Day 9 Notes...

Project topics due Monday. Our project ideas may not have been entirely suitable, so we have until Monday to brainstorm.

Idea of using formal methods for specification (Parnas). Dr. Saad hands out “Really Rethinking 'Formal Methods’” by David Lorge Parnas, Middle Road Software:

In the book, what are referred to as formal methods? A way to prove mathematically that the implementation could be correct.

4.5 in the book – Formal methods: mathematically based specification and design techniques. Formal methods model requirements or software behavior as a collection of mathematical functions or relations
-Functions specify the state of the system's execution, and output
-A relation is used whenever an input value maps more than one output value.
Functional method is consistent and complete.

Drive-by-wire example for Toyotas... Software / sensors to blame for Toyota’s recent problems.

What to rethink?
-Identifies and variables.
-Conventional expressions or something more structured?
-Hidden state: Normal or extension?
-Termination: Normal or exception?
-Time: A special variable or another variable?
-Axioms: Assignment or relational algebra?
-Direction of analysis: Forward, backward, or inside out?
-Side effects: Normal or bad?
-Nondeterminism: Normal or extension?
-Models, descriptions, and specifications
-What can be ignored?
-How do we establish correspondence between model and code?
-Mathematics in documentation
-Pre- and Postconditions
-Correctness proof or property calculation?

Back to slides, starting at (71)...

(Slide 4.77) – Dr. Saad would like us to be able to identify these parts of our project next week.

(Slide 4.18) – Emphasis on attributes of specifications.

(4.81) – We're given the handout on Software Requirements Specification for <Project>...
-Compare the paper headings with the IEEE Standard for SRS Organized by Objects.
-Good to see the target information from 2 independent directions...
(4.86) Requirements review - [http://www.sei.cmu.edu/cmmi/](http://www.sei.cmu.edu/cmmi/)
(4.87) sidebar – Study discussion. *to= ”can be attributed to”
½ the faults may be due to misinterpretation!

(4.91) Why would we measure requirements?

(4.92) If the project has 1 or 2 requirements, we'll probably understand what it's about. The more requirements, the less likely we are to understand it...

(4.94) We're getting to some very concrete questions that we'll need to answer for our specifications.

Let's build a bridge between our 3 concepts/ideas... How can we answer the papers in the handout “Software Requirements Specification for <Project>”... We need to stop by Dr. Saad's office and try to answer these by Monday. Start bullet points / checklist to think about what we need to specify as system requirements.


Purpose - “Raison d'être” (Reason to exist)

A couple more thoughts / questions at this point...
3 days to debate with him as this which we'll proceed with. Which one lends itself to be a significant project for this course?
Design & Implementation are where we want to go.
What problems should we anticipate down the road? Bad requirements (50% of faults will be traced back to this)!
As we try to formulate our project, we'll go over chapter 5 = Design.
Thesaurus – “Peculiarity” (eccentricities & intricacies)
Something that helps coupling from requirements to design.
Systems requirements – CHAPTER 1... THINK ABOUT OUR PROJECT IDEAS & COME BACK TO DR. SAAD WITH OUR IDEAS UNTIL WE NAIL IT DOWN TO 1.

Ben, note to self... Would CovertChronicle be a suitable project? Kelly's website?

After narrowing down the design, move on to filling out the project requirements document like the handout.

Read the 2 handouts from today.

…Dr. Saad's Google Page Rank discussion... (google search: car)
For the ranking google uses, how can you help someone get higher results on google.
Don't use fancy `<div>`... Instead, use `<h1> <h2> <i> <b>` tags.
Meta tags.
Dr. Saad will pass along the advice.
Look for SEARCH ENGINE OPTIMIZATION (SEO)