Final Project Announcement

Project Logistics

- 3 students per team (1,2,3)
- 3 projects (a,b,c)
- 3 jobs
  - Requirement (R)
  - Development (D)
  - Validation (V)
- Student 1: a.R+b.D+c.V
- Student 2: b.R+c.D+a.V
- Student 3: c.R+a.D+b.V

Projects

1. Elevator
2. Vending Machine
3. Railway Control Center

Elevator

- A building with 3 floors and one basement
- 2 elevators (should be coordinated)
  - Only one elevator can reach basement (-1)
- User Interface
  - Button panels and display inside each elevator
  - Button panels and display on each floor
- Sensors
  - Door fully open, door closed (true/false)
  - Elevator move by the sensor (true/false)
- Controller actions
  - Open door, close door, move up, move down, stop
- Physical Environment
  - Door movements, acceleration, deceleration all take time

Vending Machine

- Interface
  - User Interface
  - Coin insert
  - Cash insert
  - Maintenance interface
- Sensors
  - Fake coin/cash
  - No merchandise
- Physical Environment
  - Coin/cash container
  - Merchandise

Railway Control Center

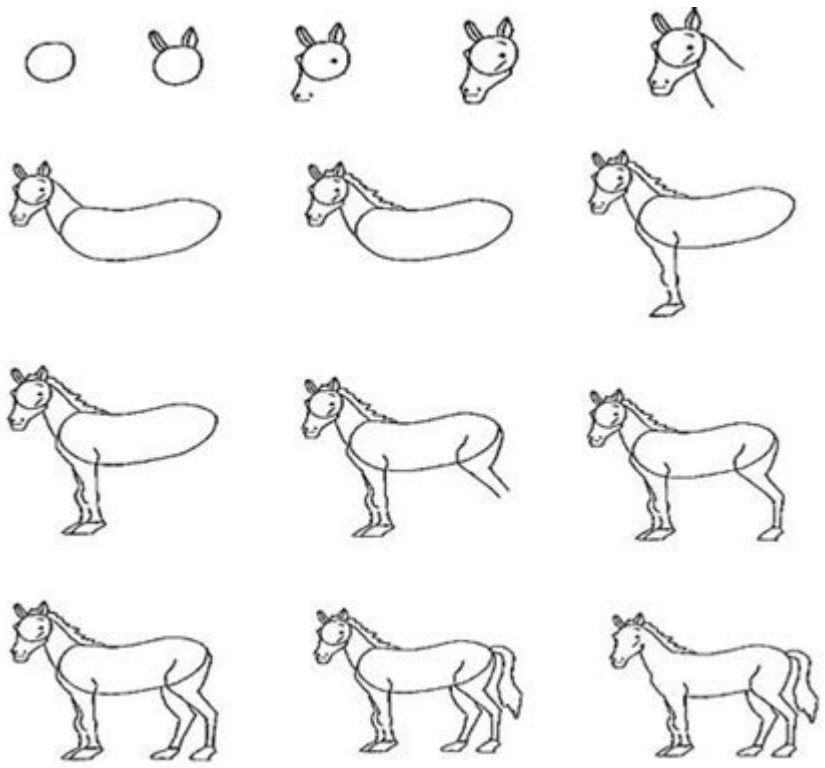
- Railway
  - One direction, one rail
- Station
  - Multiple rails with switches at entry and exit
  - Switching among rails takes time
- Locomotives
  - Type: G, D and K
  - Status: Stopped, accelerating, decelerating, cruising speed, maximum speed
  - Deadline: accumulated delay must be within certain value
- Controller
  - To the locomotives: Stop at the next section, accelerate to cruising speed, accelerate to maximum speed
  - To the switches: Switch to rail i
- User Interface
  - Display current status
  - Manually send commands

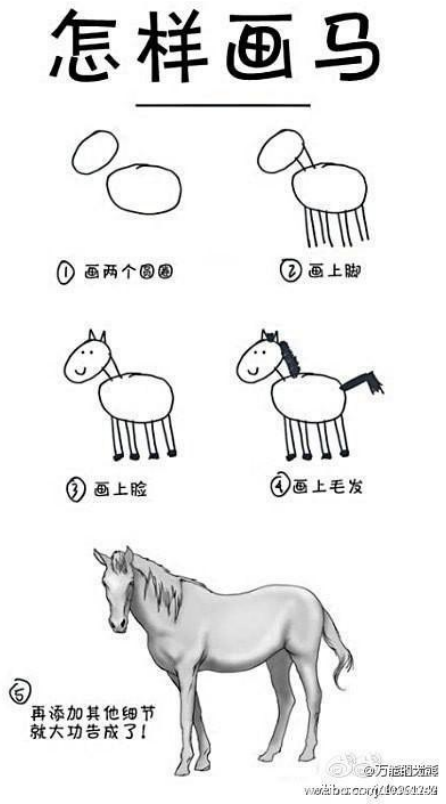
Railway Control Center (cont.)

- Input
  - A schedule
  - A layout
- Design an automated control algorithm that ensures
  - No collision
  - All locomotives eventually reach destination
  - Cumulated delay within deadline

Iterative Software Development

- Develop “validatable” artifacts early





Requirement

- Requirement document
- UML diagrams
  - Collaborate with development guy/gal
- Model of system environment for validation
  - Collaborate with validation guy/gal
- Traceability report
  - Collaborate with both development and validation
  - Focus on requirement
- User Manual

Development

- Detailed UML diagrams reflecting actual design
  - Collaborate with requirement guy/gal
- Implementation of the design
- Traceability report
  - Collaborate with both requirement and validation
  - Focus on specification, model translation and code

Validation

- Validation planning and execution
- Risk Management
- Testing
- Model checking
- Traceability
  - Collaborate with other two guys/gals
  - Focus on test case, models in model checking

Job Allocation

- Finish job allocation at the following link by Fri Mar 12th
  - https://shimo.im/sheets/ckjdGXtjYQQQKXhq/MODOC/
- Changes in team composition and job allocation must be formally announced to the instructor team via email

Name1(1R2D3V)	Name 2(2R3D1V)	Name 3(3R1D2V)

Group meetings

- Weekly meetings (Required)
- Meeting report for each project
  - The requirement guy/gal for each project is the organizer of the meeting.
  - For each group member, summarize works done in the previous week
  - Summary of the meeting
  - For each group member, propose action items for the next week
  - Due every Fri at the end of day, starting next week
- This is an important traceability document
- Please be specific
  - “continue working on project” does not work