



National University of Computer & Emerging Sciences, Karachi
Spring-2018 CS-Department



MidTerm 1

23rd February 2017, 9:30 am – 10:30 am

Course Code: CS303	Course Name: SOFTWARE ENGINEERING
Instructor Names: Engr. Abdul-Rahman, Ms. Rubab Jaffar, Ms. Javeria Farooq, Ahsan Shah	
Student Roll No: 152993	Section No:

Instructions:

- Return the question paper.
- Read each question completely before answering it. There are 3 questions and 2 pages.
- All the answers must be solved according to the sequence given in the question paper.
- Handwriting / diagrams should be neat and clean. Avoid cutting and over-handwriting.
- Students are not allowed to write anything on the question paper except roll number & section.
- Submit the question paper along with the answer script.
- This paper is subjective.

Time: 60 minutes.

Max Marks: 30 points

Question 1 [10 points]:

- a. The "Software Oyster Farming" i.e., "System Accretion" is a famous software metaphor documented in the book called "Mythical Man-Month" by Fred Brooks. Briefly describe this metaphor and explain how does it differs from "Software Farming" metaphor.
- b. Each of the different generic approaches to software development has a different profile of cost distribution across the software process activities. Kindly illustrate the percentage of software activity cost distribution by drawing a bar graph of activity percentage distribution in following different approaches: water fall model, iterative development, component based software development, development and evolution costs for long life projects and product based development costs.
- c. Rather than delivering the system as a single delivery, in incremental development, delivery is broken down into increments with each increment delivering part of the required functionality. Please draw the generalized process model for incremental delivery process.
- d. Consider that you are appointed as a project manager of Softech Worldwide L.L.C. on one of the most important product which provides a secure content delivery network to a military organization. After your joining you have discovered that this application is underdevelopment since 2 years and the progress is still 50% because the initial time required to develop the software was underestimated. There is a high probability that top management can be restructured. It is almost impossible to recruit staff with the military grade encryption skills; hence you are always in search of good people. There is a low probability for organization's financial problems that can force reductions in the project budget, and they are asking you to improve the project state by identification of risks list, and the effect of these risk on the project, (e.g., Catastrophic, Serious, tolerable, insignificant etc.)

Question 2 [10 points]:

Table 1 sets out a number of activities, durations and dependencies of multiple tasks in a project. Assume that project is starting from February 23, 2018. To simplicity the calculations, also assume that all seven days of the week are working days. Draw either a bar chart (Project Gantt Chart) OR an activity chart showing the project schedule. In case of an activity chart you need to also calculate the critical path for the project.

Note: Take special care while counting individual days of a month (e.g., 31, days in Jan, 28 days in Feb, etc.)

S#	Task	Duration (days)	Dependencies	S#	Task	Duration (days)	Dependencies
1	T1	08		9	T9	13	T6
2	T2	13	T1	10	T10	5	T5, T9
3	T3	08	T1, T2	11	T11	08	T9
4	T4	18		12	T12	18	T10
5	T5	08		13	T13	10	T3, T4
6	T6	13	T3, T4	14	T14	08	T8, T9
7	T7	18	T3	15	T15	18	T12, T14
8	T8	10	T7	16	T16	08	T15

Table 1

Question 3 [10 points]:

You need to create a sequence diagram for a payment scenario of Metro shopping mall. Assumes that the customer selects the items that he needs to purchase and puts them into the cart. Customer delivers the items in the cart to the employee on the checkout counter where the POS (Point of Sale) application is running. For each item, whenever the employee scans the bar code of an item, an object of Checkout class sends the barcode to central database. Central database returns the price and description of each product to the checkout object, which employee can also see on his console. When all items are scanned, employee then presses proceed button in the checkout application which calls the total() function of the Bill class. Bill class then generates the receipt and returns the bill object to the Checkout class. After informing the customer about the total amount, employee asks the customer to pay cash. Amount is then paid to the employee and is kept in the cash tray of the counter. After receiving cash, a transaction is then made from the checkout class to the database and Database object returns the transaction id to the checkout object which is then printed on the bill of customer. In the end, employee releases the items to the customer and also handover the bill to customer.

BEST OF LUCK!