

Name: Niamul Hasan, Id: 17201026

See: A sem: 3.2

Assignment - 01

CSE-321

Q. Ans 1:

The differences between a software process model and a software process:

1. As we know, the systematic approach that is used in software engineering is called a software process whereas, A software process model is a simplified description of a software process that presents one view of that process.
2. In software process, there is a standard for basic processes activities of specification, development, validation,

and evolution are organized differently in different development processes where on the other side, In the software Process Model like waterfall model, they are organized in sequence, while in incremental development they are interleaved.

Now, two ways in which a software be helpful in identifying possible process improvements:

1. Incremental development: This approach interleaves the activities of specification, development, and validation. The system is developed as a series of revisions, with

each version adding functionality to the previous version.

3. Integration and configuration: This approach relies on the availability of reusable components or systems. The system development process focuses on configuring these components for use in a new setting and integrating them into a system.

Q. Ans 2:

Apart from the challenges of heterogeneity, rapid delivery and trust, other problem and challenges that software engineering is likely to face in 21st century are;

1. Legacy systems:

The majority of software systems which are going to build or develop in 2021, were may be developed before or many years ago. Now the legacy challenge is the challenge of maintaining and updating this software in such a way that excessive costs are avoided and essential business services continue to be delivered.

2. Rapid technology advancement :

Every technology advancement is a blessing for the IT industry. But at the same time, technology evolving at a phenomenal rate leads to an added pressure for software development professionals to leverage these upcoming technology trends in software product development to gain a cutting edge over competitors and stand out in the market.

Q. Ans 3 :-

As a software engineer, I must accept that my job involves wider responsibilities than simply the application of technical skills. I must also behave in an ethical and morally responsible way if to be respected as a professional engineer.

So it goes without saying that the engineers should uphold normal standards of honesty and integrity to develop the computer system.

there are areas where standards of acceptable behavior are not bound by laws but the more tenuous notion of professional responsibility. Some of these are :

1. Confidentiality:

Tracking citizens and their actions are very private things, if leaked then the consequences will be very pathetic.

So the system developer team should ensure the security. Beside that, the developer team may have the access of that system. So they could easily leak the information for a large wealth. But they should have the ethics to not to do that.

2. Competence:

The developer team for this system need skilled employees. So as a software engineer no one should misrepresent their level of skill or competence to enter into the developer team.

3. Intellectual property right:

As developing a software to keep track of citizen, there is a limit of it, because everyone has their own privacy rights. So the developer team shouldn't develop the software that violates their rights.

