Design and Analysis of Software Systems 01/04/2024
Quiz - 2

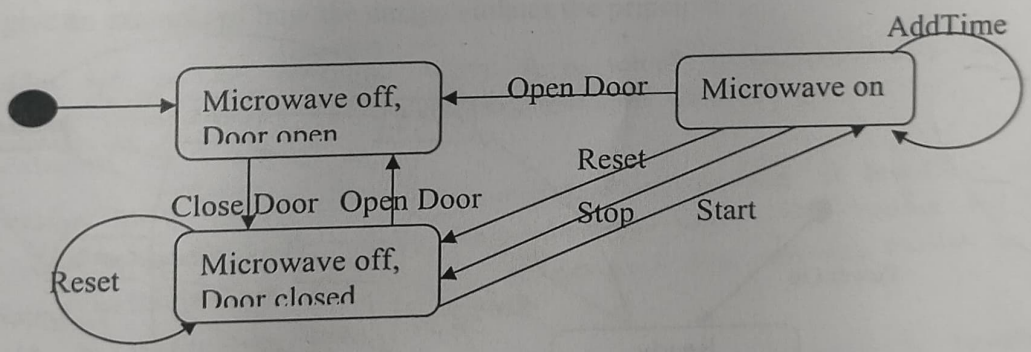
Name: **Roll No:**

This is a closed-book, closed-notes Quiz. Answer all questions for a maximum score of **20 points**. The total time for the test is **45 min**.

Credit is given for what you write, not what you are thinking. Write your answer in the space provided for the question. Partial credit will be given based on content, not quantity.

Good Luck!

1. **(3 points)**
   The state diagram below shows the transitions for a simple microwave. When the microwave is on, identify all the different ways in which the microwave may turn off.:



(3 points)
We want to add one more feature to the microwave: "child lock". When the microwave is off, we can press "child lock", and the microwave pad gets locked. No other operations will be possible on the microwave until a "secret code" is entered. Modify the above state diagram to reflect the addition of this feature.

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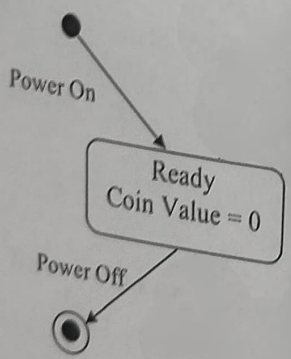
2. **(5 points)**
Complete the following state diagram to model the operation of a simplified vending machine that dispenses a single flavor of soda for 10 rupees, accepts only 1 rupee, 2 rupee, and 5 rupee coins, and does not have a coin return.



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3. **(5 points)**
You are working on a calendar management system, that keeps a list of appointments with the date and time they occurred. You find that the current design has the following two modules:

DayView
- Keep track of the list of appointments
  - Includes the classes Appointment and AppointmentList
- Write appointments to file
- Search the list of appointments and find the appointments for a given day
- Display the list of appointments for that day
- Edit configuration parameters, such as day start time and end time
- Provide for adding, deleting and editing appointments
  - Calls the editing functionality in WeeklyView

WeeklyView
- Display appointments for a specified week
  - Calls DayView to retrieve appointments for each day
- Provides for adding, deleting and editing appointments
  - Uses the appointment list in DayView
- Edit configuration parameters, such as first and last day of week

Identify five principles of good design that are violated by the above design. For each, explain or give an example of how the design violates the principle.

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(4 points)
Suggest an alternative design that follows the principles of good design. Identify the modules in your design, their functionality and interfaces. Use UML as your modeling notation to model the redesigned class diagram.