Systems for Design and Implementation

Outline

- JDBC

JDBC

`java.sql`

1. Key interfaces

- `Driver`
- `Connection`
- `Statement/PreparedStatement`
- `ResultSet`

pgAdmin
IntelliJ Idea Database Tools

2. Connecting to a database

The JDBC URL

`jdbc:postgresql://localhost:5432/catalog`

Getting a Database *Connection*

`DriverManager.getConnection(...)`

Postgresql-9.4.1208.jar

`runtime` **group: 'org.postgresql', name: 'postgresql', version: '42.0.0'`

3. Getting a ~~*Statement/PreparedStatement*~~

~~`connection.createStatement()`~~

`connection.prepareStatement(sqlString)`

`preparedStatement.setXXX(paramIndex, paramValue)`

`//paramIndex starts with 1`

4. Getting a *ResultSet*

`preparedStatement.executeQuery()`

Executing a statement

`preparedStatement.executeUpdate()`

Getting Data from a *ResultSet*

```
while(resultSet.next()){
    XXX value = resultSet.getXXX(columnName)
    //or
    XXX value = resultSet.getXXX(columnIndex)
}
```

?Describe what is happening in the following situations

```
1. ResultSet rs = stmt.executeQuery("select count(*)
   from student");
2. if (rs.next()){ int id = rs.getInt(0); }
```

```
1. ResultSet rs = stmt.executeQuery("select * from
   student where name = 'does not exist'");
2. rs.next();
3. int id = rs.getInt(1);
```

```
1. ResultSet rs = stmt.executeQuery("select count(*)
   from student");
2. int id = rs.getInt(1);
```

5. Closing DB resources

How many resources are closed in the following code?

```
try (Connection conn =
        DriverManager.getConnection(url);
    Statement stmt = conn.createStatement();
    ResultSet rs = stmt.executeQuery("...")){

    if (rs.next()){System.out.println("hello1");}
    ResultSet rs2 = stmt.executeQuery("...");
    int num = stmt.executeUpdate("...");
}
```

jdbc