SEP1 Exercise Key

1. In your own words, describe what the term "software process" means.

The lecture slides discuss the meaning of software processes. Something like the following would be a good response:

A software process describes a set of steps for developing a software product. A well-defined process would have a script to guide one through the process, standards and procedures for carrying our process steps, forms and templates for collecting process data and documenting process outcomes, and methods for assessing how well the process worked.

2. What does the statement "The bearing of a child takes nine months, no matter how many women are assigned." have to do with the development of software?

This quote came from the Fred Brooks essay "The Mythical Man Month". It emphasizes that certain tasks cannot be partitioned into subtasks to be carried out concurrently, by separate developers. In such a situation, adding developers to a project will not accelerate the completion of the project. Or, in other words, two women cannot bear a baby in 4.5 months.

3. How many pair wise communication links are possible for a team of five people, compared to the one link for a two-person team?

The Fred Brooks essay has the formula n(n-1)/2 (the number combinations of n things chosen 2 at a time). Hence, there are 5*4/2 = 10 pair wise communication links for a five-person team.

4. What is your opinion of programming? Is it alchemy, craft, science, or engineering? Explain your answer.

There is no clear correct answer for this question, but the Fleming article, "A Fresh Perspective on Old Problems", discusses this issue. The response should be thoughtful and reasoned.

5. What is the biggest obstacle to introducing process into the workplace?

In the Fleming article several obstacles are mentioned: a preoccupation with tools and tricks, the belief that process will hinder productivity, and apprehension and hostility of people about change in the workplace.

6. Discuss "paired programming". What do you see as its advantages and disadvantages?

The Paulk article "Extreme Programming from a CMM Perspective" has a bit of discussion about paired programming on p.22.

Disadvantages:
* increased cost of resources (if there is not a subsequent increase in productivity)
* requires a good personality match to work well

Advantages:
* close collaboration can improve problem solving
* close collaboration can improve product quality, reducing future maintenance costs
* can lead to faster development (needed for competitive edge in certain market-driven technologies)

7. Give the statement "Poor customers result in poor systems", what can/should a developer do if she has a "poor customer"?

The statement is a quote from the Highsmith and Cockburn article , "Agile Development: The Business of Innovation". There is not much in the reading to help answer this question, so this is more of an open thought question. The following would be a good response:

The answer depends on the type of system and the development environment. One approach would be to decide not to develop the product. Another would be to try to negotiate one or more of the following:
* *Educate the customer about the development process and the customer input and involvement required.*
* *Secure a new, better customer representative.*
* *Spend more effort on requirements elicitation (market/competitor research, interviewing users, studying the existing system).*
* *Require regular customer involvement and review for each development phase.*
* *Secure a firm, contractual agreement about the product requirements and the procedure for change in requirements.*

8. Give an example of the sort of software system for which it might be appropriate to use a highly structured CMM-type process. Give an example of a system for which an agile process like XP would be more appropriate.

The Paulk and Highsmith articles argue the CMM-type processes are most appropriate for large projects with severe reliability requirements, especially for life-critical systems. XP (and other agile processes) are most applicable to turbulent high-change environments.

Example CCM-type process: software for the Joint Strike Fighter
Example XP process: software for the latest and greatest interactive web conferencing system

9. When AIS (Advanced Information Services) introduced the PSP into their organization, what was the affect on the quality of they software produced?

Before PSP training engineers had 0.76 defects/KLOC and after training they had 0.17 defects/KLOC. Modules developed by PSP trained engineers had significantly fewer acceptance test and usage defects than those developed by non-PSP trained engineers.

10. In the Task View project, how did the use of the TSP affect productivity?

The Webb and Humphrey article "Using the TSP on the TaskView Project" states there was a 16 percent increase in productivity on the TSP project compared with previous projects.

11. Design and document a process for some activity you have carried out before.

Final Exam Process	
Purpose	Guide a student through preparation and study for a comprehensive exam in a problem-solving course (e.g., math, science, programming).
Goal	Perform well on the exam, with a grade of 80% or better.
Inputs	Textbook, lecture notes, complete homework, completed quizzes and tests.
Planning	* review information provided about exam (scope/coverage, exam rules/format, time/date, etc.) * assemble and organize course material * determine study activities (e.g., read textbook, review lecture notes, etc.) * estimate study time * complete Study Schedule template * record planning time
Pre-Study	* review textbook reading assignments * review lecture notes * review previous quizzes and tests, identifying weak areas * review homework assignments, identifying weak areas * rework assign problems * record study time
Practice Exam	* develop a practice exam * complete exam (under conditions similar to actual exam) * grade exam, identifying weak areas * record practice time
Post-Study	* re-study areas that are identified as both weak areas and likely exam areas * record study time
Exam	* read through entire exam and make a plan for taking the exam * answer each question * review answers
Postmortem	* compute total preparation and study time * assess exam success * assess preparation and study effectiveness * determine changes to the exam process

Study Schedule							
Day	Sat	Sun	Mon	Tue	Wed	Thu	Fri
0900							
1000							
...							
2200							
2300							