TÖL303G Gagnasafnsfræði

Verkefni 8

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1. <u>Kóði:</u>

```java
package V8;
import java.sql.*;

/**
 * Forrit sem skrifar meðallaun allra starfsmanna í COMPANY gagnagrunninum.
 */
public class V8a {
    /**
     * Breytur.
     */
    static Connection conn = null; // Connection við gagnagrunninn
'company.db'.

    /**
     * Tengist gagnagrunninum.
     */
    public static void connect() {

        try {
            // db parameter.
            String url =
"jdbc:sqlite:C:\\Users\\Notandi\\Dropbox\\Skólinn\\Tölvunarfræði\\2022-
haust" +

"\\Gagnasafnsfraedi\\V8\\forritun\\forritun\\company.db";
            // Bý til connection fyrir gagnagrunninn.
            conn = DriverManager.getConnection(url);
            System.out.println("Tenging við gagnagrunn stofnuð.");
        }
        catch (SQLException e) {
            System.out.println(e.getMessage());
        }
    }

    /**
     * Aftengist gagnagrunninum.
     */
    public static void disconnect() {
        try {
            if (conn != null) {
                conn.close();
                System.out.println("Tenging við gagnagrunn rofin.");
            }
        }
        catch (SQLException ex) {
            System.out.println(ex.getMessage());
        }
    }

    /**
     * Skilar meðaltali launa allra starfsmanna.
```

```java
    */
    public static void meanSalaryOfAllEmployees() {
        String sql = "SELECT AVG(Salary) FROM EMPLOYEE";

        try {
            if (conn != null) {
                Statement stmt = conn.createStatement();
                ResultSet rs = stmt.executeQuery(sql);

                while (rs.next()) {
                    System.out.println(rs.getDouble("AVG(Salary)"));
                }
            }
        }
        catch (SQLException e) {
            System.out.println(e);
        }
    }

    public static void main(String[] args) {
        connect(); // Tengist gagnagrunni og prenta út skilaboð þess eðlis.
        meanSalaryOfAllEmployees(); // Framkvæmi sql statement-ið og prenta
út útkomuna.
        disconnect(); // Aftengist gagnagrunni og prenta út skilaboð þess
eðlis.
    }
}
```

Útkoma keyrslu:

```
Tenging við gagnagrunn stofnuð.
35125.0
Tenging við gagnagrunn rofin.
```

2. <u>Kóði:</u>

```java
package V8;

import java.sql.*;

/**
 * Forrit sem gefur öllum starfsmönnum í COMPANY gagnagrunninum 200 dala
launahækkun.
 */
public class V8b {
    /**
     * Breytur.
     */
    static Connection conn = null; // Connection við gagnagrunninn
'company.db'.

    /**
     * Tengist gagnagrunninum.
     */
    public static void connect() {

        try {
            // db parameter.
            String url =
"jdbc:sqlite:C:\\Users\\Notandi\\Dropbox\\Skólinn\\Tölvunarfræði\\2022-
haust" +

"\\Gagnasafnsfraedi\\V8\\forritun\\forritun\\company.db";
            // Bý til connection fyrir gagnagrunninn.
            conn = DriverManager.getConnection(url);
            System.out.println("Tenging við gagnagrunn stofnuð.");
        }
        catch (SQLException e) {
            System.out.println(e.getMessage());
        }
    }

    /**
     * Aftengist gagnagrunninum.
     */
    public static void disconnect() {
        try {
            if (conn != null) {
                conn.close();
                System.out.println("Tenging við gagnagrunn rofin.");
            }
        }
        catch (SQLException ex) {
            System.out.println(ex.getMessage());
        }
    }

    /**
     * Gefur öllum starfsmönnum í COMPANY gagnagrunninum 200 dala
launahækkun.
     */
    public static void raiseAllSalaryBy200() {
        // SQL skipanir.
        String SQLSelectSSN = "SELECT Ssn FROM EMPLOYEE";
        String SQLUpdateSalary = "UPDATE EMPLOYEE SET Salary = Salary + 200
```

```java
WHERE " +
                "Ssn = ?";

        try {
            if (conn != null) {
                Statement stmt = conn.createStatement(); // SELECT skipanin
til að finna Ssn.
                ResultSet rs = stmt.executeQuery(SQLSelectSSN); //
ResultSet sem inniheldur Ssn starfsmanna.

                // Ítra í gegnum Ssn og uppfæri laun samsvarandi
starfsmanns.
                while (rs.next()) {
                    String ssn = rs.getString("Ssn"); // Næsta ssn.
                    PreparedStatement pstmt =
conn.prepareStatement(SQLUpdateSalary); // UPDATE skipunin til að uppfæra
laun.
                    pstmt.setString(1, ssn); // Set næsta ssn úr
ResultSettinu inn í Update skipunina SQLUpdateSalary.
                    pstmt.executeUpdate(); // Uppfæri laun starfsmanns með
Ssn ssn.
                }
            }
        }
        catch (SQLException e) {
            System.out.println(e);
        }
    }

    public static void main(String[] args) {
        connect(); // Tengist gagnagrunni og prenta út skilaboð þess eðlis.
        raiseAllSalaryBy200(); // Hækka laun allra starfsmanna í
gagnagrunninum um 200 dali.
        disconnect(); // Aftengist gagnagrunni og prenta út skilaboð þess
eðlis.
    }
}
```

