Week 3 Begins

- What is the underlying technology of the computer (and software)? (Note - much is not in Baase book)
    - define "technology"

– define "computer"
  - a "general purpose" machine (Jackson)
  - mention Brooks, Hamlet here

– define "software"
  - the static description of a dynamic process to be instantiated at some point in time to solve a computational problem (Turner)

– define "abstraction"
  - reduction of a problem space by removing all details appearing irrelevant to a solution
  - implications?

– define "operating system"

- roughly: the program that gives basic services to other programs (called "applications") that offer services to the user…
- what operating systems are there?

What Problems can Computers Solve?

- Goedel's incompleteness theorem
  - consider the proposition: "using logic, this statement cannot be proved true"
    - Assume its provable to be true
      - then it's false
    - Assume it is false (cannot be proved true)
      - then it is true
  - What's up with that?

- Computers cannot store "real numbers"
  - they count in binary numbers: 0, 1, 10, 11, 100, …
  - "floating point" arithmetic is innacurate
    - demo java program
  - they *estimate* results of real-valued problems

- Computers cannot represent "continuous" behavior ("smooth" behavior)
  - when they err, they might err catastrophically
    - interpolation does not help us to see their behavior
  - no "reliability theory" to assist professionals in estimating how good programs might be!
    - Hamlet, Parnas, Leveson, etc.

For Week 4

- Read Petroski Chapters 4 and 5
- Baase assignment review exercise 4.3 and general exercise 4.15.
  - be brief and to-the-point
  - lists are useful before explanations
  - review written exercise information on website