**Spring 2020**

**CSE-5382-001 – Secure Programming**

# Homework Assignment 11 – Input Validation - Report

| Name | UTA ID |
|---|---|
| Goutami Padmanabhan | 1001669338 |

## Description of how your code works:

There are three java classes in this project. MainController.java is the main program that must be run to get the results.

**InputValidation.java** – This program does all the input validation that needs to be performed whenever a user enters something on the command line. It validates the person's name and phone number with its corresponding regex pattern and returns true or false. We use the Pattern and Matcher class to match each regex pattern. Pattern compiles the given regex and returns the instance of the Pattern. It creates a matcher that matches the given input with the pattern.

The method validatePersonName() validates and matches the name with the regex pattern.

The method validateTelephone() does the telephone number validation. Apart from the pattern match, we also check if the country code given in the phone number is valid. To do this, a list of 248 country codes is put together in a text file. It is opened and read one by one and compared with the user entered input. If it is valid it returns true. Otherwise, it returns false.

**PeopleManipulation.java** - This program does all the actions like adding, listing and deleting records from the database.

The method usageScreen() displays the help screen to the user whenever the arguments are not given properly.

The method add() gets the person’s name and telephone number and validates them. After validation, it performs an INSERT query in the table and adds the record to the database table.

The method listRecords () performs a SELECT query and lists all the records in the database table.

The method deleteUsingName() gets the name of the person and uses a DELETE query in the table to delete the corresponding record in the database table.

The method deleteUsingTelephone() gets the telephone number of the person and uses a DELETE query in the table to delete the corresponding record in the database table.

**MainController.java** – This program establishes a connection with sqlite JDBC and receives input given by the user from the command line. It creates an action object of the PeopleManipulation class to perform adding, listing, and deleting of records. It validates the input from the command line by redirecting to InputValidation.java. The argument length is validated and redirected to the add, listRecords, deleteUsingName or deleteUsingTelephone method in PeopleManipulation class based on the input given (ADD, LIST, DEL).

## Compilation instructions:

1. Unzip the submitted folder.
2. Open the command line using cmd and open the directory containing the project in the command line.
3. Open the project in Eclipse IDE to view the code.
4. Compile the code with javac *.java. If that doesn’t work, compile each program like this.

   ```
   javac MainController.java
   javac PeopleManipulation.java
   javac InputValidation.java
   ```

5. MainController.java is the program having the main method. We can add, list and delete records in the database from the command line using the following commands:
   a. java -cp sqlite-jdbc-3.23.1.jar;. secure.MainController ADD "Goutami" "1234567890"
   b. java -cp sqlite-jdbc-3.23.1.jar;. secure.MainController LIST
   c. java -cp sqlite-jdbc-3.23.1.jar;. secure.MainController DEL "Goutami"
   d. java -cp sqlite-jdbc-3.23.1.jar;. secure.MainController DEL "1234567890"

## Assumptions you have made:

1. I have assumed that you have a computer with a latest version of Java that has been installed in your machine.
2. I also assume that you have Eclipse IDE installed in your machine.
3. I assume that a user enters a phone number that has a country code.
4. I expect the user to enter the commands in cmd from the command line. The arguments are given from the command line.

## Pros/Cons of your approach:

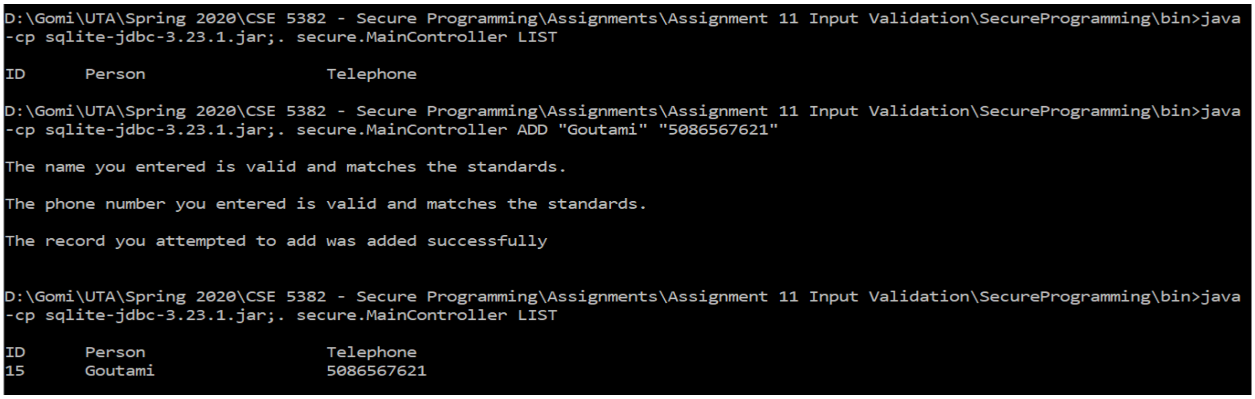
## Pros:

1. I have used prepared statements as an API that supports parameterized queries in the SQL query. This prevents SQL injection attack from any attacker.
2. To persist the phonebook to disk, I have used SQLite as a database engine
3. Regex expression is used to avoid invalid user inputs

