Exercise Session 1: Quality Scenarios

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Exercise Sessions

- Every Friday, 13:15 - 15:00
- Builds on the lectures with interactive activities.
  - This week: **quality scenarios**
  - We give introduction and an activity.
  - You work in groups.
  - Feel free to come and go, split off into other rooms.
- Professor + TAs will be here to answer questions.
  - Not graded - intended to build skills that will be helpful on assignments and in the future.
  - **This is also a good time to ask us homework questions too!**

Exercise - Airport Parking

- Fully automated parking system.
  - User can insert credit card into a reader at parking ramp entrance. Records time of entry.
  - User presents same card on exit.
  - User can also get a ticket on entry (with time of entrance) and pay by credit card or cash on exit.
- Interacts with: customers, police, emergency responders, managers, external card validation and payment systems, accounting system, physical gate and signage, personnel system

Exercise - Airport Parking

The system will be deployed within the physical architecture of the airport parking garage, incorporating:

- Entrance Kiosks
  - Card dispensers
  - Credit card reader for e-park
  - Card reader for contract parking
- Parking ramp levels
  - Signage {FULL / not full}
  - Entry gates
- Exit Kiosks
  - Signage: {OPEN / ePark ONLY / CLOSED}
  - Staffed Kiosks
  - Automated Kiosks
- Security Cameras
- Hardware for Parking System
  - Dual Server w/Failover (can switch in event of failure)
  - Clustered DB
  - Storage Area Network

Quality Scenario Format

- Overview
  - Brief description of what the scenario illustrates.
- System State
  - Aspects of the state that affect quality
  - (i.e., information stored in the system)
- System Environment
  - Significant observations about the environment that the system is running in.

Quality Scenario Format

- External Stimulus
  - Environmental factors that initiate the scenario.
  - (i.e., infrastructure changes or failures, security attacks, etc.)
- Required System Response
  - How should it respond?
  - (i.e., how should it handle a defined increase in requests)?
- Response Measure
  - How we quantify a successful system response.
  - Measurements, thresholds on success.

Activity

- Scenarios centered around the following:
  - Reliability
  - Availability
  - Performance
  - Scalability
  - Security
  - Remember to include both a response and a response measure (with acceptable threshold)!

Some Starting Ideas

- Performance
  - Time to exit ramp
- Availability
  - Exit Kiosk Malfunction
  - Loss of Server
  - Loss of Connection to Credit Card Processing
- Security
  - DDOS attack on a public API of the parking system (does one exist?) or external dependencies (credit card/payment systems)

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