1. Write VHDL code for the FSM shown in the Figure below, using the style of code discussed in class (Lecture 8: FSM VHDL Code, page 10-11).

2. Repeat problem 1, using the style of code discussed in class (Lecture 8: FSM VHDL Code, page 19-20).

3. Write VHDL code for the FSM shown in the Figure below, using the style of code discussed in class (Lecture 8: FSM VHDL Code, page 12-13).
4. Repeat problem 3, using the style of code in class (Lecture 8: FSM VHDL Code, page 21-22).

5. The arbiter FSM defined in class (Lecture 8: FSM VHDL Code, page 25) may cause device 3 to never get serviced if devices 1 and 2 continuously keep raising requests, so that in the Idle state it always happens that either device 1 or device 2 has an outstanding request. Modify the proposed FSM to ensure that device 3 will get serviced, such that if it raises a request, the devices 1 and 2 will be serviced only once before the device 3 is granted its request.

6. Write VHDL code for the FSM designed in problem 5.