CS 5/7316 Software Requirements
Homework 4
(5.5 pts)

Due Dates: On campus students due by 11:59pm on 11/18/2024
Off campus students due by 11:59pm on 11/19/2024

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 (or 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 the ***road*** is either an ***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 (transition) diagram for this traffic light controller. (2 pts)