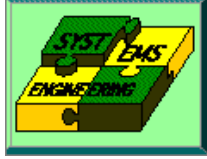
George Mason University



SYST 101: Intro to Systems

Lecture 7

Feb. 10, 2004

C. Wells, SEOR Dept.

Announcements

- INCOSE - International society of systems engineers. Publishes the journal System Engineering.
  - Student membership forms available in the SEOR Dept. office.

Announcements 3

- Feb 19, Lecture 10, will be a Laboratory day
  - final design and checkout of Project 1
- Mar 2 will be a review day
- Mar 4 will be the Midterm Exam

Agenda

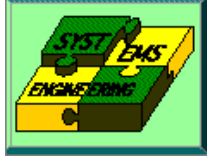
- Objective for Today
  - Project I Grading Information
  - Pair Wise Comparisons
  - Utility Curves

Homework Discussion

- Completion of Mindstorm demo?
  - Everybody loaded the software?
- Anyone need extra parts?

Grading of Project 1

- Project demonstration on Feb 25, oral reports on Feb 27
  - Robot performance
  - Oral presentation (and questions)
  - Documentation package
  - Peer evaluations (as a homework assignment
- Relative weights are TBD
- 15 minutes for each team



Project 1 Test Schedule

3:00	Team 1
3:06	Team 2
3:12	Team 3
3:18	Team 4
3:24	Team 5
3:30	Team 6
3:36	Team 7
3:42	Team 8
3:48	Team 9

Project 1 Oral Presentations

3:00	Team 1
3:08	Team 2
3:16	Team 3
3:24	Team 4
3:32	Team 5
3:40	Team 6
3:48	Team 7
3:56	Team 8
4:04	Team 9

Robot Performance

- Accuracy of each circle diameter 30
  - (full credit if circle within 6 inches of requested size)
- Repeatability of circle 20
- On schedule 20

Oral Presentation

- Style and level of detail (8 min max)
- Content
  - System engineering approach used
  - Member roles and division of work
  - Design of the robot
    - Architecture
    - Parts count
  - Tests performed on the robot
  - Lessons Learned
    - What to do and not do next time

Documentation Package

- Part of the Lab Notebook
  - Data supporting oral presentation
  - Detailed description of the robot
    - How to build it
    - How to control it
  - Parts count

Peer evaluations

- Use form on next slide
- Used to determine the relative contribution of each member to the team's progress.
- For each square, ask "did X contribute more to our project than Y?"
- 1=yes, 0=no

Pair Wise Comparison

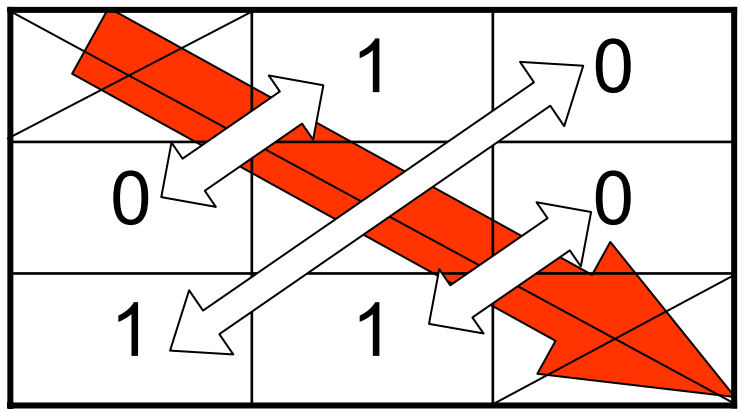
YOU	Barney	Fred	Wilma	Jane
Barney		B > F?	B > W?	B > J?
Fred	F>B?		F > W?	F > J?
Wilma	W>B?	W>F?		W > J?
Jane	J>B?	J>F?	J>W?	

Filled Evaluation Matrix

YOU	Barney	Fred	Wilma	Jane
Barney		1 (yes)	0 (no)	1
Fred	0		0	1
Wilma	1	1		1
Jane	0	0	0	

Rules for Completing

- Matrix shows a kind of symmetry about the major diagonal:



- If one entry is 1, the other must be 0. (If A does more than B, then B must have done less than A.

