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Department of Computer Science, UC Irvine, Prof. Chen Li
Quiz 1

_____
Initial Score (out of 100)

_____   _____
                    Name   **Student ID**

In accordance with both the letter and spirit of the Honor Code, I have neither given nor received assistance on this examination.

Signature _____

Make sure to write succinct answers to each question.

Question 1: (15 points)
For each of the statements, mark **True ("T")** or **False ("F")**:

1. _____ The "executeUpdate()" method can be used to send a SQL statement to update the specified database.
2. _____ The HTTP protocol is a stateful protocol.
3. _____ The JDBC driver for a database should be provided by the vendor of the operating system.
4. _____ In JDBC, the user can set a time limit on how long the client can wait for a query to return.
5. _____ A query result cursor allows the JDBC client to iterate through the results of the query.

Question 2: (5 points)
In an HTML form, we have the following two input boxes:
          <input type="text" name="A1">
          <input type="password" name="A2">
Why do we need to use the "password" type for "A2"?

Question 3: (15 points)
We use Amazon AWS services to run our application on EC2 instances. The security group of each instance allows us to specify what IP address(es) can access which ports of the instance.
    (1) What's the default network port for the SSH protocol?

    (2) What's the default network port for the Tomcat server?

    (3) What are the three options in a security group to specify the client IPs that can access the instance?

Question 4: (13 points)

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In Tomcat, a servlet can establish a session with a client, and add key-value pairs in this session. Suppose request 1 to one servlet sets an "<accessCount, Integer>" pair to the session. Five minutes later another equest 2 to the same servlet gets this pair from the same session. Explain how the pair was passed from the first request to the second from the perspective of the JVM.

Question 5: (15 points)
Explain the main idea of PreparedStatement in JDBC and its advantage.

   1) Idea:

   2) Advantage:

Question 6: (15 points)
Order the following steps when using JDBC:

        A. Establish connection
        B. Create a statement object
        C. Define connection URL
        D. Execute a query
        E. Process the result
        F. Load the driver
        G. Close the connection

F →_____→_____→_____→_____→_____→ G

Question 7: (10 points)
Describe one advantage and one disadvantage of enabling MySQL logging.

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Advantage: _____

Disadvantage: _____

Question 8: (12 points)
For each of the following descriptions of the lifecycle of cookies in Web applications, mark it True ("T") or False ("F").

   A. _____ When a client first connects to the server, the client receives a cookie from the server.
   B. _____ The second time the client interacts with the server, the browser sends all its client cookies to the server.
   C. _____ Each cookie is stored on both the client and the server.
   D. _____ Common uses of cookies are authentication, server session identification, shopping cart items, etc.

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Question 1: (15 points)

____**T**___ (3 points)
____**F**___ (3 points)
____**F**___ (3 points)
____**T**___ (3 points)
____**T**___ (3 points)

Question 2: (5 points)
Solution: To hide the sensitive information typed in the input box.
(No partial points)

Question 3: (15 points)
Solution: (1) 22; (2) 8080; and (3) Specific IP, My IP, and Anywhere.

Question 4: (13 points)
Solution: Request 1 leaves the key-value pair in a hash map on the heap of the JVM, and the heap remains valid even after request 1 is finished. Request 2 retrieves the pair from the hash map on the heap of the JVM.

Question 5: (15 points)

Solution: (1) The client first creates a statement with placeholders, then provides constants for these placeholders for each query for the server to execute;
(2) For many queries with the same shape/pattern, PreparedStatement can be used to save the overhead for each query on the DBMS server, including parsing, validation, and query optimization.
(10pt and 5pt respectively)

Question 6: (15 points)

F → __**C**__ → __**A**__ → __**B**__ → __**D**__ → __**E**__ → G (3 points for each)

Question 7: (10 points)

Advantage: keep track of every SQL query to database.
Disadvantage: log file grow fast, negative impact on performance
(5pt for each section)

Question 8: (12 points)

____**T**___ (3 points)
____**F**___ (3 points)
____**T**___ (3 points)
____**T**___ (3 points)