #10,Car #8,Car #7,Car #5,Car #2,]

Waiting Vehicles (Southbound): [Car #25,Car #24,Car #20,Car #19,Car #14,Car #11,Car #4,Car #3,]

Truck #27 exited the bridge.

Vehicles on the bridge: [Car #2,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): [Car #28,Car #21,Car #17,Car #12,Car #10,Car #8,Car #7,Car #5,]

Waiting Vehicles (Southbound): [Car #25,Car #24,Car #20,Car #19,Car #14,Car #11,Car #4,Car #3,]

Vehicles on the bridge: [Car #7,Car #2,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): [Car #28,Car #21,Car #17,Car #12,Car #10,Car #8,Car #5,]

Waiting Vehicles (Southbound): [Car #25,Car #24,Car #20,Car #19,Car #14,Car #11,Car #4,Car #3,]

Vehicles on the bridge: [Car #5,Car #7,Car #2,]

Now 3 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): [Car #28,Car #21,Car #17,Car #12,Car #10,Car #8,]

Waiting Vehicles (Southbound): [Car #25,Car #24,Car #20,Car #19,Car #14,Car #11,Car #4,Car #3,]

Car #2 exited the bridge.

Car #7 exited the bridge.

Car #5 exited the bridge.

Vehicles on the bridge: [Car #8,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): [Car #28,Car #21,Car #17,Car #12,Car #10,]

Waiting Vehicles (Southbound): [Car #25,Car #24,Car #20,Car #19,Car #14,Car #11,Car #4,Car #3,]

Vehicles on the bridge: [Car #12,Car #8,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): [Car #28,Car #21,Car #17,Car #10,]

Waiting Vehicles (Southbound): [Car #25,Car #24,Car #20,Car #19,Car #14,Car #11,Car #4,Car #3,]

Vehicles on the bridge: [Car #10,Car #12,Car #8,]

Now 3 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): [Car #28,Car #21,Car #17,]

Waiting Vehicles (Southbound): [Car #25,Car #24,Car #20,Car #19,Car #14,Car #11,Car #4,Car #3,]

Car #8 exited the bridge.

Car #12 exited the bridge.

Car #10 exited the bridge.

Vehicles on the bridge: [Car #17,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): [Car #28,Car #21,]

Waiting Vehicles (Southbound): [Car #25,Car #24,Car #20,Car #19,Car #14,Car #11,Car #4,Car #3,]

Vehicles on the bridge: [Car #21,Car #17,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): [Car #28,]

Waiting Vehicles (Southbound): [Car #25,Car #24,Car #20,Car #19,Car #14,Car #11,Car #4,Car #3,]

Vehicles on the bridge: [Car #28,Car #21,Car #17,]

Now 3 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #25,Car #24,Car #20,Car #19,Car #14,Car #11,Car #4,Car #3,]

Car #17 exited the bridge.

Car #21 exited the bridge.

Car #28 exited the bridge.

Vehicles on the bridge: [Car #4,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #25,Car #24,Car #20,Car #19,Car #14,Car #11,Car #3,]

Vehicles on the bridge: [Car #19,Car #4,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #25,Car #24,Car #20,Car #14,Car #11,Car #3,]

Vehicles on the bridge: [Car #3,Car #19,Car #4,]

Now 3 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #25,Car #24,Car #20,Car #14,Car #11,]

Car #4 exited the bridge.

Car #19 exited the bridge.

Car #3 exited the bridge.

Vehicles on the bridge: [Car #14,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #25,Car #24,Car #20,Car #11,]

Vehicles on the bridge: [Car #20,Car #14,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #25,Car #24,Car #11,]

Vehicles on the bridge: [Car #11,Car #20,Car #14,]

Now 3 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #25,Car #24,]

Car #14 exited the bridge.

Car #20 exited the bridge.

Car #11 exited the bridge.

Vehicles on the bridge: [Car #24,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #25,]

Vehicles on the bridge: [Car #25,Car #24,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): []

Car #24 exited the bridge.

Car #25 exited the bridge.

Finished execution.

Schedule 6:

```
mjbylak@turing:~/csce-3513/Car-Truck-Simulator$ ./bridge_crossing 6
```

Please select one Schedules from the following six options:

1. 10 : DELAY(10) : 10

car/truck probability: [1.0, 0.0]

2. 10 : DELAY(10) : 10

car/truck probability: [0.0, 1.0]

3. 20

car/truck probability: [0.65, 0.35]

4. 10 : DELAY(25) : 10 : DELAY(25) : 10

car/truck probability: [0.5, 0.5]

5. 10 : DELAY(3) : 10 : DELAY(10): 10

car/truck probability: [0.65, 0.35]

6. 20 : DELAY(15) : 10

car/truck probability: [0.75, 0.25]

Please select [1-6]:*****

Car #0 (southbound) arrived.

