1. Define fit criteria for the following specification fragments from our running case studies; (1.5 pts)
   a. “Trains should run at high frequency during rush hours” (0.5 pt)
   b. “In order to ensure comfortable transportation, trains should
      accelerate/decelerate smoothly” (0.5 pt)
   c. “Meetings should be scheduled as quickly as possible once they are
      initiated” (0.5 pt)

2. Build a decision table for a checkout transaction in the library system with input
   conditions such as “registered user”, “book copy available”, “load quota reached”,
   and output conditions such as “loan granted”, “loan denied”, and “book copy
   reserved”. (2 pts)

3. An embedded computer controls two pairs of traffic lights at the intersection of a
   street and an avenue, one pair for each. The lights can be red or green, but both
   pairs can never be green at the same time (else the lights will cause car
   collisions!). Under normal processing, the lights change, via turn_red and
   turn_green commands, whenever the event change_lights occurs, say every 45
   seconds; the changes are such that one pair is red while the other is green. When
   an ambulance nears the intersection, a sensor signals amb_enter road event,
   where road is either avenue or street depending on the location of the ambulance.
   The controller must then ensure that the lights on the ambulance road are green,
   while those on the other road are red. When the ambulance leaves the intersection
   area, signaled by an amb_exit event, the lights resume their normal sequencing.
   Draw a state machine this traffic light controller. (2 pts)