National University of Computer and Emerging Sciences

Introduction to Software Engineering (SE1001)

Date: February 28th, 2024

Course Instructor(s): Kiran Khurshid

Sessional-I Exam

Total Time: 1 Hour

Total Marks: 45

Total Questions: **10**

Semester: SP-2024

Campus: Lahore

Department: Computer Science

Student Name	Roll No	Section	Student Signature

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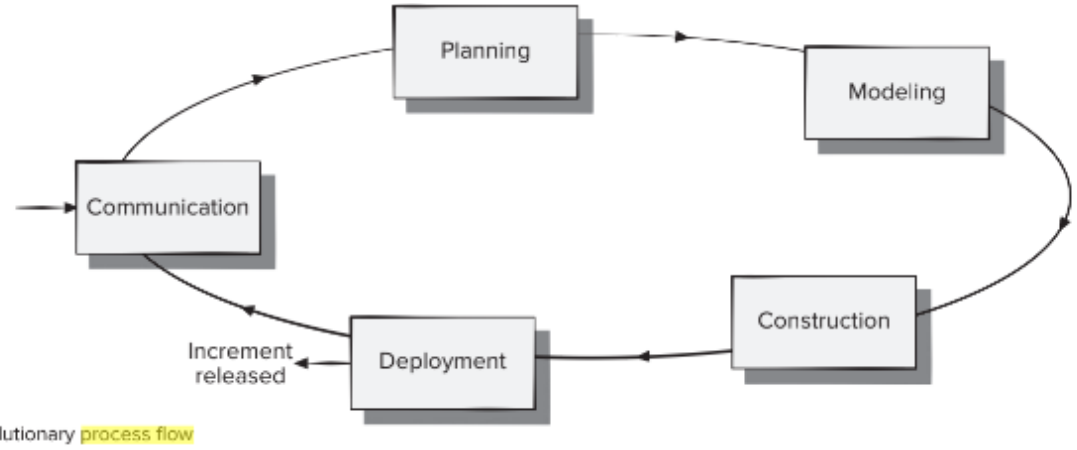
CLO 2: Select suitable SDLC models for different project situations

Q1: A project has increments/releases deployed, after which the communication activity begins again, and the software process activities continue till another increment is deployed.

a) What kind of process flow is this project following? **[1 mark]**

……Evolutionary……

b) Draw that process flow in the space below. **[6 marks]**



(c) Evolutionary process flow

CLO 2: Select suitable SDLC models for different project situations

Q2. What is the difference between throwaway prototype and evolutionary prototype?
…Throwaway prototypes are discarded but in evolutionary prototypes the prototype continues to be developed as the final product. **[2 marks]**

CLO 3: Discuss key Software Engineering Principles

Q3: Write down two major differences between software and hardware characteristics

… Software is intangible/invisible and doesn't wear out **[2 marks]**

CLO 3: Discuss key Software Engineering Principles

Q4. A software house is hiring a software engineer. What kind of human aspects of his/her character will they be looking for, during the HR interview. List any three. **[3 marks]**
Individual responsibility, Has an acute awareness of the "environment", Brutally honest, Resilient under pressure, Has a heightened sense of fairness, Attention to detail, Pragmatic

CLO 3: Discuss key Software Engineering Principles

Q5: Match the software examples on the left with the category of software to which they belong. Write the correct option in the center column. **[5 marks]**

Example of software	Answer	Software category to which it belongs
Microsoft Visual C++	d	a. Scientific Software
Gemini by Google DeepMind	c	b. Web/Mobile application
Microsoft Office Suite	e	c. Artificial Intelligence
Google Slides	b	d. System Software
Matlab	a	e. Product-line Software

CLO 3: Discuss key Software Engineering Principles

Q6. What kind of skills does a software engineer need to have, other than programming skills? List any five. **[5 marks]**

- Be familiar with several design approaches
- Translate vague requirements and desires into precise specifications
- Be able to converse with the user in terms of the application rather than in computerese
- Ability to move among several levels of abstraction at different stages of the project
- Build a variety of models
- Reason about those models in order to guide choices of the many trade-offs faced in the software development process
- Needs communication skills and interpersonal skills as a member of a team
- The ability to schedule work, both his or her own and that of others

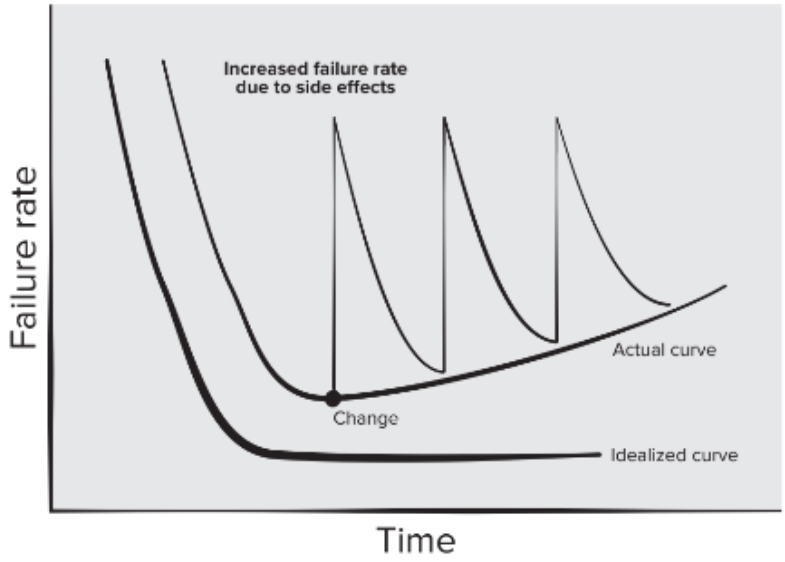
CLO 3: Discuss key Software Engineering Principles

Q7. Which of the quality aspects do each of the following statements depict? Quality aspects are Functionality, Reliability, Usability, Interoperability, Maintainability. **[5 marks]**

Statements	Quality Aspect
An accounting software should not produce erroneous financial statements.	**Reliability**
A library management system should have the feature of issuing a book.	**Functionality**
After an academics management system is deployed in the university, it can easily be managed to handle issues arising after deployment.	**Maintainable**
A web browser is able to interact seamlessly with various web technologies and standards to access and display content from diverse sources across the internet.	**Interoperability**
A social media application developed for Pakistanis has information in both English and Urdu to enable the user to perform his functions.	**Usability**

CLO 3: Discuss key Software Engineering Principles

Q8. a) Draw the failure curve for a software. **[3 marks]**



b) Keeping in mind the curve made above, explain why software deteriorates over time?

This seeming contradiction can best be explained by considering the actual curve in Figure 1.2. During its life software will undergo change. As changes are made, it is likely that errors will be introduced, causing the failure rate curve to spike as shown in the "actual curve" (Figure drawn above). Before the curve can return to the original steady state failure rate, another change is requested, causing the curve to spike again. Slowly, the minimum failure rate level begins to rise—the software is deteriorating due to change.

CLO 3: Discuss key Software Engineering Principles

Q9. A system that has been in use since decades is called A legacy system **[1 mark]**

CLO 4: Describe different phases of software development

Q10. James has decided to use the waterfall model to develop his point of sales software. What will be the different phases of his project? Briefly describe what he will do in each phase.
[10 marks]

- Requirements analysis and specification
- System design and specification
- Coding and module testing
- Integration and system testing
- Delivery and maintenance

OR

FIGURE 2.3 The waterfall model