Question 6:

6.1.

Assume the current turn is 1.

A possible sequence that violate mutual exclusion is given below:

P0: blocked[0]:=true;

P0: while (turn != 0) -> true

P0: while (blocked[1]) -> false

P1: blocked[1]:=true;

P1: while (turn != 1) -> false

P1: <critical section> //P(1) goes into CS

P0: turn:=0;

P0: while (turn != 0) -> false

P0: <critical section> //P(0) goes into CS

6.2.

cust: semaphore (:= 0);

bus: semaphore (:= 0);

busReady: semaphore (:= 0);

busMutex: semaphore (:= 1);

procedure bus;

{

wait(busMutex);

signal(bus);

signal(bus);

wait(cust);

wait(cust);

signal(busReady);

signal(busReady);

signal(busMutex);

drive around the park;

unload visitors;

}