Tutorial 12

1. You, as an appointed software engineer are in-charge for designing an online management system for Study Point Tutor center. Currently the tuition center has been using manual way to manage the center and now has decided to automate all their registration, classes scheduling, attendance, and payment processes.

   Assuming that you are adopting Component Based Software Engineering. Identify and explain 4 activities that must be carried out in developing the proposed Study Point Tutor online management system.

   1. Component Qualification
   - Use a process of discovery and analysis to qualify each component's fit in architecture and requirements.

   2. Component Adaptation
   - Components adapted to meet the needs of architecture or to remove architecture mismatches, and be replaced by more suitable components.

   3. Component Composition
   - Assembles qualified, adapted, and engineered components to populate the architecture established for an application.

   4. Component Update
   - When requirements for the system change. Update the components if requirements change / new release available.

2. Highlight the difference among *black-box wrapping*, *white-box wrapping* and *grey-box wrapping* technique in Component Adaptation of CBSE.

   1. black-box wrapping
   - Requires the introduction of pre- and post- processing at the component interface to remove conflicts.

   2. white-box wrapping
   - Examines the internal processing details of the component and makes code-level modifications to remove any conflict.

   3. gray-box wrapping
   - Applied when the component library provides a component extension language or API that enables conflicts to be removed.

Tutorial 12

3. Discuss 2 advantages and 2 obstacles of CBSE approach on software development.

2 advantages

1. Improve quality
2. Increase Productivity

2 obstacles

1. Little tanning available
2. Many software company believe that reuse is "more trouble than it's worth"

4. Running Boy For You (RuBy4U) is a company that allows users to call in to select food and beverages from a list of twenty-five local restaurants and six fast food restaurants. RuBy4U will deliver the order with minimum charges from RM1 to RM5 depending on the delivery distance. Recently the owner of RuBy4U is planning to market its business online within a month. As a newly recruited software engineer in RuBy4U, you are to handle the system development all by yourself.

   Suggest 4 functional categories of computer-aided software engineering (CASE) tools to help you to automate the software engineering process in accelerating the RuBy4U online system development. Explain the tools by giving 1 example for each category.

1. Business Process Engineering Tools - IBM RSA, Microsoft Project
2. Process Modeling and Management Tool - Microsoft Visio
3. Requirement Tracing Tool - Microsoft Excel
4. Data Modeling - SQL DBMS
5. Project Planning and Management Tool - JIRA
6. Prototyping tool - VB
7. Web Development tools - FrontPage

5. A local television programs production company (Longevity Pte. Ltd.) is planning to develop an online real time system which allows users to watch television programs online (OnlineWatch.com). The website allows users to login and watch three local television channels' programs archived for one month. You have successfully bid the project for your software organization and will kick start the project in a month time

   a. Assume that this project is adopting Computer-Aided Software Engineering (CASE). List and explain 4 appropriate CASE tools that can assist you in this project. You must select the tools from different functional classification of CASE tools.

1. Business Process Engineering Tools - IBM RSA, Microsoft Project
2. Process Modeling and Management Tool - Microsoft Visio
3. Requirement Tracing Tool - Microsoft Excel
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b. Longevity Pte. Ltd. would like to reuse some screens (user interface) from their proprietary system. Briefly explain the 4 activities involved in Component-based Software Engineering (CBSE) to the customer.

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2. Component Adaptation
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3. Component Composition
- Assembles qualified, adapted, and engineered components to populate the architecture established for an application.

4. Component Update
- When requirements for the system change. Update the components if requirements change / new release available.