Car #1 (northbound) arrived.

Car #2 (northbound) arrived.

Truck #3 (northbound) arrived.

Car #4 (southbound) arrived.

Car #5 (northbound) arrived.

Truck #6 (southbound) arrived.

Truck #7 (southbound) arrived.

Car #8 (northbound) arrived.

Car #9 (northbound) arrived.

Car #10 (southbound) arrived.

Car #11 (northbound) arrived.

Car #12 (southbound) arrived.

Truck #13 (southbound) arrived.

Car #14 (northbound) arrived.

Truck #15 (northbound) arrived.

Truck #16 (southbound) arrived.

Car #17 (southbound) arrived.

Car #18 (southbound) arrived.

Car #19 (southbound) arrived.

Vehicles on the bridge: [Truck #3,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Truck #15,Car #14,Car #11,Car #9,Car #8,Car #5,Car #2,Car #1,]

Waiting Vehicles (Southbound): [Car #19,Car #18,Car #17,Truck #16,Truck #13,Car #12,Car #10,Truck #7,Truck #6,Car #4,Car #0,]

Truck #3 exited the bridge.

Vehicles on the bridge: [Truck #7,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Truck #15,Car #14,Car #11,Car #9,Car #8,Car #5,Car #2,Car #1,]

Waiting Vehicles (Southbound): [Car #19,Car #18,Car #17,Truck #16,Truck #13,Car #12,Car #10,Truck #6,Car #4,Car #0,]

Truck #7 exited the bridge.

Vehicles on the bridge: [Truck #15,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Car #14,Car #11,Car #9,Car #8,Car #5,Car #2,Car #1,]

Waiting Vehicles (Southbound): [Car #19,Car #18,Car #17,Truck #16,Truck #13,Car #12,Car #10,Truck #6,Car #4,Car #0,]

Truck #15 exited the bridge.

Vehicles on the bridge: [Truck #6,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Car #14,Car #11,Car #9,Car #8,Car #5,Car #2,Car #1,]

Waiting Vehicles (Southbound): [Car #19,Car #18,Car #17,Truck #16,Truck #13,Car #12,Car #10,Car #4,Car #0,]

Truck #6 exited the bridge.

Vehicles on the bridge: [Truck #13,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Car #14,Car #11,Car #9,Car #8,Car #5,Car #2,Car #1,]

Waiting Vehicles (Southbound): [Car #19,Car #18,Car #17,Truck #16,Car #12,Car #10,Car #4,Car #0,]

Truck #13 exited the bridge.

Vehicles on the bridge: [Truck #16,]

Now 0 cars are moving.

Now 1 trucks are moving.

Waiting Vehicles (northbound): [Car #14,Car #11,Car #9,Car #8,Car #5,Car #2,Car #1,]

Waiting Vehicles (Southbound): [Car #19,Car #18,Car #17,Car #12,Car #10,Car #4,Car #0,]

Truck #16 exited the bridge.

Vehicles on the bridge: [Car #2,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): [Car #14,Car #11,Car #9,Car #8,Car #5,Car #1,]

Waiting Vehicles (Southbound): [Car #19,Car #18,Car #17,Car #12,Car #10,Car #4,Car #0,]

Vehicles on the bridge: [Car #1,Car #2,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): [Car #14,Car #11,Car #9,Car #8,Car #5,]

Waiting Vehicles (Southbound): [Car #19,Car #18,Car #17,Car #12,Car #10,Car #4,Car #0,]

Vehicles on the bridge: [Car #5,Car #1,Car #2,]

Now 3 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): [Car #14,Car #11,Car #9,Car #8,]

Waiting Vehicles (Southbound): [Car #19,Car #18,Car #17,Car #12,Car #10,Car #4,Car #0,]

Car #2 exited the bridge.

Car #1 exited the bridge.

Car #5 exited the bridge.

Vehicles on the bridge: [Car #8,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): [Car #14,Car #11,Car #9,]

Waiting Vehicles (Southbound): [Car #19,Car #18,Car #17,Car #12,Car #10,Car #4,Car #0,]

Vehicles on the bridge: [Car #9,Car #8,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): [Car #14,Car #11,]

Waiting Vehicles (Southbound): [Car #19,Car #18,Car #17,Car #12,Car #10,Car #4,Car #0,]

Vehicles on the bridge: [Car #11,Car #9,Car #8,]

Now 3 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): [Car #14,]

Waiting Vehicles (Southbound): [Car #19,Car #18,Car #17,Car #12,Car #10,Car #4,Car #0,]

Car #20 (southbound) arrived.

