EECS 222A:
System-on-Chip Description and Modeling
Lecture 5

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Lecture 5: Overview

- Project Discussion
  - Elevator example
- Homework Assignment 3
  - Tasks

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Project Discussion

- Example Project
  - Elevator Control System (ECS)
    - Distributed embedded system
    - Set of communicating Elevator Control Units (ECU)
- Tasks for System Specification
  - Decompose ECS into multiple ECUs
  - Develop a specification model for each ECU
  - Validate each ECU model using simulation
  - Compose entire ECS using developed ECUs
  - Validate entire ECS
  - Then, refine and implement ECS...

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Project Discussion

- Decomposition of ECS into multiple ECUs
  - Floor panel
    - panel at each floor and each shaft with up/down controls
  - Floor display
    - display of current floor and direction at each floor
  - Floor door
    - Control unit to open/close doors at each floor
  - Car panel
    - panel in each car with request controls
  - Car display
    - display of current floor and direction in each car
  - Car door
    - Control unit to open/close doors in each car
  - Main control unit
    - central control unit to control the entire ECS
  - Motor control unit
    - control unit for the motor atop each shaft

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Project Discussion

- Project Documentation:
  - D. Castellanos, R. Dömer:
    "System-Level Modeling and Simulation of an Elevator
    Control System",
    CECS Technical Report 07-04, June 2007.
  - http://www.cecs.uci.edu/~doemer/publications/CECS_TR_07_04.pdf

Homework Assignment 3

- Task
  - Develop a simple system specification model
    - such as one ECU in the ECS
    - the system should consist of
      - Test bench behavior Main
      - Stimulus behavior
      - Design Under Test (DUT)
      - Monitor behavior
    - in SpecC language
  - Simulate your model

Homework Assignment 3

- Deliverables
  - 1-page specification of your system
    - Illustration figure / schematic view of DUT with ports
    - Brief (!) description of functionality (in English)
  - Executable source code (in SpecC)
  - Successful simulation run
- Due
  - Week 6 (next week)

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