Chapter 3. Cont.

Your names:

1. Explain why agile methods have practical problems with
    a. The legal approach
    b. Software maintenance
    c. Worldwide distributed teams

Hints:

a. The informality of agile development is incompatible with the *legal approach* to contract definition that is commonly used in large companies.

Most software contracts for custom systems are based around a specification, which sets out what has to be implemented by the system developer for the system customer. However, this precludes interleaving specification and development as is the norm in agile development.

A contract that pays for developer time rather than functionality is required.

However, this is seen as a high risk in many legal departments because what has to be delivered cannot be guaranteed.

b. Agile methods are most appropriate for new software development rather than software *maintenance*. Yet the majority of software costs in large companies come from maintaining their existing software systems.

Three key problems concern maintaining software using agile methods:

- The emphasis in the agile development process is to minimize formal documentation, so it is lack of product documentation for software maintenance.
- Although an agile development process is designed for change and maintaining simplicity and is likely to be effective for software evolution, the main difficulty after software delivery is likely to be keeping customers involved in the process. This precludes obtaining effectively information from customers during maintenance.
- Moreover, maintaining the continuity of the development team is very challenging since a few members leave the team. It is difficult for new team members to build up the same understanding of the system and its components.

c. Agile methods are designed for small co-located teams yet much software development now involves worldwide distributed teams. It is hard to organize daily meetings. The coherence of the development team is lose while product documents are not recorded formally. This leads to lots of difficulties in project management.

2. You are a software manager in a company that develops critical control software for aircraft. You are responsible for the development of a software design support system that supports the translation of software requirements to a formal software specification. Comment on the advantages and disadvantages of the following development strategies:
    a. Collect the requirements for such a system from software engineers and external stakeholders (such as the regulatory certification authority) and develop the system using a plan-driven approach.
    b. Develop a prototype using a scripting language, such as Ruby or Python, evaluate this prototype with software engineers and other stakeholders, then review the system requirements. Redevelop the final system using Java.
    c. Develop the system in Java using an agile approach with a user involved in the development team.

Hints:

Option *a* is the best choice.

This is a system used for supporting software design, it requires design knowledge from software engineers and external stakeholders. This product development process needs to be planed carefully since its changes affect much on formal software specification translated from the system. However, this is a big system, so it should be developed incrementally to verify released modules as well as the whole system effectively.