EECS31L
Lab 4
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Write a VHDL code and test bench for the following state diagram,
A state diagram for a simple two-floor elevator is shown in Figure 1.

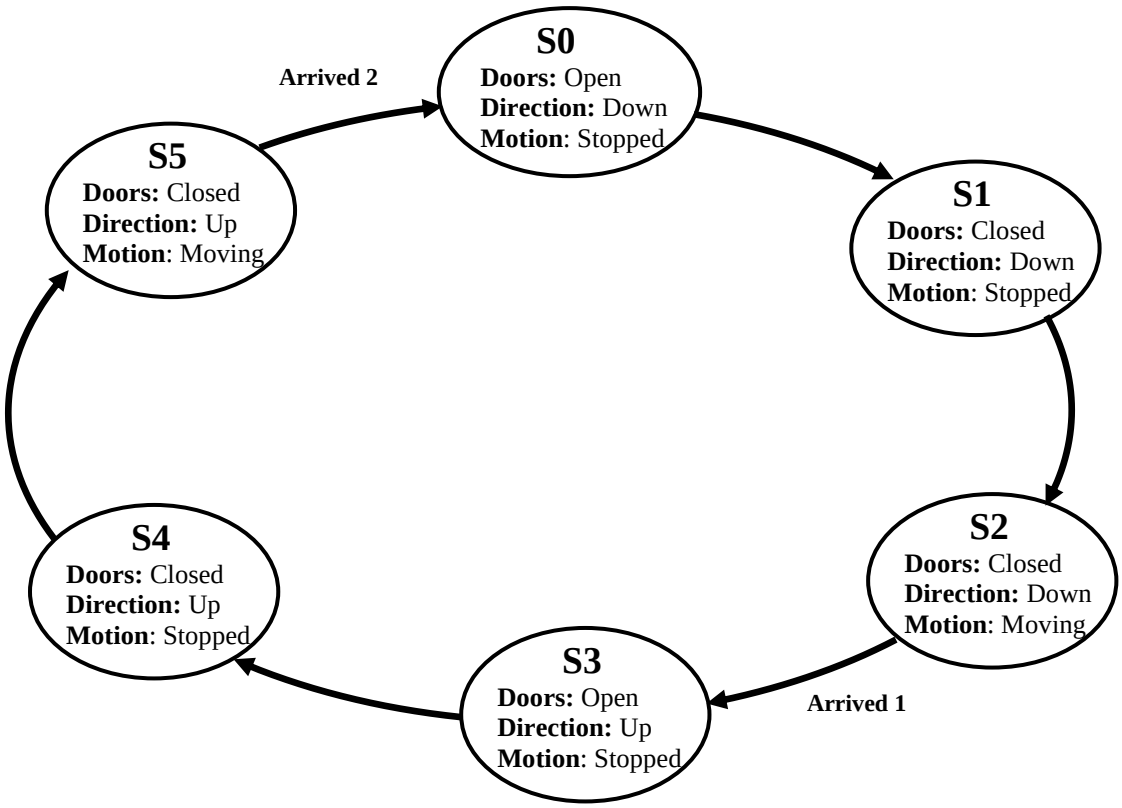

Figure 1: State Diagram for a Two-Floor Elevator

The elevator shown in Figure 1 has three variables (direction, doors, and motion) and six output states, represented as S0 though S5. Arrows between states represent state transitions. S0 represents the elevator at rest on the upper floor and S3 is the elevator at rest on the lower floor. Here information from sensors, Arrived 1 and Arrived 2, is used to detect elevator arrival on either floor.

In this description, the variables are represented by the values for Q, such that Doors is Q(2) with Open = 0 and Closed = 1; Direction is Q(1) with Down = 0 and Up = 1; and Motion is Q(0) with Stopped = 0 and Moving = 1.

We assume the system is operating without external inputs. In this system, the elevation would continuously move between floors, without regard to if anyone was waiting.

Submit VHDL file, test bench file, and screen shot of simulation.