Mansoura University
Faculty of Computer and Information Sciences
Software Engineering
Third Year Computer Science 2014

About the course

The Software Engineering course final Exam. 2014, will cover the materials discussed in:

- Chapter 16
- Chapter 17
- Chapter 19
- Chapter 20

About the Project

- The oral Exam will be at 10:00AM.
- All the project team members should be presented at the oral Exam.'s day.
- The team will presents a runnable project.
- A report should be delivered, which has the project members' names, description, results, a discussion, and a conclusion.
- A CD which has a soft copy of the project components, and the report.

About the Sheet

Solve the following questions and submit it electronically to the Email address **SW_Homework@yahoo.com**. The deadline is May,16th, 2014.

N.B.

- **Copying** form each other is not accepted, if discovered, "**zero**" will be the grade for both!.
- Explicitly associate your name in the **Subject** section of the EMail with the submitted sheet.

1. what are the different kinds of reuse-based software engineering.

2. List the benefits/problems of software reuse, explain with examples.

3. Give some examples of software reuse approaches, compare between them, the advantages and disadvantages of them (you may use a table).

4. why sometimes do we need to use application wrapping?

5. Why have many large companies chosen ERP systems as the basis for their organizational information system? What problems may arise when deploying a large-scale ERP system in an organization?

6. Explain why adaptors are usually needed when systems are constructed by integrating COTS products. Suggest three practical problems that might arise in writing adaptor software to link two COTS application products.

7. What are the most important distinctions between objects, software components, and services?

8. what are the reasons behind choosing one component standard rather than another?

9. Why is it important that all component interactions are defined through 'requires' and 'provides' interfaces?

10. The principle of component independence means that it ought to be possible to replace one component with another that is implemented in a completely different way. Using an example, explain how such component replacement could have undesired consequences and may lead to system failure.

11. Explain why it is difficult to validate a reusable component without the component source code. In what ways would a formal component specification simplify the problems of validation?

12. Design the 'provides' interface and the 'requires' interface of a reusable component that may be used to represent a customer in an ATM system.

13. Using examples, illustrate the different types of adaptor needed to support sequential composition, hierarchical composition, and additive composition.

14. It has been suggested that an independent certification authority should be established for a component. Vendors would submit their components to this authority, which would validate that the component was trustworthy. What would be the advantages and disadvantages of such a certification authority?

15. Explain why SOAs should be based on standards. List two types of web service standards, give real life examples where each of these standards maybe used?, and why?

16. Define an interface specification for the currency converter, and check credit rating services.

17. Giving reasons for your answer, suggest two important types of applications where you would not recommend the use of service-oriented architecture.

18. Using examples, explain why real-time systems usually have to be implemented using concurrent processes.

19. Identify possible stimuli and the expected responses for an embedded system that controls a home refrigerator or a domestic washing machine.

20. If a periodic process in the onboard train protection system is used to collect data from the trackside transmitter, how often must it be scheduled to ensure that the system is guaranteed to collect information from the transmitter? Explain how you arrived at your answer.

Dr. Omaima Nomir
24/4/2014