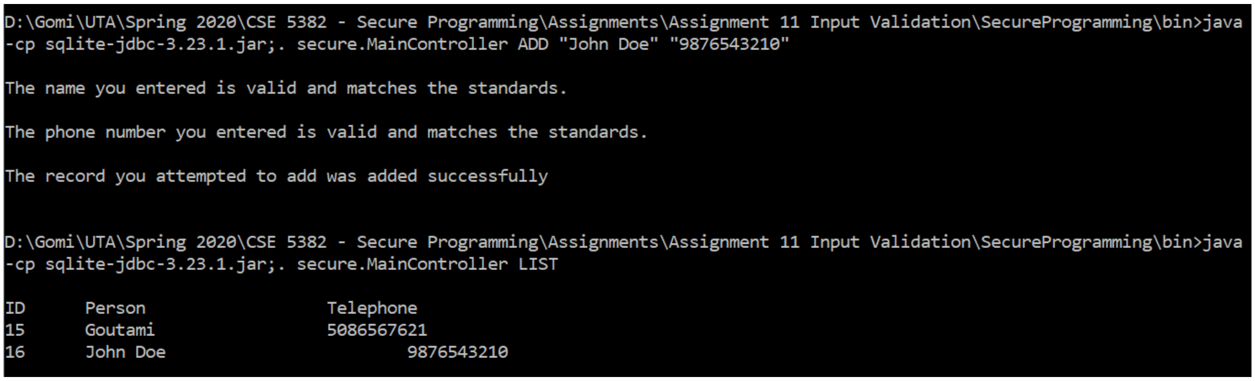
## Cons:

1. Regex expression may not cover all kinds of invalid input. For example, names like O'Malley, John F. are not getting accepted as valid inputs. Whereas names like Brad Everett Samuel Smith are getting accepted as valid inputs. Phone numbers like 011 1 703 111 1234 are not getting accepted as valid inputs. Whereas phone numbers like +01 (703) 123-1234 are getting accepted as valid inputs.

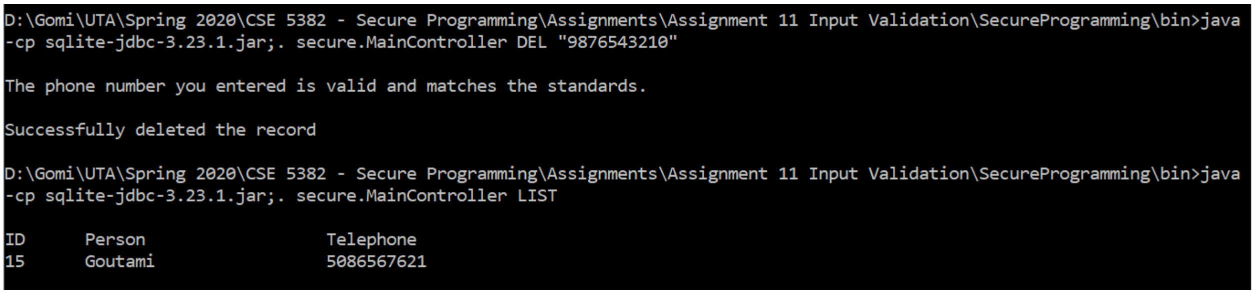
**<u>Screenshots</u>**: Some example screenshots of the successful run of the program is given below:



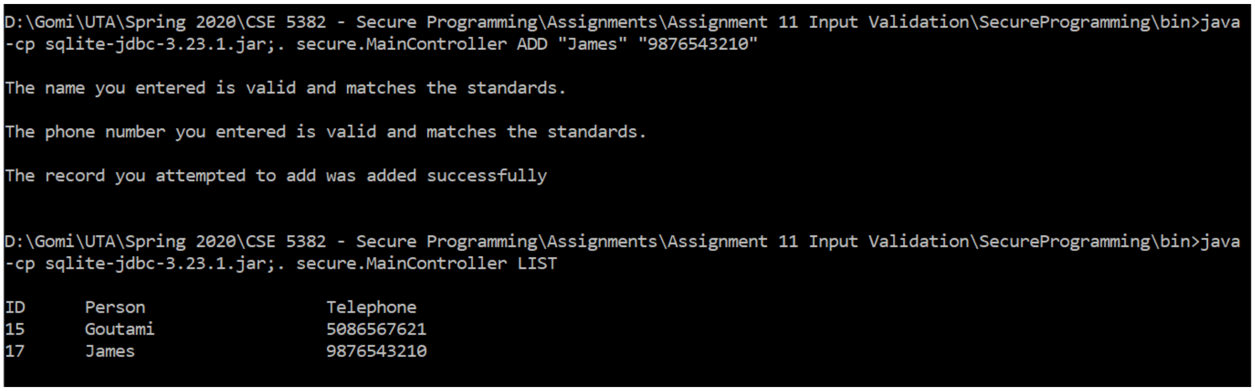
```
D:\Gomi\UTA\Spring 2020\CSE 5382 - Secure Programming\Assignments\Assignment 11 Input Validation\SecureProgramming\bin>java
-cp sqlite-jdbc-3.23.1.jar;. secure.MainController LIST

ID      Person                  Telephone

D:\Gomi\UTA\Spring 2020\CSE 5382 - Secure Programming\Assignments\Assignment 11 Input Validation\SecureProgramming\bin>java
-cp sqlite-jdbc-3.23.1.jar;. secure.MainController ADD "Goutami" "5086567621"

The name you entered is valid and matches the standards.

The phone number you entered is valid and matches the standards.

The record you attempted to add was added successfully


D:\Gomi\UTA\Spring 2020\CSE 5382 - Secure Programming\Assignments\Assignment 11 Input Validation\SecureProgramming\bin>java
-cp sqlite-jdbc-3.23.1.jar;. secure.MainController LIST

ID      Person                  Telephone
15      Goutami                 5086567621
```



