SCC.211 Software Design:
Software Architecture Intro (Workshop)

Tracy Hall
(based on materials by Jean Petric)
Room B42, InfoLab21
School of Computing and Communications

Objectives

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- Partitioning a system into sub-systems and components
- Represent systems using “box and line” and “ball and socket” diagrams
- Describing interfaces

Recap about system partitioning

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I. Read through the system description to establish what the system is required to do OR what the system does
II. List the system functions
III. Group related functionality
IV. Associate functionality of sub-systems
V. For each sub-system establish if there is need to partition further
VI. Link sub-systems that interact with each other (i.e. those that exchange data or control information)
VII. Establish interfaces between sub-systems that interact with each other

- VI and VII needed for ball and socket diagrams

Identifying sub-systems: web services app

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- Consider a web-based system that provides users with a number of software services.
  - Access to the system is based on the permissions assigned to users (i.e. users can only access the software services assigned to them)
  - Users require a valid userID and password to access the system services
  - Users log onto the system and access the system services through a web browser
  - A web server authenticates user logins and facilitates access to services
- Task:
  - Identify possible sub-systems for the web-based system, their relationships and interfaces. Use the ball and socket notation.

Identifying sub-systems: myGrocer app

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- You have been asked to develop a smart phone app called myGrocer for automaing supermarket purchases and checkouts. myGrocer users must register their credit card details with the supermarket before using the app. The app shall:
- Scan purchases and add them to a shopping cart on the customer's phone.
- Automate the checkout of purchases. As the customer leaves the store, an item sensor shall detect the customer's exit and automatically tally his or her purchases. The item sensor shall alert the store security system if the customer has unscanned items. The system shall take payment via the customer's pre-registered credit card.
- Check purchases for compliance with the customer's nutritional profile as the purchases are scanned and alert the customer to accept or decline the purchase.
- Display the list of items on 'special offer' that satisfy the customer's nutritional profile" as the customer walks around the supermarket. The smart phone shall obtain the list of items from the supermarket's item database.