

JDBC

1. How many of Connection, Driver, and DriverManager are JDBC interfaces included with the JDK?
A. None
B. One
C. Two
D. Three
2. Which is found in the java.sql package?
A. DerbyDriver
B. MySQLDriver
C. OracleDriver
D. None of the above
3. What must be the first characters of a database URL?
A. db,
B. db:
C. jdbc,
D. jdbc:
4. Which is responsible for getting a connection to the database?
A. Driver
B. Connection
C. Statement
D. ResultSet
5. Which most accurately fills in the blanks in this sentence? With JDBC 3.0, the driver is _____ to contain a java.sql.Driver file, and the code getting a Connection is _____ to call Class.forName().
A. allowed, allowed
B. allowed, required
C. required, allowed
D. required, required
6. Which of these obtains a Connection?
A. Connection.getConnection(url)
B. Driver.getConnection(url)
C. DriverManager.getConnection(url)
D. new Connection(url)
7. Which method is overloaded to allow passing a username and password?
A. forName()
B. getConnection()
C. getStatement()
D. None of the above
8. What is the name of a concrete class that implements Statement and is included in the core JDK?
A. CallableStatement
B. PreparedStatement
C. StatementImpl

D. None of the above

9. How many of the following could be valid JDBC URL formats for an imaginary driver named magic and a database named box?

I. jdbc:magic:127.0.0.1:1234/box

II. jdbc:magic:box

III. jdbc:magic:@127.0.0.1:1234

A. None

B. One

C. Two

D. Three

10. Which most accurately fills in the blanks in this sentence? With JDBC 4.0, the driver is _____ to contain a java.sql.Driver file, and the code getting a Connection is _____ to call Class.forName().

A. allowed, allowed

B. allowed, required

C. required, allowed

D. required, required

11. Which pair of statements is true when requesting a ResultSet to be both scroll sensitive and updatable?

I. The scroll sensitive option is passed as a parameter before the updatable parameter.

II. The updatable option is passed as a parameter before the scroll sensitive parameter.

III. If these options are not available, the database driver returns a ResultSet with different options.

IV. If these options are not available, the database driver throws a SQLException.

A. I, III

B. I, IV

C. II, III

D. II, IV

12. Suppose the blue database exists and we are using a JDBC 4.0 driver. Which is the outcome of this code?

```
String url = "jdbc:derby:blue";
```

```
Class.forName(url);
```

```
try (Connection conn = DriverManager.getConnection(url);
```

```
Statement stmt = conn.createStatement();
```

```
ResultSet rs = stmt.executeQuery("select count(*) from sky")) {
```

```
System.out.println(rs.getInt(1));
```

```
}
```

A. It runs successfully and prints the number of rows in the sky table.

B. It throws a ClassNotFoundException.

C. It throws a SQLException.

D. It does not compile.

13. Consider the three methods execute(), executeQuery(), and executeUpdate(). Fill in the blanks: _____ of these methods is/are allowed to run a DELETE SQL statement while _____ of these methods is/are allowed to run an UPDATE SQL statement.

A. One, one

B. One, two

- C. Two, one
- D. Two, two

14. Assuming the clowns database exists and contains one empty table named clowns, what is the output of the following when run using a JDBC 4.0 driver?

```
import java.sql.*;
public class EmptyTable {
    public static void main(String[] args) throws SQLException { // s1
        String url = "jdbc:derby:clowns";
        try (Connection conn = new Connection(url); // s2
            Statement stmt = conn.createStatement();
            ResultSet rs = stmt.executeQuery("select * from clowns")) {
            if (rs.next())
                System.out.println(rs.getString(1));
        }
    }
}
```

- A. The code terminates successfully without any output.
- B. The code does not compile due to line s1.
- C. The code does not compile due to line s2.
- D. None of the above

Answers

1. C. Connection is an interface for communicating with the database. Driver is tricky because you don't write code that references it directly. However, you are still required to know it is a JDBC interface. DriverManager is used in JDBC code to get a Connection. However, it is a concrete class rather than an interface. Since Connection and Driver are JDBC interfaces, Option C is correct.

2. D. Database-specific implementation classes are not in the java.sql package. The implementation classes are in database drivers and have package names that are specific to the database. Therefore, Option D is correct. The Driver interface is in the java.sql package. Note that these classes may or may not exist. You are not required to know the names of any database-specific classes, so the creators of the exam are free to make up names.

3. D. All JDBC URLs begin with the protocol jdbc followed by a colon as a delimiter. Option D is the only one that does both of these, making it the answer.

4. A. The Driver interface is responsible for getting a connection to the database, making Option A the answer. The Connection interface is responsible for communication with the database but not making the initial connection. The Statement interface knows how to run the SQL query, and the ResultSet interface knows what was returned by a SELECT query.

5. B. The requirement to include a java.sql.Driver file in the driver jar file was introduced in JDBC 4.0. A 3.0 driver is allowed, but not required, to include this file. JDBC 3.0 also requires a call to Class.forName(). As a result, Option B best fills in the blanks.

6. C. Connection is an interface. Since interfaces do not have constructors, Option D is incorrect. The Connection class doesn't have a static method to get a Connection either, making Option A incorrect. The Driver class is also an interface without static methods, making Option B incorrect. Option C is the answer because DriverManager is the class used in JDBC to get a Connection.

7. B. The DriverManager.getConnection() method can be called with just a URL. It is also overloaded to take the URL, username, and password, making Option B correct.

8. D. CallableStatement and PreparedStatement are interfaces that extend the Statement interface. You don't need to know that for the exam. You do need to know that a database driver is required to provide the concrete implementation class of Statement rather than the JDK. This makes Option D correct. Note that while Derby is provided with Java, it is in a separate jar from the "main" JDK.

9. C. A JDBC URL has three components separated by colons. All three of these URLs meet those criteria. For the data after the component, the database driver specifies the format. Depending on the driver, this might include an IP address and port. Regardless, it needs to include the database name or alias. I and II could both be valid formats because they mention the database box. However, III only has an IP address and port. It does not have a database name or alias. Therefore III is incorrect and Option C correct.

10. C. The requirement to include a java.sql.Driver file in the driver jar was introduced in JDBC 4.0. A call to Class.forName() was made optional with JDBC 4.0. As a result, Option C best fills in the blanks.

11. A. Scroll sensitive is a result set type parameter, and updatable is a concurrency mode. The result set type parameter is passed to createStatement() before the concurrency mode. If you request options that the database driver does not support, it downgrades to an option it does support rather than throwing an exception. Statements I and III are correct, making Option A the answer.

12. B. JDBC 4.0 allows, but does not require, a call to the Class.forName() method. However, since it is in the code, it needs to be correct. This method is expecting a fully qualified class name of a database driver, not the JDBC URL. As a result, the Class.forName() method throws a ClassNotFoundException, and Option B is the answer.

13. D. The execute() method is allowed to run any type of SQL statements. The executeUpdate() method is allowed to run any type of the SQL statement that returns a row count rather than a ResultSet. Both DELETE AND UPDATE SQL statements are allowed to be run with either execute() or executeUpdate(). They are not allowed to be run with executeQuery() because they do not return a ResultSet. Therefore, Option D is the answer.

14. C. Connection is an interface rather than a concrete class. Therefore, it does not have a constructor and line s2 does not compile. As a result, Option C is the answer. Option A would be the answer if the code new Connection() was changed to DriverManager.getConnection().