

>>> SOLUTION <<<

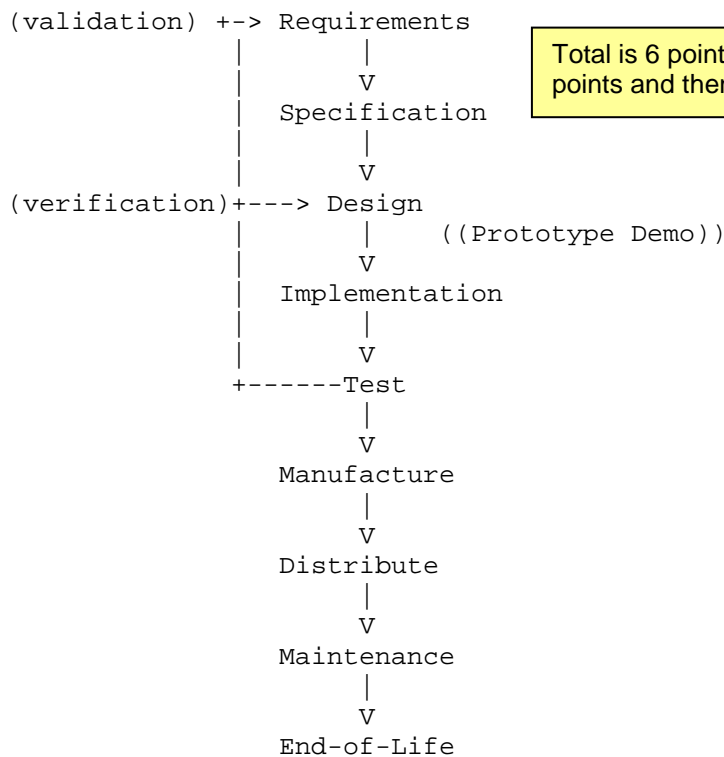
Each problem is worth 20 points.

Welcome to your 10% mini-exam for *Senior Project*. The exam is open book and notes, but you may not receive or give help from or to another person during the exam. **You may have with you anything on paper (your notes, books, copies of the old exam solutions from the course website, etc.). You may not use any electronic aids (e.g., a laptop WiFi'ed to the Internet is not legal).** If you copy the answer directly out of the textbook (or some other source), be sure to properly “quote” the answer (otherwise it is assumed that any answer is given in your own words). Read the last sentence again. There are five questions. You have **60 minutes** for the exam. Please fill-in this cover sheet and submit it on top of your answer sheets. Please use a separate sheet of paper for each question. Read the last sentence again.

**Problem #1**

Answer the following questions about the product development process...

a) Sketch the product development process as we have discussed and followed it in this class.



Total is 6 points. Each step is worth 0.5 points and then round-up minus points.

b) What is the purpose of a prototype demo?

Total is 7 points. Item (1) is 4 points and item (2) is 3 points.

The purpose of a prototype demo is 1) to get a first check with the customer that you are solving the right problem in a good way, and 2) to build the skills and confidence that you can complete a full solution.

- c) Brooks does not explicitly describe a prototype demo in his book, but he does implicitly describe the same idea as a prototype. So, what is it that Brooks describes that is similar to a prototype?

Total is 7 points. Must get the Brooks chapter.

Chapter 11 of Brooks is "Plan to Throw One Away". Here Brooks talks about a pilot plant... this is the very same idea as a prototype. Brooks admonishes that you will throw the first one away in any case, so you may as well plan for it.

## **Problem #2**

Total is 20 points with 2 points for each fill-in item.

Fill-in the blanks (each with one or more words). Trivial answers don't get it. For example, saying "page number" to (d) below might be correct, but it certainly is trivial.

