

Name:
Surname:

Software Engineering
Homework 5

Topic
Architectural Design

Q1) In agile development, amount of documentation is low, and software and documents are evolved in an incremental way. Yet, overall architecture design is better done as a very first step of the agile development, as complete as possible. Why?

In agile development, it is crucial to identify essential and more important components so that they can be accomplished previously. Otherwise, it could be hard and costly to modify components since refactoring is expensive (adaptation of components to architectural change can be generally very expensive). In addition, these, designing architecture well would affect relationships between stakeholders and would affect future decisions. Therefore, it is significant to make this process better to enable the project open to changes, satisfy non-functional and functional requirements of the system as well as to enhance customer correlation.

Q2) What are the architecture and system characteristics?

(1) Performance, (2) Security, (3) Safety, (4) Availability, and (5) Maintainability

Q3) What are the architectural views in 4 + 1 view model?

(1) Logical view, (2) Process view, (3) Development view, (4) Physical view, and
(5) Use cases or scenarios (as +1)

Q4) Give informative links on Model-View-Controller (MVC) pattern (one video link, one tutorial link, one blog link, one example code link, 3 links for 3 different usages in different – other than Web Development). Why MVC is very popular and important?

MVC pattern is a widely-used architectural pattern because

- it enables developers to produce multiple views with the same model,
- it makes developers to work on the project collaboratively easier,
- it makes development process of software easier and faster,
- it enables developers to produce cleaner and reusable codes,
- it enables developers to update the project easier by decreasing coupling,
- it enables developers debug their codes easier.

1. MVC in Game Development
Unity with MVC.
<https://www.toptal.com/unity-unity3d/unity-with-mvc-how-to-level-up-your-game-development>
2. MVC in Android Development
Android TicTacToe game using MVC model.
<https://github.com/ericmaxwell2003/ticTacToe/tree/mvc>
3. MVC in Desktop Development
One of 3 video tutorials about building a desktop application using Python.
<https://www.youtube.com/watch?v=EGn2MWK5MjU>

Q5) List at least 8 commonly used different architectural patterns.

1. Model-View-Controller (MVC) pattern
2. Model-View-Presenter (MVP) pattern
3. Layered architecture pattern
4. Repository pattern
5. Client-server pattern
6. Pipe and filter pattern
7. Microservices pattern
8. Broker pattern