4. Misuse of data:

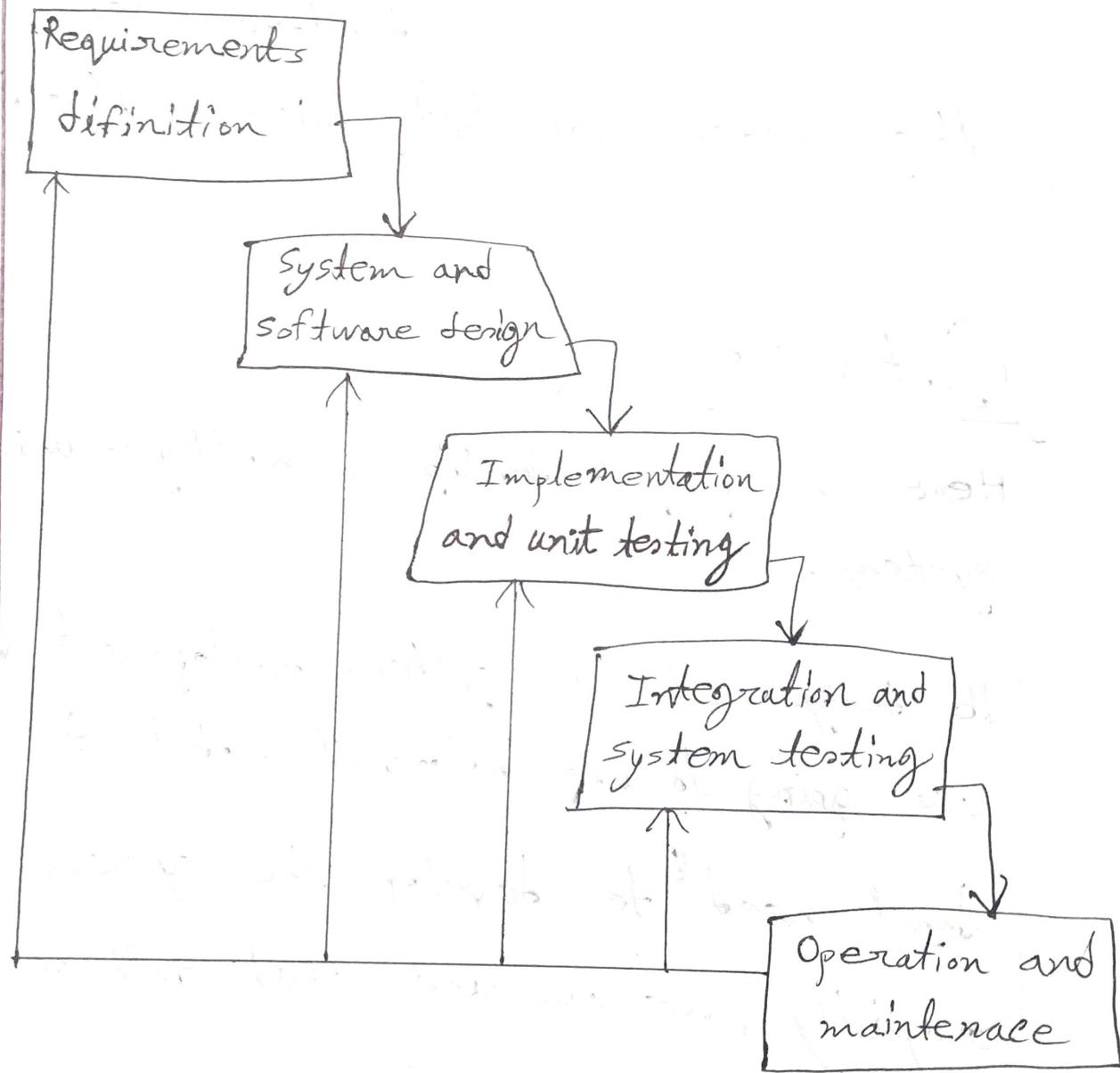
The developer team and the system shouldn't misuse the data.

Q. Ans 4 :

Here we going to develop a building security system.

To design such a system development we are going to use waterfall model. As we don't need to develop the system rapidly, we can use waterfall model.

For that the block diagram is given below:



Block diagram: Building security system
(Waterfall model)

Q. Am 5:

Here the task is to make a flood warning system.

We are going to use agile Model to develop this system.

Basically, when frequent changes are required, then we need to use agile model. As we are considering natural disasters which way of attack is much unpredictable and to predict it, requirements are changeable.

For Example, we set a monitoring station at one place but after some time we may need to replace at any other place or we may need to have two monitoring station instead of one.

So here we can use agile model.

But agile could be used for a project which is small. And the system we are developing is a large project.

To solve this problem we can separate the project in small pieces of project. Like setup the mechanism to measure river water levels is a project, monitoring setup is another, etc. finally we need to combine those.

Now the block diagram:

