Software Engineering
CS5704: Class 7 Midterm - 3/2/01

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Agenda

▲ Conduct Midterm
  ● Good Luck – I hope you do well!
▲ Break
▲ Class 6 Review
▲ Homework Assignments
Problem 10.1

▲ Objective: Definitions or synonyms of the word “System.”

▲ Many definitions of the word. Here's a few ... but others work as well.

scheme, organization,
arrangement, classification,
coordination, organism,
method, procedure
Problem 10.2

▲ Objective: Discuss Reasons for Baselines

▲ Any hierarch of systems should work here... system consisting of subsystems, consisting of lower and lower level subsystems.

![Car Diagram]

Problem 10.5

▲ Objective: Describe data, application, and technology infrastructure architecture with examples

▲ The data architecture refers to corporate data, its organization, and the relationships between individual corporate data elements. For example, a telephone billing system might draw on elements that include customer information, rate tables, calling logs and so forth.

▲ Application architecture defines the functional hierarchy that is required to realize the goals and objectives of a large information system.

▲ Technology Infrastructure defines the common services such as relational database, graphical user interface, and the like.
Problem 10.6

▲ Objective: Describe Goals and Objectives for ISP

▲ A business objective for a software products vendor might be to "get the customer written information about our products within 4 hours of receipt of inquiry." The following goals could be stated:

● Improve system that integrate telephone sales to customer response;
● Make better use of the internet/e-mail and web
● Make better use of automated instant response systems
● Improve customer follow-up post receipt of inquiry information

Problem 10.9

▲ Objective: Feasibility Checklist with some #s

▲ The checklist should answer one global question: "Can we do it?" An example checklist follows:

● Project complexity (hardware, software, interfaces)
● Relevant staff experience
● Projected degree of change
● % "new" technology
● Availability of resources (people, hardware, software)
● Support
● Performance requirements

▲ A ranking and/or scoring of the feasibility on some ordinal (e.g., 1-5 weight, 1-5 score)
Problem 11.4

▲ Objective: Describe types of customers

▲ The customer for information systems is often another department in the same company—often referred to as the "user department."
▲ The customer for computer based products is typically the marketing department.
▲ The customer for computer-based systems may be an internal department, marketing or an outside entity (e.g., a government agency, another company, an end-user).

Problem 11.7

▲ Objective: Can Preliminary User Manual be a form of Prototype?

▲ Yes, the Preliminary User Manual is a form of paper prototype for the software that is to be built. It provides the reader with a characterization of the software taken from the user's point of view.
Problem 11.9

▲ Objective: Partition functional domain of SafeHome.

▲ Partitioning depends on the requirements established. Each level of the function hierarchy represents the same level of detail. For example, a function such as read sensor input should not be at the same level (in the hierarchy) as dial telephone number. The latter is a reasonably low level function, while the former encompasses many important activities.

Business Process Engineering (BPE)

Engineering Objectives

- Understand Existing Processes
- Determine Process(es) to be (Re)Designed
- Design Process Alternatives
- Pilot Newly Selected Process(es)
- Implement New Process(es)

Current Business Process

Engineer the Business Process

New Business Process

Is this BPE process or information oriented? Why is understanding the process important?
The Decomposition Hierarchy

▲ World view?
▲ Domain view?
▲ Detailed view?
▲ Why do we analyze or model the systems or processes?

BPE via Information Engineering

▲ Uses integrated set of procedures, methods, and tools to identify how information systems can best meet the strategic goals of an enterprise
▲ Focuses first on the enterprise and then on the business area
▲ Creates enterprise models, data models and process models
▲ Creates a framework for better information management distribution, and control
▲ Just like Engineering Systems... Businesses are Systems too!
BPE via Information Engineering

▲ ISP ?

▲ BAA ?

▲ How is Application Engineering different than ISP?

Requirements Engineering

▲ Elicitation ?
▲ Analysis & negotiation ?
▲ Requirements specification ?
▲ System Modeling ?
▲ Validation ?
▲ Management ?
Requirements Gathering

What is FAST (not your car and not my wit)?

Anyone seen any chairs around here?

Software Engineering Group

Customer Group

Use-Cases

▲ A collection of ??? that describe ???
▲ How is an “actor used in Use-Cases?
▲ Each scenario answers the following questions (Give some Examples):
  ● What are the main tasks of functions performed by the actor?
  ● What system information will the actor acquire, produce or change?
  ● Will the actor inform the system about environmental changes?
  ● What information does the actor require of the system?
  ● Does the actor wish to be informed about unexpected changes
Five Analysis Principles

Analysis Principle 1
Model the ???
▲ Define data objects
▲ Describe data attributes
▲ Establish data relationships

Analysis Principle 2
Model the ???
▲ Identify functions that transform data objects
▲ Indicate how data flow through the system
▲ Represent producers and consumers of data

Analysis Principle 3
Model the ???
▲ Indicate different states of the system
▲ Specify events that cause the system to change state

Analysis Principle 4
Partition the ???
Refine models to represent lower levels of abstraction
▲ Refine data objects
▲ Create a functional hierarchy
▲ Represent behavior at different levels of detail

Analysis Principle 5
What???
Begin by focusing on the ??? of the problem without regard to implementation details

Homework Assignment for 3/2/01

▲ You are Finished with the Midterm Exam!!!
▲ Read Pressman Chapters
  ● Chapter 12
    – Do problems 12.3, 12.4, 12.7, 12.10, 12.13
▲ Read Pressman Chapters
  ● Chapter 13
▲ Project – Work with teams on Defining Requirements until next class
▲ Have a great week!