IN2013, Week 7 – Components and Deployment

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Assignment

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Scenario

Consider that the BAPERS system is deployed as a web application as follows:

- A single node called BAPERS server (modeled as a device node) is used as hardware with operating system Linux Fedora Core 10 (modeled as execution environment);
- BAPERS itself is developed as a web application which may consist of many servlets and Java Server Pages (JSP), which are packaged together as a single archive file, BAPERS.war (an artifact), as required by the J2EE specification for web application. BAPERS.war is then deployed on BAPERS server, in Tomcat to be more precise.
- A DB server (DB server device) is also used for the deployment with operating system Linux Fedora Core 10. The database deployed on DB server is MySQL 5.1. The database file itself (where the databases tables are stored) is called bapers.dbi and is modeled as an artifact deployed on MySQL.
- The communication between Tomcat running the web-application and the database is via a JDBC driver (another artifact, e.g. mysql.jar, deployed also in Tomcat 6.0)
- The web application is accessed by a browser of any device and operating system communicating with Tomcat. For the purpose of this exercise, assume that there is an Employee PC (as a device) with operating system Windows 8 (as execution environment) in which a browser, e.g. Firefox, is run (another execution environment).
- The communication protocols used in the deployed system are as follows:
    - tcp/ip between the devices
    - http between a browser and Tomcat (Tomcat listens on port 8080)
    - 'mysql protocol' between the execution environments Tomcat and MySQL (MySQL listens on port 3306).

Question 1.

Develop a deployment diagram for BAPERS.

Question 2.

Consider that BAPERS is accessed from a browser using a javascript library such as jQuery. Model the deployment of jQuery (as an artifact) in the browser.

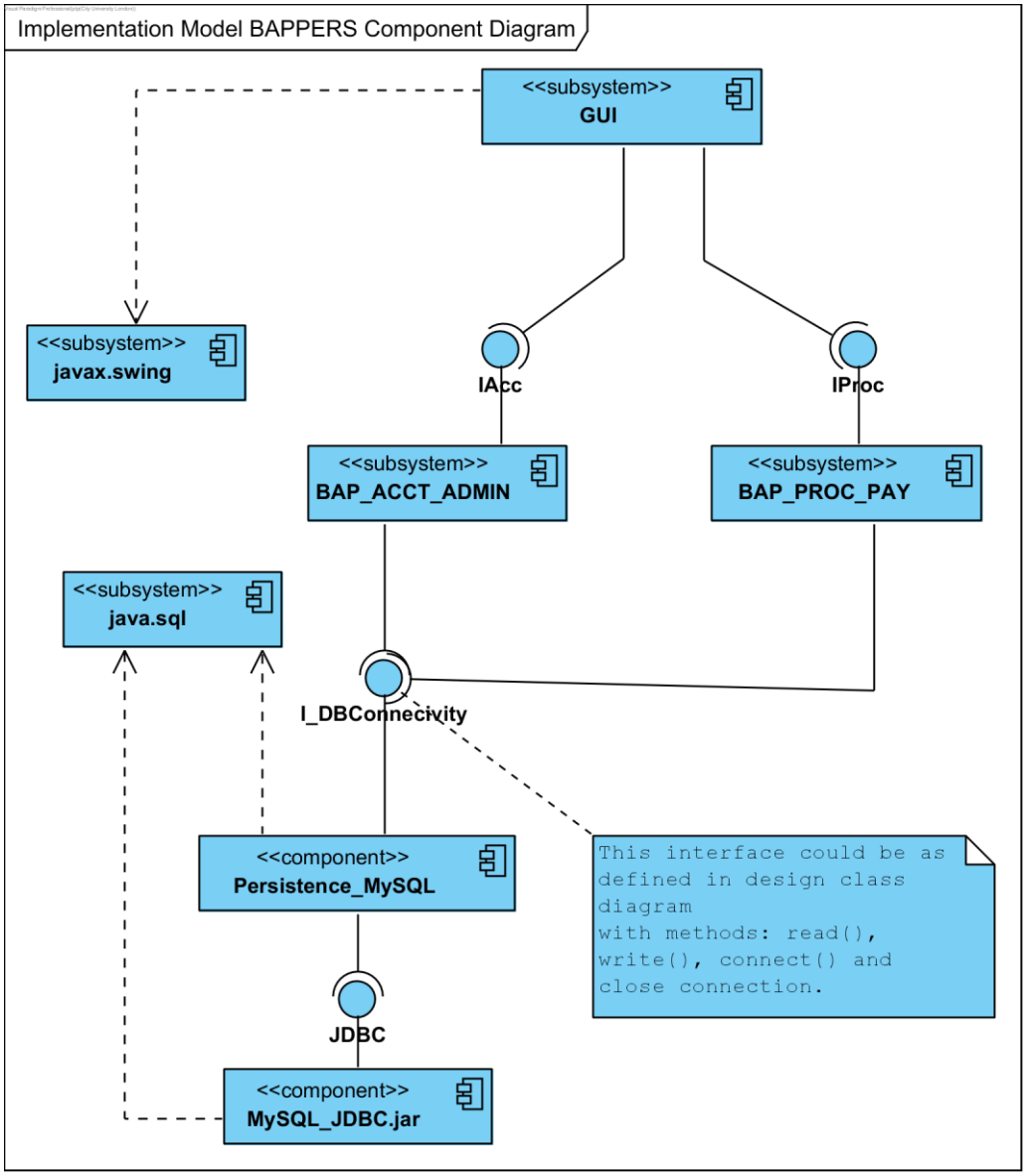
Question 3.

Extend the diagram to model that BAPERS can be accessed from mobile devices.

Question 4.

Consider a possible layered architecture of BAPPERS, which assumes that a specific RDBMS will be used, e.g. MySQL.

A possible component diagram is shown below.



Now consider a possible change of the RDBMS from MySQL to a different product, e.g. PostgreSQL.

a) How will the BAPPERS architecture change? Draw a component diagram to reflect the change.
b) Discuss the implications of the change from MySQL to a different RDBMS for the application code. Will it be affected by the change? If so, discuss ways of minimizing the changes.
Hint: Think about which parts of SQL to use in the application code.

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