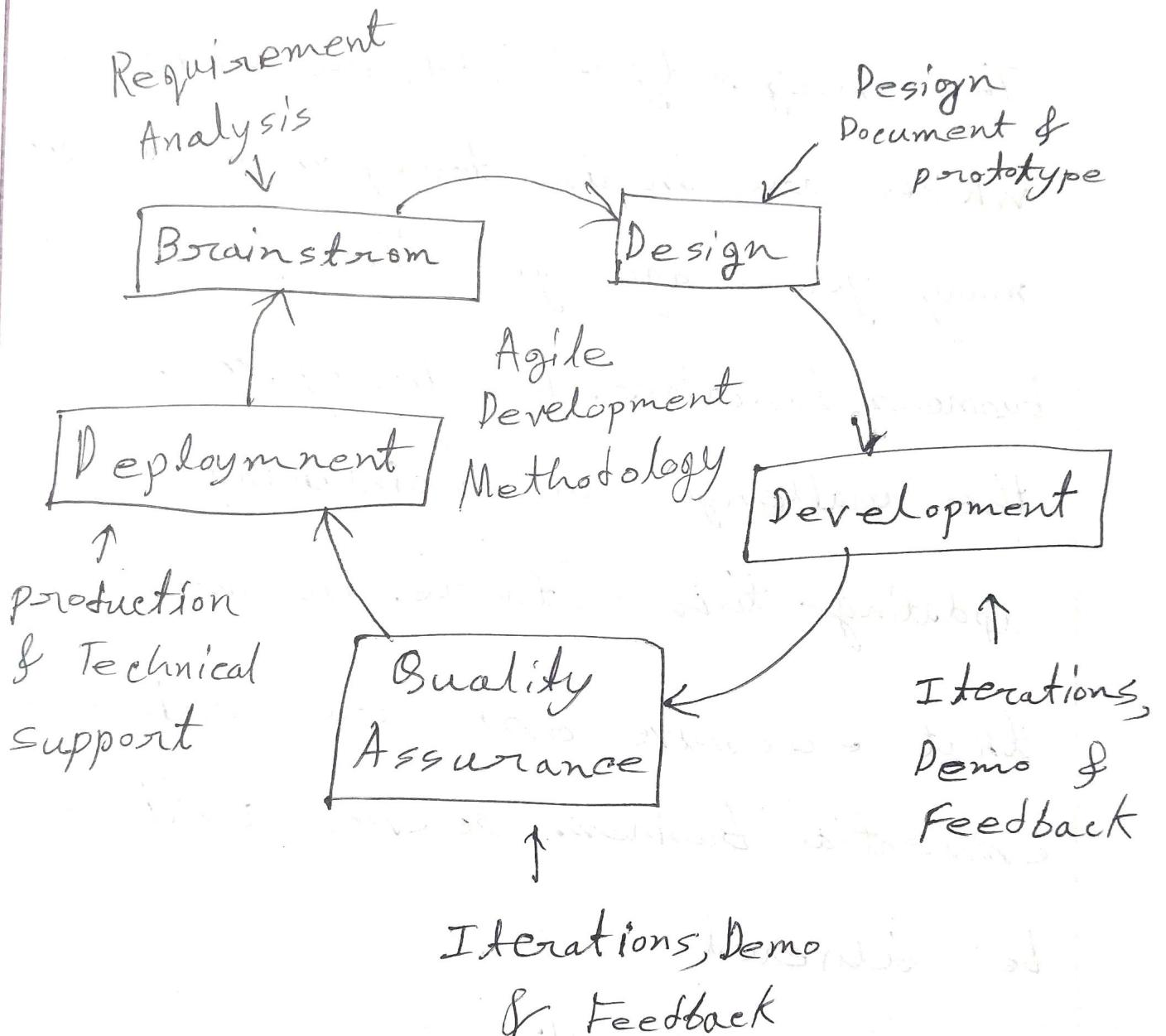


Fig : Agile Model for flood warning system

Q. Am: 6

The majority of software systems which are in use today were developed many years ago yet they perform critical business functions. The legacy challenge is the challenge of maintaining and updating this software in such a way that excessive costs are avoided and essential business services continue to be delivered.

Now the difficulties for companies that wish to reorganise their business processes based on the legacy system; the security in legacy systems old and unstable. As the security system is

based on old systems to ensure proper security we have to retransform the full security analysis and development.

Q.Ans 7:

No I should not abandon the work.
As I am involved in this job so I have to complete it.

Here significant number of people redundant.
Beside that the people also in the environment deny me to access the essential information to complete the system installation

here we can use Agile model to complete installation and overall system development.

