Self-test Database application programming with JDBC

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INTRODUCTION TO THE SELF-TEST DATABASE APPLICATION PROGRAMMING WITH JDBC

This test is based on subjects handled in the ABIS course Data base application programming with JDBC.

This test consists of multiple-choice questions. With some questions, multiple correct answers are possible. Write down your answer(s) and compare with the given solutions.

This test contains 20 questions. Note: if multiple answers are possible, this is explicitly indicated. A question is answered correctly if and only if all correct answers are given.

There are no catch-questions (not intended), but it is advised to read all questions and answers attentively. Count about 15 minutes to complete the test.

The correct answers and the guidelines for the evaluation are at the back of this document.

QUESTIONS SELF-TEST DATABASE APPLICATION PROGRAMMING WITH JDBC

1. Which statements about JDBC are true? (2 answers)

   [_] [a] JDBC is an API to connect to relational-, object- and XML data sources

   [_] [b] JDBC stands for Java DataBase Connectivity

   [_] [c] JDBC is an API to access relational databases, spreadsheets and flat files

   [_] [d] JDBC is an API to bridge the object-relational mismatch between OO programs and relational databases

2. Which packages contain the JDBC classes?

   O (a) java.jdbc and javax.jdbc

   O (b) java.jdbc and java.jdbc.sql

   O (c) java.sql and javax.sql

   O (d) java.rdb and javax.rdb

3. Which type of driver converts JDBC calls into the network protocol used by the database management system directly?

   O (a) Type 1 driver

   O (b) Type 2 driver

   O (c) Type 3 driver

   O (d) Type 4 driver

4. Which type of Statement can execute parameterized queries?

   O (a) PreparedStatement

   O (b) ParameterizedStatement

   O (c) ParameterizedStatement and CallableStatement

   O (d) All kinds of Statements (i.e. which implement a sub interface of Statement)

5. How can you retrieve information from a ResultSet?

   O (a) By invoking the method `get(..., String type)` on the ResultSet, where type is the database type

   O (b) By invoking the method `get(..., Type type)` on the ResultSet, where Type is an object which represents a database type

   O (c) By invoking the method `getValue(...)`, and cast the result to the desired Java type.

   O (d) By invoking the special getter methods on the ResultSet: `getString(...)`, `getBoolean (...)`, `getClob(...),...`

6. How can you execute DML statements (i.e. insert, delete, update) in the database?

   O (a) By making use of the InsertStatement, DeleteStatement or UpdateStatement classes

   O (b) By invoking the `execute(...)` or `executeUpdate(...)` method of a normal Statement object or a sub-interface object thereof

   O (c) By invoking the `executeInsert(...)`, `executeDelete(...)` or `executeUpdate(...)` methods of the DataModificationStatement object

   O (d) By making use of the `execute(...)` statement of the DataModificationStatement object

7. How do you know in your Java program that a SQL warning is generated as a result of executing a SQL statement in the database?

   O (a) You must catch the checked SQLException which is thrown by the method which executes the statement

   O (b) You must catch the unchecked SQLWarningException which is thrown by the method which executes the statement

   O (c) You must invoke the `getWarnings()` method on the Statement object (or a sub interface thereof)

   O (d) You must query the ResultSet object about possible warnings generated by the database

8. What is, in terms of JDBC, a DataSource?

   O (a) A DataSource is the basic service for managing a set of JDBC drivers

   O (b) A DataSource is the Java representation of a physical data source

   O (c) A DataSource is a registry point for JNDI-services

   O (d) A DataSource is a factory of connections to a physical data source

9. What is the meaning of ResultSet.TYPE_SCROLL_INSENSITIVE

O (a) This means that the ResultSet is insensitive to scrolling

O (b) This means that the Resultset is sensitive to scrolling, but insensitive to updates, i.e. not updateable

O (c) This means that the ResultSet is sensitive to scrolling, but insensitive to changes made by others

O (d) The meaning depends on the type of data source, and the type and version of the driver you use with this data source

10. Are ResultSets updateable?

O (a) Yes, but only if you call the method `openCursor()` on the ResultSet, and if the driver and database support this option

O (b) Yes, but only if you indicate a concurrency strategy when executing the statement, and if the driver and database support this option

O (c) Yes, but only if the ResultSet is an object of class UpdateableResultSet, and if the driver and database support this option

O (d) No, ResultSets are never updateable. You must explicitly execute DML statements (i.e. insert, delete and update) to change the data in the underlying database

11. What statements are correct about JDBC transactions (2 correct answers)?

[_] [a] A transaction is a set of successfully executed statements in the database

[_] [b] A transaction is finished when `commit()` or `rollback()` is called on the Connection object,

[_] [c] A transaction is finished when `commit()` or `rollback()` is called on the Transaction object

[_] [d] A transaction is finished when `close()` is called on the Connection object.