<u>Fyrir keyrslu:</u>

<u>Eftir keyrslu:</u>

3. Kóði:

```java
package V8;

import java.sql.*;

public class V8c {
    /**
     * Breytur.
     */
    static Connection conn = null; // Connection við gagnagrunninn
'company.db'.

    /**
     * Tengist gagnagrunninum.
     */
    public static void connect() {

        try {
            // db parameter.
            String url =
"jdbc:sqlite:C:\\Users\\Notandi\\Dropbox\\Skólinn\\Tölvunarfræði\\2022-
haust" +

"\\Gagnasafnsfraedi\\V8\\forritun\\forritun\\company.db";
            // Bý til connection fyrir gagnagrunninn.
            conn = DriverManager.getConnection(url);
            System.out.println("Tenging við gagnagrunn stofnuð.");
        }
        catch (SQLException e) {
            System.out.println(e.getMessage());
        }
    }

    /**
     * Aftengist gagnagrunninum.
     */
    public static void disconnect() {
        try {
            if (conn != null) {
                conn.close();
                System.out.println("Tenging við gagnagrunn rofin.");
            }
        }
        catch (SQLException ex) {
            System.out.println(ex.getMessage());
        }
    }

    /**
     * Hækka laun allra í EMPLOYEE töflunni í COMPANY gagnagrunninum um 3%.
     * Notar SQL UPDATE skipun til að hækka öll laun samtímis í einni
skipun.
     */
    public static void blanket3PercentRaise() {
        // SQL Skipun.
        String SQLUpdateSalary = "UPDATE Employee SET Salary = Salary *
1.03";
        try {
            if (conn != null) {
                PreparedStatement preparedStatement =
```

```
conn.prepareStatement(SQLUpdateSalary); // UPDATE skipunin tilbúin.
                preparedStatement.executeUpdate(); // UPDATE skipunin
framkvæmd.

                System.out.println("Laun allra í Employee töflunni hækkuð
um 3%.");
            }
        }
        catch (SQLException e) {
            System.out.println(e);
        }
    }

    public static void main(String[] args) {
        connect(); // Tengist gagnagrunni og prenta út skilaboð þess eðlis.
        blanket3PercentRaise(); // Hækka laun allra í Employee töflunni í
company gagnagrunninum um 3%.
        disconnect(); // Aftengist gagnagrunni og prenta út skilaboð þess
eðlis.
    }
}
```

Fyrir keyrslu:

```
sqlite> SELECT * FROM Employee;
Fname|Minit|Lname|Ssn|Bdate|Address|Sex|Salary|Super_ssn|Dno
James|E|Borg|888665555|1937-11-10|450 Stone, Houston, TX|M|55200||1
Franklin|T|Wong|333445555|1955-12-08|638 Voss, Houston, TX|M|40200|888665555|5
Jennifer|S|Wallace|987654321|1941-06-20|291 Berry, Bellaire, TX|F|43200|888665555|4
John|B|Smith|123456789|1965-01-09|731 Fondren, Houston, TX|M|30200|333445555|5
Alicia|J|Zelaya|999887777|1968-01-19|3321 Castle, Spring, TX|F|25200|987654321|4
Ramesh|K|Narayan|666884444|1962-09-15|975 Fire Oak, Humble, TX|M|38200|333445555|5
Joyce|A|English|453453453|1972-07-31|5631 Rice, Houston, TX|F|25200|333445555|5
Ahmad|V|Jabbar|987987987|1969-03-29|980 Dallas, Houston, TX|M|25200|987654321|4
```

Eftir keyrslu:

```
sqlite> SELECT * FROM Employee;
Fname|Minit|Lname|Ssn|Bdate|Address|Sex|Salary|Super_ssn|Dno
James|E|Borg|888665555|1937-11-10|450 Stone, Houston, TX|M|56856||1
Franklin|T|Wong|333445555|1955-12-08|638 Voss, Houston, TX|M|41406|888665555|5
Jennifer|S|Wallace|987654321|1941-06-20|291 Berry, Bellaire, TX|F|44496|888665555|4
John|B|Smith|123456789|1965-01-09|731 Fondren, Houston, TX|M|31106|333445555|5
Alicia|J|Zelaya|999887777|1968-01-19|3321 Castle, Spring, TX|F|25956|987654321|4
Ramesh|K|Narayan|666884444|1962-09-15|975 Fire Oak, Humble, TX|M|39346|333445555|5
Joyce|A|English|453453453|1972-07-31|5631 Rice, Houston, TX|F|25956|333445555|5
Ahmad|V|Jabbar|987987987|1969-03-29|980 Dallas, Houston, TX|M|25956|987654321|4
```

4. Keyrsla forritsins JDBC1.java:

```
Enter a Social Security Number: 888665555
Borg 56856.0
```

Keyrsla V8a:

```
Tenging við gagnagrunn stofnuð.
36384.75
Tenging við gagnagrunn rofin.
Disconnected from the target VM, address: '127.0.0.1:52583', transport: 'socket'

Process finished with exit code 0
```