CMSC 435 - Software Engineering
Spring 2010
Quiz 11

Name:

Answer the questions below. Be clear and concise in your answers, writing in complete sentences and providing examples for support as appropriate. Use as many sentences as you want.

It is said about projet management that "You cannot control what you cannot measure, and you cannot measure what you cannot define." When developing a software system, some managers use "% of module covered" as a measure of the quality of unit tests. If a set of unit tests for a module covers 97% of the code in the module, we would say that %-module-covered=0.97. A manager may apply this metric by requiring that all modules be 100% covered by unit tests.

1. (4 pts) Does %-module-covered alone sufficiently capture the quality of the unit tests? Why or why not?
   As you have probably discovered (and perhaps taken advantage of!) during your project, simply looking at a coverage metric (e.g. line or branch coverage) does not completely describe the quality of a set of unit tests. It is possible to execute the entire unit under test without making the appropriate checks on its functionality. We must also consider what the tests are actually checking for, whether they actually fail upon the insertion of faults, etc.
   2 points for "No"
   2 points for explanation of missed atrribute of quality

2. (6 pts) Define one additional metric that could improve a manager's understanding of the quality of unit tests. Name the metric, define the metric, and give an example of how a maanger might apply this metric to ensure a higher level of quality for unit tests.
   There are several possible answers here, but basically, you should address a problem that you identified in the first question. If we want to address correctness, we could include a metric such as "number of assertions made per LOC" or "independent variables checked per test." If we want to check if tests are capable of failing, we could track "number of bugs found," either as a project goes along or when bugs are intentionally inserted.
   For the appication of the metric, I was simply look for something like "A manager could require that all unit tests include at least one assertion for each input and output variable," or something similar (just as in the description of %-module-covered above).

   2 pts. for selection of metric
   2 pts. for description
   2 pts. for application