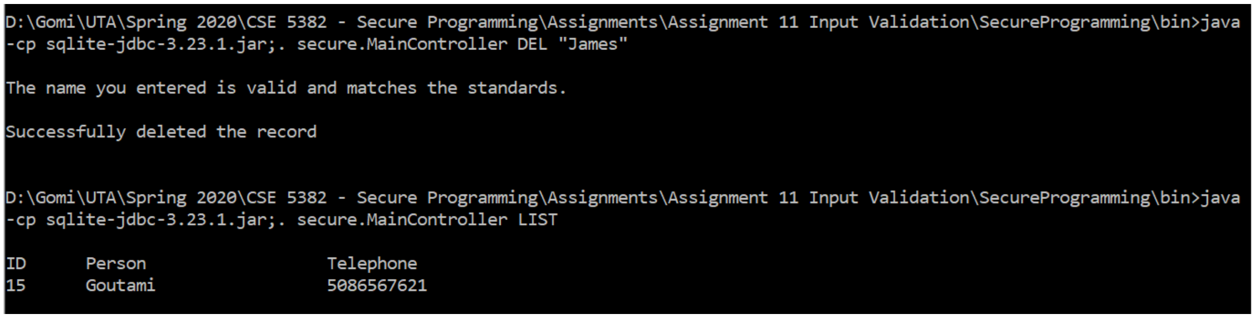
```
D:\Gomi\UTA\Spring 2020\CSE 5382 - Secure Programming\Assignments\Assignment 11 Input Validation\SecureProgramming\bin>java
-cp sqlite-jdbc-3.23.1.jar;. secure.MainController ADD "John Doe" "9876543210"

The name you entered is valid and matches the standards.

The phone number you entered is valid and matches the standards.

The record you attempted to add was added successfully


D:\Gomi\UTA\Spring 2020\CSE 5382 - Secure Programming\Assignments\Assignment 11 Input Validation\SecureProgramming\bin>java
-cp sqlite-jdbc-3.23.1.jar;. secure.MainController LIST

ID      Person                  Telephone
15      Goutami                 5086567621
16      John Doe                        9876543210
```



```
D:\Gomi\UTA\Spring 2020\CSE 5382 - Secure Programming\Assignments\Assignment 11 Input Validation\SecureProgramming\bin>java
-cp sqlite-jdbc-3.23.1.jar;. secure.MainController DEL "9876543210"

The phone number you entered is valid and matches the standards.

Successfully deleted the record

D:\Gomi\UTA\Spring 2020\CSE 5382 - Secure Programming\Assignments\Assignment 11 Input Validation\SecureProgramming\bin>java
-cp sqlite-jdbc-3.23.1.jar;. secure.MainController LIST

ID      Person                  Telephone
15      Goutami                 5086567621
```



```
D:\Gomi\UTA\Spring 2020\CSE 5382 - Secure Programming\Assignments\Assignment 11 Input Validation\SecureProgramming\bin>java
-cp sqlite-jdbc-3.23.1.jar;. secure.MainController ADD "James" "9876543210"

The name you entered is valid and matches the standards.

The phone number you entered is valid and matches the standards.

The record you attempted to add was added successfully


D:\Gomi\UTA\Spring 2020\CSE 5382 - Secure Programming\Assignments\Assignment 11 Input Validation\SecureProgramming\bin>java
-cp sqlite-jdbc-3.23.1.jar;. secure.MainController LIST

ID      Person                  Telephone
15      Goutami                 5086567621
17      James                   9876543210
```



```
D:\Gomi\UTA\Spring 2020\CSE 5382 - Secure Programming\Assignments\Assignment 11 Input Validation\SecureProgramming\bin>java
-cp sqlite-jdbc-3.23.1.jar;. secure.MainController DEL "James"

The name you entered is valid and matches the standards.

Successfully deleted the record


D:\Gomi\UTA\Spring 2020\CSE 5382 - Secure Programming\Assignments\Assignment 11 Input Validation\SecureProgramming\bin>java
-cp sqlite-jdbc-3.23.1.jar;. secure.MainController LIST

ID      Person                  Telephone
15      Goutami                 5086567621
```