Member Evaluation

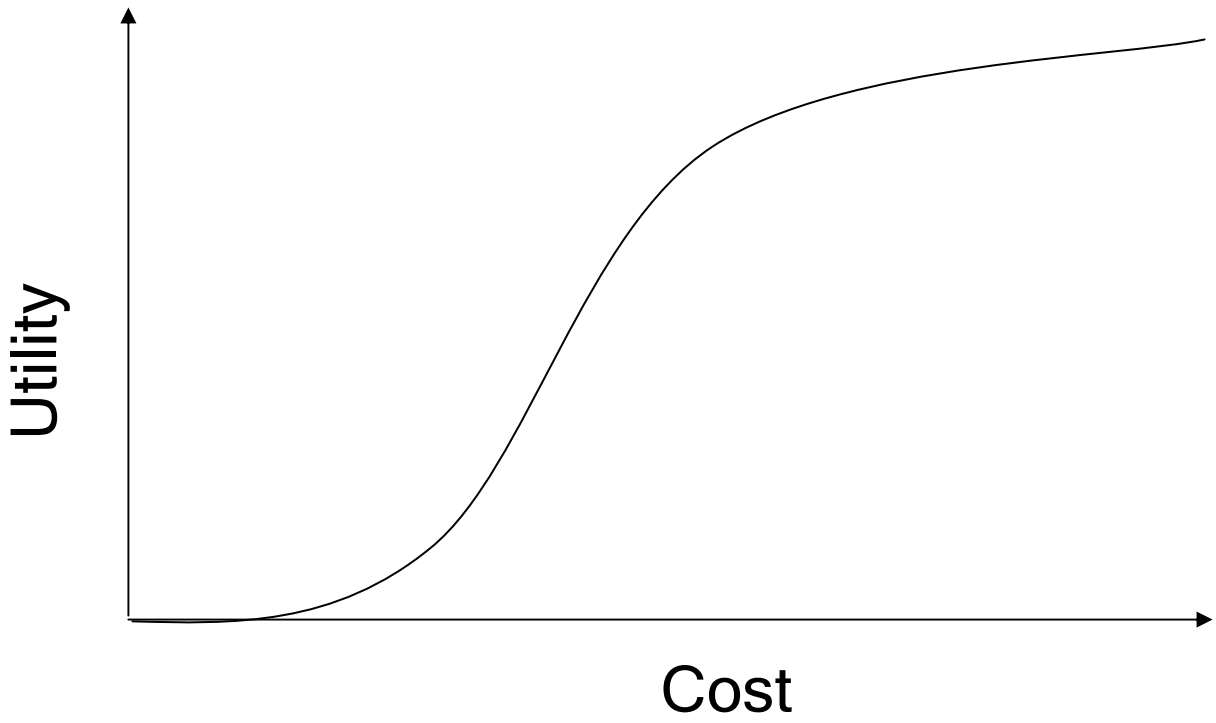
- Total along the rows:

YOU	Barney	Fred	Wilma	Jane	Σ=
Barney		1 (yes)	0 (no)	1	2
Fred	0		0	1	1
Wilma	1	1		1	3
Jane	0	0	0		0

Scoring Process

- Each team member will fill out an evaluation sheet.
  - Privately, without consultation
  - I will total the final scores for the group
- Results in relative scoring for each team member.
  - Minimum: 0 points
  - Maximum: (n-1)(n-2) points, where n = number of members in your group.

Utility Curves and Optimization



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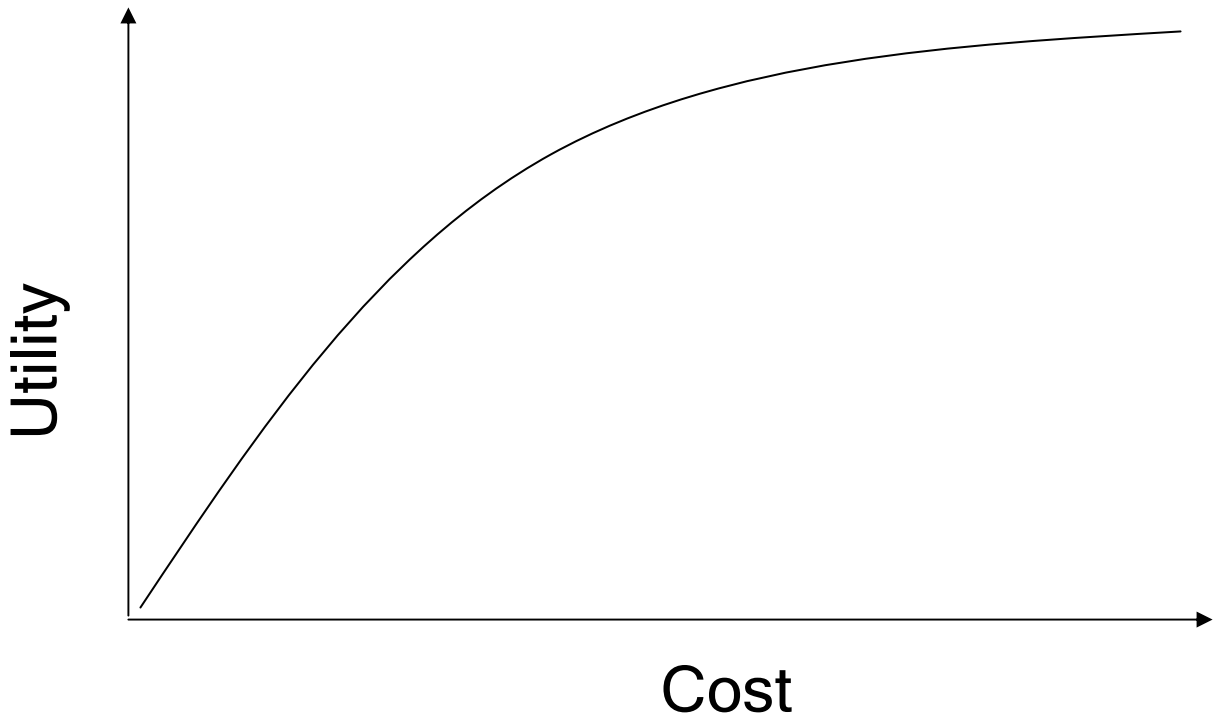