Car #21 (southbound) arrived.

Car #22 (southbound) arrived.

Car #23 (northbound) arrived.

Car #24 (northbound) arrived.

Car #25 (southbound) arrived.

Car #26 (southbound) arrived.

Car #27 (southbound) arrived.

Car #28 (northbound) arrived.

Car #29 (southbound) arrived.

Car #8 exited the bridge.

Car #9 exited the bridge.

Car #11 exited the bridge.

Vehicles on the bridge: [Car #23,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): [Car #28,Car #24,Car #14,]

Waiting Vehicles (Southbound): [Car #29,Car #27,Car #26,Car #25,Car #22,Car #21,Car #20,Car #19,Car #18,Car #17,Car #12,Car #10,Car #4,Car #0,]

Vehicles on the bridge: [Car #28,Car #23,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): [Car #24,Car #14,]

Waiting Vehicles (Southbound): [Car #29,Car #27,Car #26,Car #25,Car #22,Car #21,Car #20,Car #19,Car #18,Car #17,Car #12,Car #10,Car #4,Car #0,]

Vehicles on the bridge: [Car #14,Car #28,Car #23,]

Now 3 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): [Car #24,]

Waiting Vehicles (Southbound): [Car #29,Car #27,Car #26,Car #25,Car #22,Car #21,Car #20,Car #19,Car #18,Car #17,Car #12,Car #10,Car #4,Car #0,]

Car #23 exited the bridge.

Car #28 exited the bridge.

Car #14 exited the bridge.

Vehicles on the bridge: [Car #24,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #29,Car #27,Car #26,Car #25,Car #22,Car #21,Car #20,Car #19,Car #18,Car #17,Car #12,Car #10,Car #4,Car #0,]

Car #24 exited the bridge.

Vehicles on the bridge: [Car #0,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #29,Car #27,Car #26,Car #25,Car #22,Car #21,Car #20,Car #19,Car #18,Car #17,Car #12,Car #10,Car #4,]

Vehicles on the bridge: [Car #19,Car #0,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #29,Car #27,Car #26,Car #25,Car #22,Car #21,Car #20,Car #18,Car #17,Car #12,Car #10,Car #4,]

Vehicles on the bridge: [Car #4,Car #19,Car #0,]

Now 3 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #29,Car #27,Car #26,Car #25,Car #22,Car #21,Car #20,Car #18,Car #17,Car #12,Car #10,]

Car #0 exited the bridge.

Car #19 exited the bridge.

Car #4 exited the bridge.

Vehicles on the bridge: [Car #10,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #29,Car #27,Car #26,Car #25,Car #22,Car #21,Car #20,Car #18,Car #17,Car #12,]

Vehicles on the bridge: [Car #12,Car #10,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #29,Car #27,Car #26,Car #25,Car #22,Car #21,Car #20,Car #18,Car #17,]

Vehicles on the bridge: [Car #18,Car #12,Car #10,]

Now 3 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #29,Car #27,Car #26,Car #25,Car #22,Car #21,Car #20,Car #17,]

Car #10 exited the bridge.

Car #12 exited the bridge.

Car #18 exited the bridge.

Vehicles on the bridge: [Car #29,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #27,Car #26,Car #25,Car #22,Car #21,Car #20,Car #17,]

Vehicles on the bridge: [Car #17,Car #29,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #27,Car #26,Car #25,Car #22,Car #21,Car #20,]

Vehicles on the bridge: [Car #20,Car #17,Car #29,]

Now 3 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #27,Car #26,Car #25,Car #22,Car #21,]

Car #29 exited the bridge.

Car #17 exited the bridge.

Car #20 exited the bridge.

Vehicles on the bridge: [Car #21,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #27,Car #26,Car #25,Car #22,]

Vehicles on the bridge: [Car #22,Car #21,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #27,Car #26,Car #25,]

Vehicles on the bridge: [Car #25,Car #22,Car #21,]

Now 3 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #27,Car #26,]

Car #21 exited the bridge.

Car #22 exited the bridge.

Car #25 exited the bridge.

Vehicles on the bridge: [Car #26,]

Now 1 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): [Car #27,]

Vehicles on the bridge: [Car #27,Car #26,]

Now 2 cars are moving.

Now 0 trucks are moving.

Waiting Vehicles (northbound): []

Waiting Vehicles (Southbound): []

Car #26 exited the bridge.

Car #27 exited the bridge.

Finished execution.