# Software Engineering Exercises

**Q1:** Give two examples to software engineering methodologies.

**Q2:** What is the difference between iterative and incremental models?

**Q3:** What is a unit test and why is it used?

**Q4:** What is alpha and beta testing?

**Q5:** Why is testing important?

**Q6:** What is the purpose of the user documentation?

**Q7:** What is the difference between *waterfall model* and *agile model*?

**Q8:** What are the four main elements in a kanban board?

**Q9:** What is the purpose of using use case diagrams?

## Answers

**A1:** Waterfall, Incremental, Iterative and Agile.

**A2:** Incremental model tries to **extend** every version by adding new features. Iterative model encompasses the concept of **refining** each version.

**A3:** Unit tests are usually automated tests to ensure that a *unit* works as intended. It also ensures that all code fits the quality standards. It saves time and money because it can find bugs early and provides a better code environment.

**A4:** Before deployment, the software is given to an audience. If that audience is within the organization, it is called alpha testing. If that audience is done in a user's environment, it is called beta testing. So, if the preliminary software is tested within the organization, it is *alpha*; if it is released to some users (beta testers) it is *beta*.

**A5:** Testing ensures that the software is doing what it is **supposed to do**. It helps prevent bugs, reduce development costs and improves performance. It is an important part of the software life cycle.

**A6:** It explains the features of the software and describes how to use them. Improves customer experience and cut down customer care costs. It also helps

users to get the complete value of the software. Sometimes we can see that there are additional features in the software we have not known before.

**A7:** In the waterfall model, entire set of requirements are done before design step. In order to move on to the next step, first the previous or current step must be completed. However, agile model is continuous. It has reduced emphasis on documentation compared to waterfall model. It's main goal is quick and early development.

**A8:** Backlog, todo, doing, done. Backlog lists every item planned to be done at some point. Elements / tasks in backlog are grouped and put into *todo* column for each sprint. When those tasks are selected by the developer or issued to developer, cards in *todo* column are carried onto *doing*. When it is done, it is carried to *Done* column.

**A9:** Use case diagrams are used to gather the requirements of a system including internal and external influences. These are mostly design requirements. So, when a system is analyzed, use cases are prepared and actors are identified.