Information System Design (U08182)

<u>Tutorial Exercise 4</u>

1. List the different categories of software that may be used in developing a system.

2. What packages (not the UML package concept) have you used and what categories do they fall into?

3. Define what is meant by a component.

4. Define what is meant by a node.

5. What is a notation for a component?

6. What is a notation for a node?

7. What are the main purposes of using component diagrams?

8. What are the main purposes of using deployment diagrams?

9. What is the difference between components in a component diagram and components in a deployment diagram?

10. How are dependencies shown in a component diagram?

11. What is the difference between a package diagram and a component diagram?

12. What are the main steps in producing a component diagram?

13. What are the main steps in producing a deployment diagram?

14. What are the benefits of reuse?

15. What are some of the obstacles of reuse?

16. Draw a component diagram to show the run-time dependency between a Java class file, the java.exe run-time program and the Java classes in a Zip file.

17. Draw a deployment diagram to show how a Web browser and a Web server are located on different machines and the communication protocol they use.

18. A database contains the following tables.

    Hotel (<u>hotelNo</u>, hotelName, city, address)

    Room (<u>row</u>, roomNo, hotelNo, roomType, price)

    A) Write SQL statements to produce, firstly a table of all towns/cities that have hotels; secondly a table of hotels that are in a specified town/city, of a particular room type, and within a price range.

    B) Figure 1 illustrates an interface used to locate a hotel based upon the criteria given in the previous part of the question. Assuming ADO.net is being used, draw a sequence diagram to show how the interface is populated with information from the database tables, to enable a user to make an informed choice of hotel.

Figure 1: GUI Hotel Finder

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19. Three entity classes are used in a collaboration – CarSharer, Journey and Address. Each of these classes will be implemented by a (.java) source file. These classes are used across a number of use cases and are grouped together into a CarSharing component as Java (.class) files. here we are just dealing with the source files. There are two other classes MCSUserInterface and MCSControl. Each of these will be implemented by a (.java) file. The MCSControl component has a dependency on the CarSharing component and on the MCSUserInterface component

   A) Draw a component diagram showing the source code dependencies. The .class files are grouped together into two Java archive (.jar) files. The MCSControl.class component will need to read a configuration file (MCS.ini) and display a help file (MCS.hlp) when required. The MCSControl (.class) file also has dependencies on the MCSUserInterface (.java) file and the CarSharing (.jar) components.

   B) Re-draw the component diagram to show the run-time component dependencies.

20. Draw a deployment diagram given that the nodes are three client PCs, a server and a printer. The communications protocol between the clients and server is TCP/IP; and between the server and the printer is a standard parallel printer protocol. The user interface and the control objects will run on the clients.