Session 5

Course Project Proposals

Making a Business Case For Your Modeling Effort

Last revised: July 6, 2011

Review of last time: Temporal Response

- Excel functions for accessing array elements:
  `INDEX, OFFSET`
- You can combine references to produce new references using reference operators: Colon, Comma and Space
- Time evolution and temporal response model business processes
  - Convolution applies when system behavior is time-independent and additive
  - The Convolve macro implements convolution
  - Also implement convolution with tables

What we'll do now

- Review the course project requirements
- Discuss merging workbooks

About "requirements"

- For any deliverable:
  - A requirement is a singular feature or capability that a particular product or service must possess
  - A "not-requirement" is a singular feature or capability that a particular product or service must *not* possess
- In industry, failure to gather or understand requirements is among the *most important causes of project failure*
- In this course, you'll do *much* better on your projects if you
  - Do a good, thorough job gathering project requirements
  - Actually understand what the requirements mean
  - Use the requirements as guidelines during project planning and conception
  - Verify that your project deliverables meet the requirements you gathered
- Gathering and using requirements is an important part of your project

Examples of writing requirements

Web site text	*Equivalent requirements*
"…you may use only the computational capabilities described as approved for use in the course Web site"	• The Excel model can use computational capabilities only if they are described as approved for use in the course Web site.
"…you can use any formatting capabilities that don't hide or lock or protect cells, rows or columns. Nor are you permitted to protect sheets or workbooks."	• The Excel model may use formatting capabilities only if they do not hide or lock or protect cells, rows, columns, sheets, or workbooks.
"Boldface is not permitted in Word documents except for section titles. Boldface is required for section titles."	• In Word documents, boldface is not permitted outside of section titles. • In Word documents, all section titles must be in boldface.

Course project "not-requirement"

- This is not a research project
- If you don't know some data that you would need if this were real life, make it up

Course project requirements

- It must be a model (not a tool)
- The model must exhibit dynamics
- The project consists of several deliverables
- It must conform to certain formatting requirements
- The model must have specific properties
  - 12 periods
  - No errors
  - ….
- There are many detailed requirements
  - Simulates what you might encounter in industry
  - Develop for yourself efficient ways to gather requirements

Model vs. Tool

A systematic method for extracting requirements

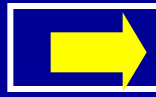
- Useful when requirements are expressed in a document
  - Not necessarily in a useful order
  - Mixed in with explanatory descriptions, justifications, and other material
- The method
  - Copy the document(s) into Word
  - Delete anything that isn't a requirement
  - Sort what remains
  - Split compound requirements into series of single requirements
  - Edit each item to simplify it

Merging workbooks: the problem

- Excel is really a single-user application
- When teams work on a single workbook:
  - Different people edit different parts of the workbook
  - The different versions begin to diverge
  - We need a way to merge the versions back together
- Excel provides a method called “sharing”
  - The original workbook is declared shared
  - Everyone makes changes to their own copy
  - Periodically, by saving their copies, each teammate gets updates
- To consolidate everything:
  - Turn off sharing
  - Excel tries to merge all the changes
  - There are tools to resolve conflicts
- Problem: sharing doesn’t support array computations

How to merge two workbooks

- Method assumes:
  - The two workbooks were once identical
  - Any links to our add-ins have been resolved
  - They were designed so that some sheets are independent of the others
  - There have been updates to independent sheets by Team Member 1 in Book1
  - There have been updates to dependent sheets by Team Member 2 in Book2
- Steps:
  - Back up Book1 and Book2
  - Open Book1
  - Delete Team Member 2's worksheets
  - Open Book2
  - Move or copy the dependent sheets from Book2 to Book1
  - Edit Links in Book2 to repoint them to Book1
  - Save Book1
  - Close Book2 (don't save)



Readings: How to Merge Workbooks

How to merge three workbooks

- Define the independent and dependent sheet sets
- Independent sheet set (S0) can't depend on anything outside S0
- For the dependent sheet sets (S1, S2):
  - Each can depend on S0
  - Each can depend on the other
  - If S2 depends on S1, then S1 cannot depend on S2
  - If S1 depends on S2, then S2 cannot depend on S1
- Steps:
  - Merge the "lowest" two workbooks first
  - Delete the other sheet set from both workbooks
  - Follow the two-workbook process
  - Finally merge the third workbook with that result

The main points

- Course project requirements
  - Gathering and understanding requirements are important parts of your project
  - Examples of requirements
  - How to gather requirements systematically
- Course project proposals
- How to merge workbooks

Preview of next time: Graphics

- Charts are an effective means of communicating numerical relationships
- The Chart Wizard is the most effective way to produce a chart
- Use chart graphics features and styles sparingly
- Use names to reduce chart maintenance effort