As we know agile model gives us the opportunity to have meeting with the customers over and over. So at the time, in installation we can take necessary inputs from the customer and note the problems and fix-it.

Q. Ans 8:

An server provided by an ISP :

ISP system connects thousands of customer and provides internet. If the system is not properly secure then hacker can hack into the system and may steal personal data of customers. So, the most critical dependency is security.

Computer-controlled scalpel :

Here reliability is the most critical dependency. If the system fails the scalpel will stop operating but if it is not reliable it might cut other parts of the body.

Directional control system:

Here reliability is the most critical dependability attribute. For this system, we need to have proper and exact service, where reliability must need.

Finance management system:

Here security is the most critical dependability. Because if the system is not secure, customer's financial credentials can be leaked.

Q. Am 9:

The distinct behavior of these two is reliability is concerned with delivering specified services and safety is concerned with the ability of the system can be reliable and unsafe or safe but unreliable. we can take the example of computer operated scalpel. It can be reliable but unsafe, cause it may be deliver precision cutting as specified but may shutdown in the middle of operation.

Peside that it can be safe but unreliable. The system may not fail catastrophically but it may be unreliable cause it may not cut with precision or cut somewhere else where it shouldn't have.

Q.10 Ans:

Obviously it's not ethical for an engineer to deliver a software product with known faults to a customer. And Yes it makes difference if the customer is told of the existence of these faults in advance. Still it won't be reasonable to claim the system is reliable cause the engineer knows it isn't.

Q11 Ans:

1. Anti-lock breaking system:

It will use prototype model to develop this system. cause the requirements are not clear

in such system as there are different effects works. So before making the real system we can make, evaluate, modify a prototype system.

2. Virtual reality system:

It will use Agile model. We know that agile model welcomes change in requirements. We know the system and technology is rapidly changing for this sector. So, the requirements are also changing rapidly and agile model accept this changing.

3. University accounting system:

It will use agile model to develop this system, cause agile model is combination of iterative and incremental model. There may be many features in such system so with each iteration we can improve certain feature.

4. Find train times from terminals:

Here we can use waterfall model to develop the system. This is not a very complicated system and doesn't have many feature and have requirement specified clearly. So that we can use waterfall model.

Q.12 Ans:

Here mentioned about prototyping model.
Software developed with this model are difficult to maintain cause of the following reasons:

- i) Practically this methodology may increase the complexity and it will make it more difficult to maintain.
- ii) There are no specific requirements in such model. So we need to gather requirements via try & error.

Q.13 Ans:

The waterfall model is accommodated where there is a low specification risk and no need for prototyping for risk resolution. The activities in the 2nd quadrant of the spiral model are skipped. The prototyping model is

accommodated when the specification phase is limited and the risk resolution phase predominates. The activities in the 3rd quadrant of the spiral model are skipped or reduced in scope.

Q. 14 Ans:

A classification scheme can be helpful for system procurement because it helps to identify gaps in the CASE tools coverage in an organization.

Procurement may be aimed at filling these gaps

815.1 Ans:

Agile model could be helpful for final project :

- a) They can get used to frequently delivery.
- b) It will improve their face to face communication skills with client
- c) It will help them to do efficient design and will teach them to fulfil the business requirements.
- d) Introduced to frequent changes and will learn to deal with it.
- e) They will be able to learn how to reduce total development time.

Q 15.2 Ans:

Agile methods may not work in organizations.

i) Lack of clarity: Large enterprises often include big teams, that may consist of remote member. It's important to have every body involved in the project collaborate, so if remote employees aren't able to easily communicate, it will be difficult to contribute.

ii) Inadequate experience with agile: possible the biggest reason why agile project fail in large enterprise is the fact that people just doesn't have experience

with methodology on how to integrate it.

iii) Lack of collaboration: In this context sometimes we can see in large companies that a team isn't really a team or they lack same goals so they can't collaborate with each other. But collaboration is very important in agile modeling.

iv) Lack of testing strategy:

The role of the tester changes and so does the required skill to fulfil his role. As the role and skill changes frequently it results in lack of testing strategy.