12. How can you start a database transaction in the database?

O (a) By asking a Transaction object to your Connection, and calling the method `begin()` on it

O (b) By asking a Transaction object to your Connection, and setting the autoCommit property of the Transaction to false

O (c) By calling the method `beginTransaction()` on the Connection object

O (d) By setting the *autoCommit* property of the Connection to false, and execute a statement in the database

13. What is the meaning of the transaction isolation level TRANSACTION_REPEATABLE_READ

O (a) Dirty reads, non-repeatable reads and phantom reads can occur

O (b) Dirty reads are prevented; non-repeatable reads and phantom reads can occur

O (c) Dirty reads and non-repeatable reads are prevented; phantom reads can occur

O (d) Dirty reads, non-repeatable reads and phantom reads are prevented

14. How do you use a savepoint?

O (a) A savepoint is realised by calling `setAutoCommit(true)` on the connection

O (b) A savepoint is activated by the method `setSavePoint("mysavepoint")` on the transaction

O (c) A savepoint is used to mark intermediate points inside a transaction, in order to get a more fine-grained control. Transactions can be rolled back to a previous savepoint without affecting preceding work.

O (d) A savepoint triggers an automatic synchronisation with the database.

15. What statements are correct about positioned updates (i.e. cursor updates) in ResultSets? (2 correct answers)

[_] [a] Using the cursor technique is currently the only possible way to change the data in the current row of a ResultSet

[_] [b] Insert statements are only supported when using scrollable cursors.

[_] [c] Only scrollable updateable ResultSets can use this approach to change the data in the current row of a ResultSet

[_] [d] The name of the cursor is specified by the `setCursorName(String name)` method the Statement object.

16. How can you execute a stored procedure in the database?

O (a) Call method `execute()` on a CallableStatement object

O (b) Call method `executeProcedure()` on a Statement object

O (c) Call method `execute()` on a StoredProcedure object

O (d) Call method `run()` on a ProcedureCommand object

17. What happens if you call the method `close()` on a ResultSet object?

O (a) the method `close()` does not exist for a ResultSet. Only Connections can be closed.

O (b) the database and JDBC resources are released

O (c) you will get a SQLException, because only Statement objects can close ResultSets

O (d) the ResultSet, together with the Statement which created it and the Connection from which the Statement was retrieved, will be closed and release all database and JDBC resources

18. What happens if you call `deleteRow()` on a ResultSet object?

O (a) The row you are positioned on is deleted from the ResultSet, but not from the database.

O (b) The row you are positioned on is deleted from the ResultSet and from the database

O (c) The result depends on whether the property *synchronizeWithDataSource* is set to true or false

O (d) You will get a compile error: the method does not exist because you can not delete rows from a ResultSet

19. What statements are correct about batched insert and updates? (2 answers)

[_] [a] To create a batch of insert and update statements, you create an object of type Batch, and call the method `addStatement(String statement)` for each statement you want to execute in the batch

[_] [b] Batch insert and updates are only possible when making use of parameterized queries.

[_] [c] To do a batched update/insert, you call `addBatch(String statement)` on a Statement object for each statement you want to execute in the batch

[_] [d] To execute a batched update/insert, you call the `executeBatch()` method on a Statement object

20. What is correct about DDL statements (create, grant,...)?

O (a) DDL statements are treated as normal SQL statements, and are executed by calling the `execute()` method on a Statement (or a sub interface thereof) object

O (b) To execute DDL statements, you have to install additional support files

O (c) DDL statements can not be executed by making use of JDBC, you should use the native database tools for this.

O (d) Support for DDL statements will be a feature of a future release of JDBC

EVALUATION.

Here are the correct answers to all questions:

1. b c
2. c
3. d
4. a
5. d
6. b
7. c
8. d
9. c
10. b
11. b d
12. d
13. c
14. c
15. b d
16. a
17. b
18. b
19. c d
20. a

Give 1 point per correct answer. For questions with multiple correct answers, all correct answers must be given before 1 point is earned. No half points are given.

If your score is more than 80%, you do not have to follow the course Data base application programming with JDBC.

When you have a score between 50% and 80%, following the course Data base application programming with JDBC can improve your knowledge.

When your score is less than 50%, we strongly suggest you follow this course Data base application programming with JDBC.