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UNIVERSITY OF NEW BRUNSWICK

Faculty of Computer Science

CS1103
Introduction to Databases

# Lecture 10
JDBC

Learning Objectives

By the end of this module, you will be able to:

o Write Java programs that include JDBC code to:

- Connect to your database

- Execute SQL statements

- Execute stored procedures

o Includes both text-based and JavaFX GUI programming

What is JDBC?

Java Database Connectivity

- Enables Java programs to interact with a database

- Provides the "glue" so Java + MySQL = Information System

- Consists of Java classes we can use in our programs

Presentation Layer

⇕

Application Layer

⇕

Database Layer
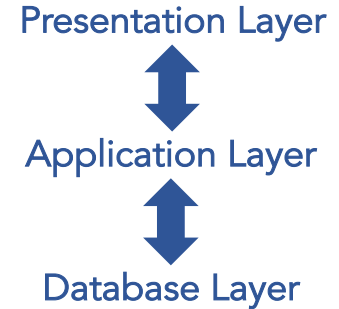
A First Example

```
$ setenv CLASSPATH .\:/usr/share/java/mysql-connector-java.jar
$ java AddHotel
Enter the new hotel id: 1004
Enter the new hotel name: Hotel 1103 Fredericton
Enter the new hotel address: 1 Queen Street
Insertion succeeded
$
```


View in a text editor:
AddHotel.java

Mapping Java to SQL Data Types

SQL Data Type	Java Data Type	PreparedStatement Methods	ResultSet Methods
int	int	setInt	getInt
decimal	float, double, java.math.BigDecimal	setFloat, setDouble	getFloat, getDouble, getBigDecimal
varchar	String	setString	getString
date	java.sql.Date, ** String	SetDate, setString *	getDate
datetime	java.sql.TimeStamp, String	setTimestamp, setString *	getTimestamp

* Depends on which type of value is more convenient to create in your Java program

** java.sql.Date and java.util.Date are different classes

Calling a Stored Procedure from Java

```
$ java CheckOut

Enter the id of the stay to be checked out: 10977

Check out succeeded

$
```
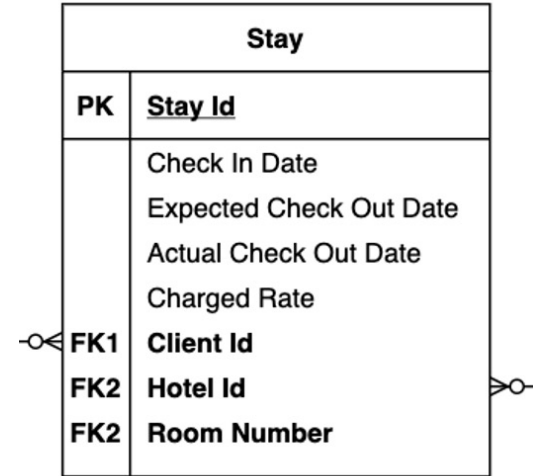

Stay		
PK	**Stay Id**	
	Check In Date	
	Expected Check Out Date	
	Actual Check Out Date	
	Charged Rate	
FK1	**Client Id**	
FK2	**Hotel Id**	
FK2	**Room Number**	

View in a text editor:
checkOut.sql
CheckOut.java

Processing Query Results

```
$ java ListClientNames

        Client Names
=============================
Herb Tarlick
Lois Jones
Sue Moore
Ted Danilo
=============================

$
```

View in a text editor:
ListClientNames.java

Client	
PK	**Client Id**
	Client Name
	Home Address
	Client Email

GUI Check In

Remote Lab Access with GUI

UNB Faculty of Computer Science Help Page:

https://www.cs.unb.ca/help/

Instructions for Remote Lab Access with GUI:

https://www.cs.unb.ca/help/remote-lab-gui-access.shtml
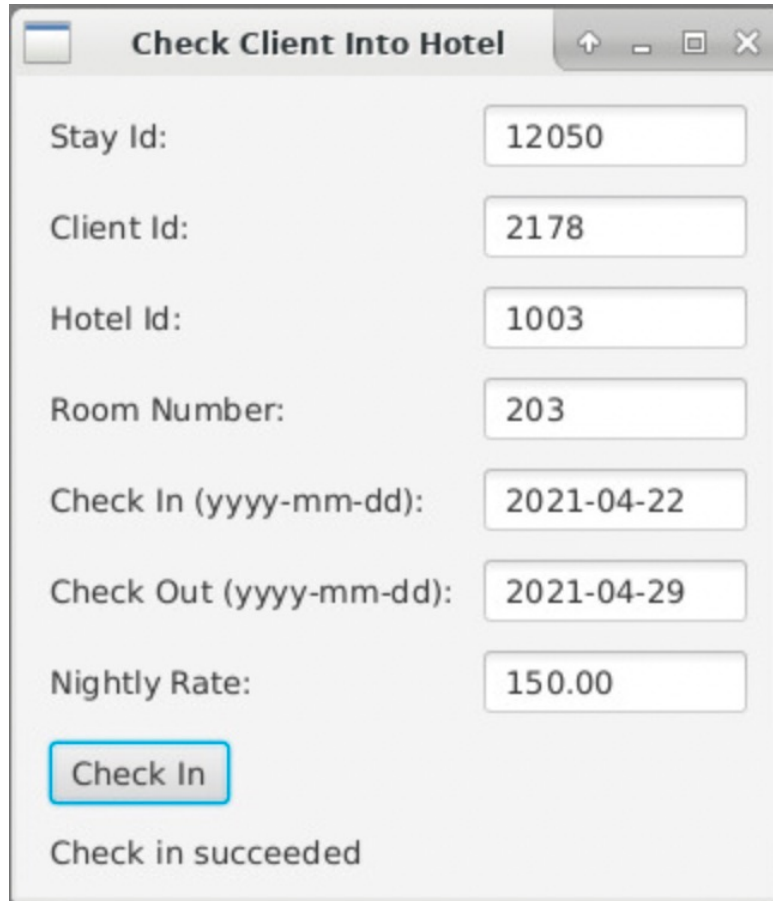
Text Editor
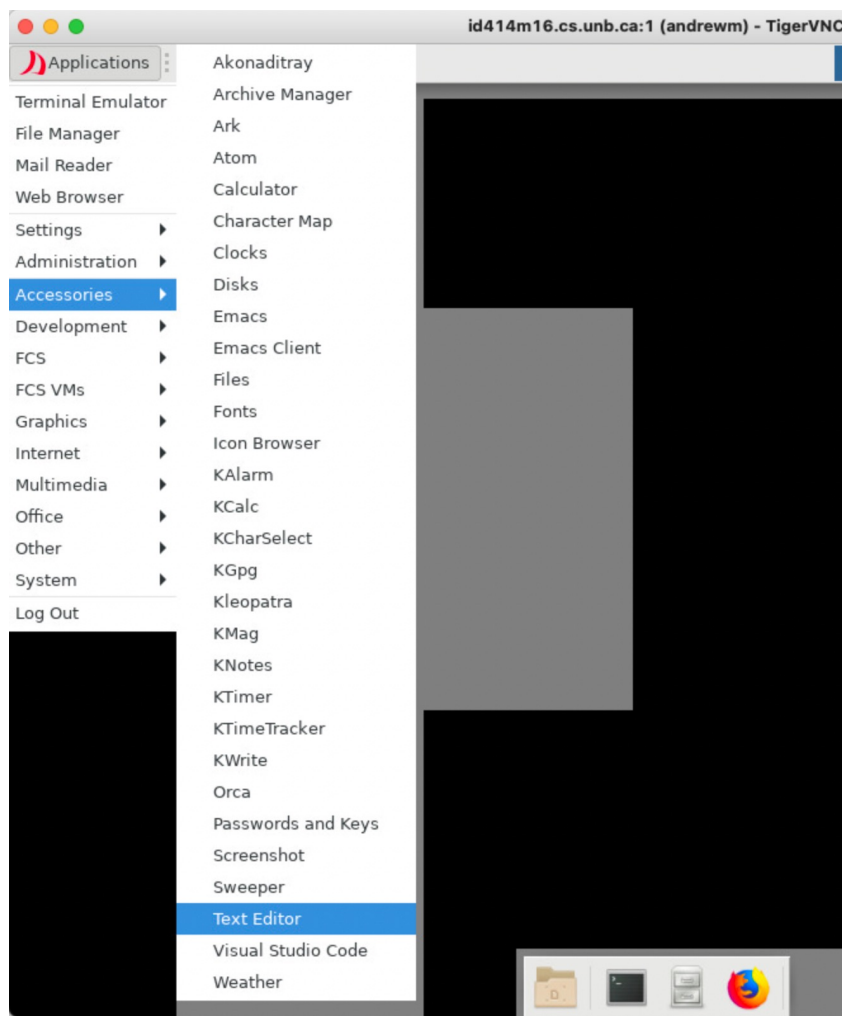
Remote Lab Access: Appearance
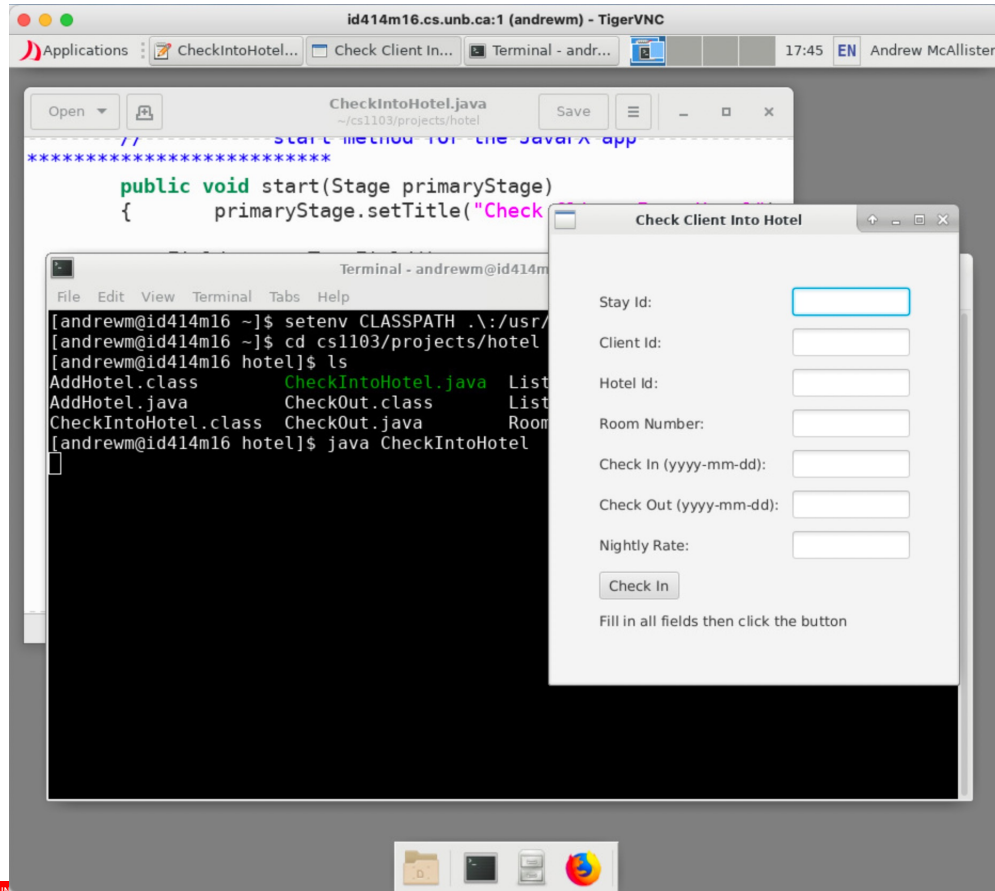
With Fields Filled In

Check Client Into Hotel

Stay Id:	12050
Client Id:	2178
Hotel Id:	1003
Room Number:	203
Check In (yyyy-mm-dd):	2021-04-22
Check Out (yyyy-mm-dd):	2021-04-29
Nightly Rate:	150.00

Check In

Check in succeeded

View in a text editor:
checkIn.sql
CheckIntoHotel.java

Listing Rooms in a Hotel

```
[andrewm@id414m16 hotel]$ java RoomList

(r)oom list or (q)uit? r

Enter the hotel id: 1001

Displaying rooms for: Hotel 1103 Toronto Airport

Room        Room Type
====    ========================
 101    Two-Queen Standard
 102    Two-Queen Standard
 103    Two-Queen Standard
 201    King Standard
 202    King Standard
 203    King Standard
==============================

(r)oom list or (q)uit? r
```

```
Enter the hotel id: 1003

Displaying rooms for: Hotel 1103 Vancouver

Room        Room Type
====    ========================
 101    Two-Queen Standard
 102    Two-Queen Standard
 103    Two-Queen Standard
 201    King Standard
 202    King Standard
 203    Deluxe Suite
==============================
```

View in a text editor:
RoomList.java

The End