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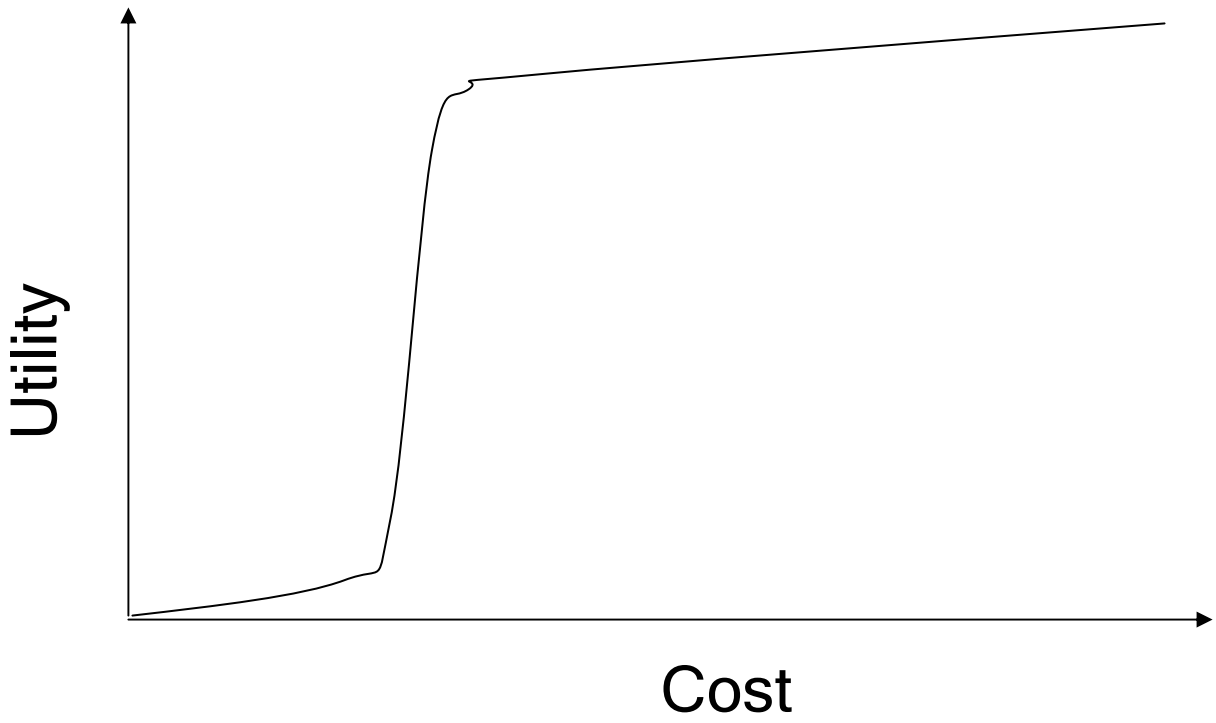

Assignments

- Reading
  - Petroski, To Engineer Is Human
    - Chapter 7, Design as Revision
    - Chapter 8, Accidents Waiting to Happen

- Homework
  - Peer review worksheets (due on Feb. 26 as homework – do not include with the Project Report or in the Lab Notebook)