Recitation #9

18-649 Embedded System Engineering
Rui Cai
Friday 10/25/2013
Announcements and Administrative Stuff

◆ Project 9 is due Thursday Oct. 30\textsuperscript{st} by 10pm.

◆ Presentation slides due 5pm 10/25/2014 (Saturday) via email!!!

◆ Important Grading Note: The grading script REQUIRES correctly formatted files. (e.g unit_tests.txt, integration_tests.txt etc)

◆ Hand in ALL the files needed to run your tests.

◆ New TAs!
  • hopefully you knew this, cause it’s a bit late if you didn’t
Project 9

- Pick up where you left off on Project 8

- Finish designing smart dispatcher (and Doors)
  - Statecharts
  - Unit tests
  - Implementation
  - Traceability
  - Peer reviews:
    - Dispatcher & DoorControl statechart
    - Dispatcher & DoorControl implementation
    - Dispatcher & DoorControl unit tests
New Requirements

◆ R-T6: The Car shall only stop at Floors for which there are pending calls.

◆ R-T7: The Car shall only open Doors at Hallways for which there are pending calls.

◆ R-T8: The Car Lanterns shall be use in a way that does not confuse passengers.
  • R-T8.1: If any door is open at a hallway and there are any pending calls at any other floor(s), a Car Lantern shall turn on.
  • R-T8.2: If one of the car lanterns is lit, the direction indicated shall not change while the doors are open.
  • R-T8.3: If one of the car lanterns is lit, the car shall service any calls in that direction first.

◆ R-T9: The Drive shall be commanded to fast speed to the maximum degree practicable.

◆ R-T10: For each stop at a floor, at least one door reversal shall have occurred before the doors are commanded to nudge
Only Service Landings with Pending Calls

- Elevator must only stop at floors/hallways that need to be serviced

- DesiredFloor
  - Floor – the floor we intend to go to next
  - Direction – the direction we intend to go after we reach the desired Floor
  - Hallway – which doors should open
Only Service Landings with Pending Calls

- Update desired floor/direction based on current state of hall/car calls
  - When is it OK to update these?

- For example:
  - If the elevator is stopped and opening its doors AND there is no pending call at the current floor AND there is a pending call at another floor THEN:
    - DesiredFloor.Floor must NOT BE current floor by the time the doors are fully open
    - DesiredFloor.Direction must correspond to illuminated lantern direction

- What about between floors?

- When should you NOT update these values?

- Above example is not a hard requirement
- Follow the requirements and do what makes sense for your design
Example

- Suppose car is initially at floor 1 and stopped
  - No calls
  - Desired Floor = (1, stop)
Example

- Get a hall call for (8, down)
  - Car begins moving up
    - Current direction = Up
  - DesiredFloor.floor = 8
  - DesiredFloor.direction = Down
    - Where we’re going after servicing floor 8
Example

- Get a hall call for (8, down)
- Then receive a hall call for (5, up)
  - Dispatcher decides to service floor 5 first
    - Depends on your algorithm
  - Current direction remains Up
  - DesiredFloor.floor = 5
  - DesiredFloor.direction = Up
    - Where we’re going after we service floor 5

- How do you decide where to go next?
  - Based on current set of car/hall calls
  - Anything that meets the requirements is OK
    - Example: Sweeping up and down servicing calls in the current direction first
Yada-yada-yada…

SODA MACHINE EXAMPLE!
Questions?