CSC 300, Turner
Sample Midterm for Study

Open book, papers and notes. Since not every student has a laptop computer to use, no laptops will be allowed. You may write out answers to this practice exam and bring it with you to the exam. On the exam you turn in, you must print or write legibly so that I can easily understand what you write. I am serious about this. You may share study materials with other students during the examination but must do so without disturbing others. No sharing of the actual exam you write :-)

You will be given a number of True/False questions designed to demonstrate your comprehension of the assigned readings and class discussions. Here is a sample:

SAMPLE TRUE OR FALSE. (Very brief comment only if necessary)

1. Brooks thinks that changeability of human-created interfaces is an essential difficulty for software engineering.

2. One form of the "categorical imperative" is "never treat another human being merely as a means but always as an end."

3. Software Engineering is not a licensed profession in the United States.

4. The ACM/IEEE Software Engineering Code of Ethics requires us to obey the law at all times.

5. According to the RUP, port scanning on the Cal Poly network is an acceptable use.

6. Transactional Analysis is process for software testing.

7. Hamlet disputes the claim that good processes and methods can result in "defect free software."

8. Parnas notes one exception to his "fake the rational process" advice: to record rationale for critical decisions about design directions that were not followed.

9. Hamlet thinks random testing has better potential than partition testing to establish confidence in apparently defect-free software.

10. A "partial oracle" is when a tester is able to state with assurance that a result is incorrect without knowing the correct answer.

Short answer. I expect a complete, concise answer to these questions in a paragraph, two maximum. If citing Code sections, paraphrase the content (do not just refer to a number alone). Opinions mean nothing without logical support (citations to outside sources need not meet MLA standards :-)

11. What is the fundamental problem of software testing?

12. Is the SE Code of Ethics mainly a utilitarian or a deontologically based document?

13. Can you ethically take a job for which you have little or no training? What section(s) of the Code provides the resolution to this problem? Explain briefly.

14. Are there sections of the SE Code that support Open Sourcing software? Explain briefly.

15. Are there sections of the SE Code that support Pair Programming of software? Explain briefly.

Essays. When applicable, I suggest a simple, concise format similar to that explained in class and mandated for your papers.

a. Start with any simple facts you will rely on in writing your answer.

b. Name the question (issue) you will address - grounded in those facts.

c. After the issue (main question for your analysis), you ought to consider what rules or ethical principles will come into play, you might even write them down as applicable to the issue in a list. These should suggest some of the arguments you'll need to cover.

d. Consider varying arguments regarding possible positions or answers to your question. Here you may include readings you've done (cite as best as you can) and you may even cite class discussions (do this sincerely, to the best of your recollection). You may create the arguments yourself, but they must be built on logic. Mere opinion has no point value.

e. At this point you will give your analysis of the question and your answer. This should incorporate the rules, ethics, and arguments you've found, applied to the facts given (or assumed, you may sometimes assume something necessary to the argument, but do not go far afield!) to yield an intermediate result (or a final result.) I repeat: to analyze you will apply rules and accepted arguments to facts to get the results, it is a very simple, logical method.

You will be graded wholistically, but the most credit comes from your analysis: criticizing and synthesizing other arguments, making your own position in a clear and consistent manner given the facts you have.

Note: I also suggest a very simple outline before you begin to write your answer. Since the exam is of limited time, you should allocate that time carefully.

Be sure to answer the question. Pay attention to what is asked, it is easy to stray and lose credit you might otherwise deserve.

SAMPLE ESSAY:

1. You graduate from Cal Poly (after receiving an "A" in your CSC 300 class!) That high grade gets you an interview with UnderCover Systems where they claim to value ethics highly. They offer you a job (and you have no other offers) at a salary that will enable you to pay for some critical surgery for your mother that she could not otherwise pay for.

UnderCover Systems hires you and only gives you the job title after you have signed your Nondisclosure agreement. They hire you as an "information retrievel operative" where you will write programs designed to connect to networked PC's and gather data which will be sent back to a special database without the PC owner's knowledge or consent. You quickly speak to your manager regarding the dubious ethics of the job title and he responds, "it's OK, we only apply these techniques to potential terrorists. The U.S. government funds us, so we're in the clear!" "If we don't find these terrorists before they strike us," he continues, "we'll be responsible for the horrors they may cause!" He tells you to get back to work and do your job or you may lose your job due to the lack of progress you're making.

According to the SE Code and other professional/ethical principles, what should you do?

ANOTHER SAMPLE ESSAY: (This essay asks for specific work and the format of the answer should follow that in some rational way.)

2. Suppose you write a paper extending Weyuker's analysis in her paper, "On Testing NonTestable Programs." You show that testing of software still isn't anywhere near an exact science and that we have no objective measure for the "strength" or "thoroughness" of testing. You admit that we can get a bug list that clearly helps avoid certain problems, but that is the only certain result of testing.

The IEEE asks you to write some guidelines regarding the Software Engineering Code of Ethics section 3.11. You'll write guidelines involving adequacy of test documentation and you'll give very brief justification for each guideline.

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A FEW BASIC THINGS TO KNOW (good knowledge for the midterm, for your paper, and eventually for the final) This is not exhaustive by any means, but should form the basis for your first line of study.

What is the fundamental problem of software testing?
What is deontological reasoning? What is utilitarian reasoning?
What is a "normative" concern?
What is a "descriptive" concern?
Understand the characteristics of a Profession.
What is "logical positivism" and what are its good/bad characteristics?
What good is a high level set of "goals" such as the SE Code (no deterministic algorithm that halts)? Consider the Medical or Legal Codes of ethics, are they similarly merely (in)adequate? What could the purpose possibly be? Is a deterministic algorithm that halts possible for such professions? Why or why not?