The LNM Institute of Information Technology
Department: Computer Science and Engineering
Software Engineering (CSE 326)
End Term Examination

Time: 3 Hours   Date: 04.12.2020   Max. Marks: 60

Instructions:
1. There are 8 questions in the paper.
2. All the questions are compulsory.
3. The use of calculator is allowed during the exam.
4. Make and state appropriate assumptions, as and when required.

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1. Write a short note on each of the following with suitable examples. [3+3+3+3]

   (a) Stamp Coupling

   (b) Class-Responsibility-Collaborator (CRC) Cards

   (c) Service-Oriented Architecture

   (d) User Interface Design Patterns

2. Describe qualitative and quantitative methods for the evaluation of a user interface prototype. Can we reduce the number of loops going through the evaluation cycle? If yes then, provide at least two ways to achieve the same. [3]

3. Perform the task elaboration, object elaboration, and analysis of display contents for user interface design of the use case described below. [5]

   Use Case: There is a requirement for software to manage tickets sales in the city auditorium efficiently. The seats of the auditorium are divided into three categories: diamond, platinum, and gold. Depending upon the popularity of a show, the prices of these categories are fixed by the show manager. Sometimes, there are reserved seats that the show producer allocates to VIP guests. The show manager feeds all necessary information into the system, such as date/time, number of shows in a day, the number of tickets given to VIP guests. The advanced booking and cancellation of tickets are available, for which the customers are required to visit the ticket counter. On cancellation before 72 hours of the show, the ticket price is refunded to the customer after deducting INR 30. Within the 72 hours and 24 hours of the show, half of the ticket price is deducted by the auditorium staff. At any time, the auditorium clerk can query the availability of different types of seats. The show manager can query more information such as the percentage of seats booked and the amount collected from the sold tickets. Tickets are booked by the auditorium clerk only. VIP guests are exempted from the booking procedure.

4. The best team structure for any particular project depends on the nature of project & product and also on the individual characteristics of the team members. Justify. [8]

5. Consider a project to develop a full screen editor. The major components identified are screen edit, command language interpreter, file input and output, cursor movement, screen movement. The sizes for these are estimated to be 4K, 2K, 1K, 2K and 3K delivered source lines. Use COCOMO Model to determine the following.

   (a) Overall cost and schedule estimates by considering that the mixed mode skills are required for the development of whole project. [5]

   (b) Cost and schedules for development of each component. [8]

6. Calculate the values of vocabulary, program length, length equation, program volume, potential volume, program level, program level equation, and intelligent content for the snippet provided below. [8]

```
int   n, first = 0, second = 1, next, c;
for(c = 0; c < n; c + +)
{
    if(c <= 1)
        next = c;
    else
    {
        next = first + second;
        first = second;
        second = next;
    }
    printf("%d\n", next);
}
```

7. The change is inevitable in a real-time software development process. Explain and justify the use of software configuration management, as an umbrella activity, to ensure that the changes are properly implemented. [4]

8. The primary objective of testing is to execute a program with the intent of finding an error. Justify and exemplify by discussing the testing principles and their usage in designing the attributes of a good test. [7]