Chapter 14: The Future of Software Engineering

1. Consider the activities of a software project manager. Where are decisions made? When are they group decisions? When are they individual decisions?

Answers to this question may vary, as there are numerous possible decisions to be made by a project manager, in all phases of the lifecycle. Individual decisions are typically those which relate directly to the project manager's role or expertise in keeping the project on track, such as how much effort to allocate to different activities, or what kinds of process to use to keep the project on time and under budget (i.e. whether inspections are worth the investment in time and effort). Group decisions are typically those in which the roles and experiences of the other developers can significantly contribute, such as whether it would be worthwhile to invest in a tool that would automate some of the developers' tasks but require the developers to master a steep learning curve, or whether a particular work document is of sufficient quality to pass an inspection.

2. What software technologies have been promoted in the last ten years? Which ones have resulted in widespread adoption and which have not? Can you use the Rogers and Moore frameworks to explain why?

Answers to this question will vary, as there are numerous software technologies from which to choose. Answers should cite literature (the number of books available on a topic is a good indicator of its penetration) or argue from personal experience to establish the level of support available and the amount of evidence as to effectiveness for the technologies chosen.

3. The January/February 2000 issue of *IEEE Software* contains an editorial by McConnell about software engineering's best influences:

- reviews and inspections
- information hiding
- incremental development
- user involvement
- automated revision control
- development using the internet
- programming languages: Fortran, COBOL, Turbo Pascal, Visual Basic
- Capability Maturity Model for Software
- component-based development
- metrics and measurement

For each practice listed, analyze its likely technology adoption. Is it a best practice? What evidence supports its adoption? And what audience is addressed by the evidence?

Answers to this question will vary, but should support their conclusions with reasonable arguments. The article summarizes the level of adoption of each technology in industry, although students should look for industry experience reports that can confirm or deny that impression. (Many conferences, including ICSE, now contain tracks devoted to industry status reports, making these a good place for students to start searching.) Students should also turn to the literature to understand the amount of published evidence on a topic.