- a) A purpose of the requirements is to determine if you understand the problem.
- b) A purpose of the specification is to determine if you understand how to solve the problem.
- c) The test plan addresses two questions. They are, 1) how do you know you met the requirements? And, 2) how do you know you implemented the specification correctly?
- d) In this class every specification and test plan document must contain a traceability matrix at the end of the document.
- e) One way to show the design of software is to use a flowchart.
- f) In Hungarian notation the first letter(s) of a variable name denotes the type of the variable.
- g) The press release (and any good piece of writing) must cover the the five W's and one H.
- h) "Amid a wash of papers, a small number of documents become the central pivot point." (from Brooks)
- i) "Not all paperwork is bad, only most of it." (from Brooks)
- g) To survive as an engineer, it helps to read the Dilbert cartoon strip as it somewhat accurately portrays the life of an engineer.

## **Problem #3**

- a) Precisely define and describe "design".

Total is 10 points with 2 points for each underlined term.

The precise definition of design from the Florida Administrative Code is (key words are underlined):

"Engineering Design" shall mean that the process of devising a system, component, or process to meet desired needs. It is a decision-making process (often iterative), in which the basic sciences, mathematics, and engineering sciences are applied to convert resources optimally to meet a stated objective. Among the fundamental elements of the design process are the establishment of objectives and criteria, synthesis, analysis, construction, testing and evaluation. Central to the process are the essential and complementary roles of synthesis and analysis. This definition is intended to be interpreted in its broadest sense. In particular the words "system, component, or process" and "convert resources optimally" operate to indicate that sociological, economic, aesthetic, legal, ethical, etc., considerations can be included.

b) What are the reasons to hold a design review?

Total is 10 points with 2.5 points for each reason.

Four reasons are to 1) get feedback to improve the design, 2) educate others (employees, etc.) on the project and design, 3) evaluation of employees, and 4) for contractual reasons.

#### Problem #4

Total is 20 points with points for correctness and statement of insight.

We had six guest speakers this semester. Which speaker has the greatest impact on your thinking? Carefully explain why (and what you learned).

A good answer describes what the speaker presented and gives a significant (not trivial or simply factual) insight gleaned from the talk.

#### Problem #5

Total is 10 points with points for insight.

a) If you could start your project over, what would you differently and why?

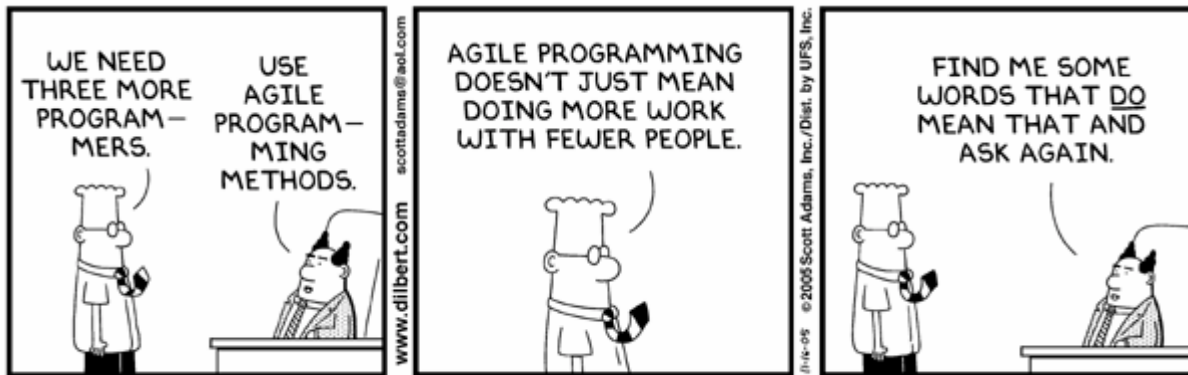
A good answer is based on something that did not go well and how it could have been "done better" (i.e., improved).

Total is 10 points with points for insight.

b) What did you learn from reading the Brook's book? First... and nonestuy now... did you READ the book? If not, please explain why you did not read it and please explain what book pertinent to development (had it been assigned) you would have read.

Again, a good answer is based on some insight and not just regurgitation of fact.

Good luck to everyone graduating. I am always happy to review resumes and help with job seeking. I leave you with one final Dilbert to think about (I promise you that you will encounter this sooner or later)...



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