PROJECT SUMMARY

Using Python and Npyscreen, an ncurses framework, we were able to create a Postgres and MySQL database interface application that runs on the Linux command line in a clean install environment of the latest version of Ubuntu after running our setup and start configuration files.

Our application allows a user to create, edit, and delete some database table information as well as create new tables for either the Postgres or MySQL database. Doing so allows users to easily visualize and manipulate the data records in their database of choice without the hassle of performing queries or using specific syntax in order to work with their data.

A target client for this application is likely to be someone who wants a simple, open source database GUI for possibly low resource computing devices. Its potential uses are storing data on small Linux boards or for someone who prefers using GUI-like interfaces. Users will not only be able to select from either a Postgres or MySQL database by entering their database usernames and passwords in the login page, but also view the content of the chosen database and select tables to display, add, edit, or remove contents in an easy GUI workflow that anyone with no knowledge of how to write a database query can use with ease. This would be great for new employees who have to get used to working with new data in a new system who have no working knowledge of how to write a Postgres or MySQL database query.

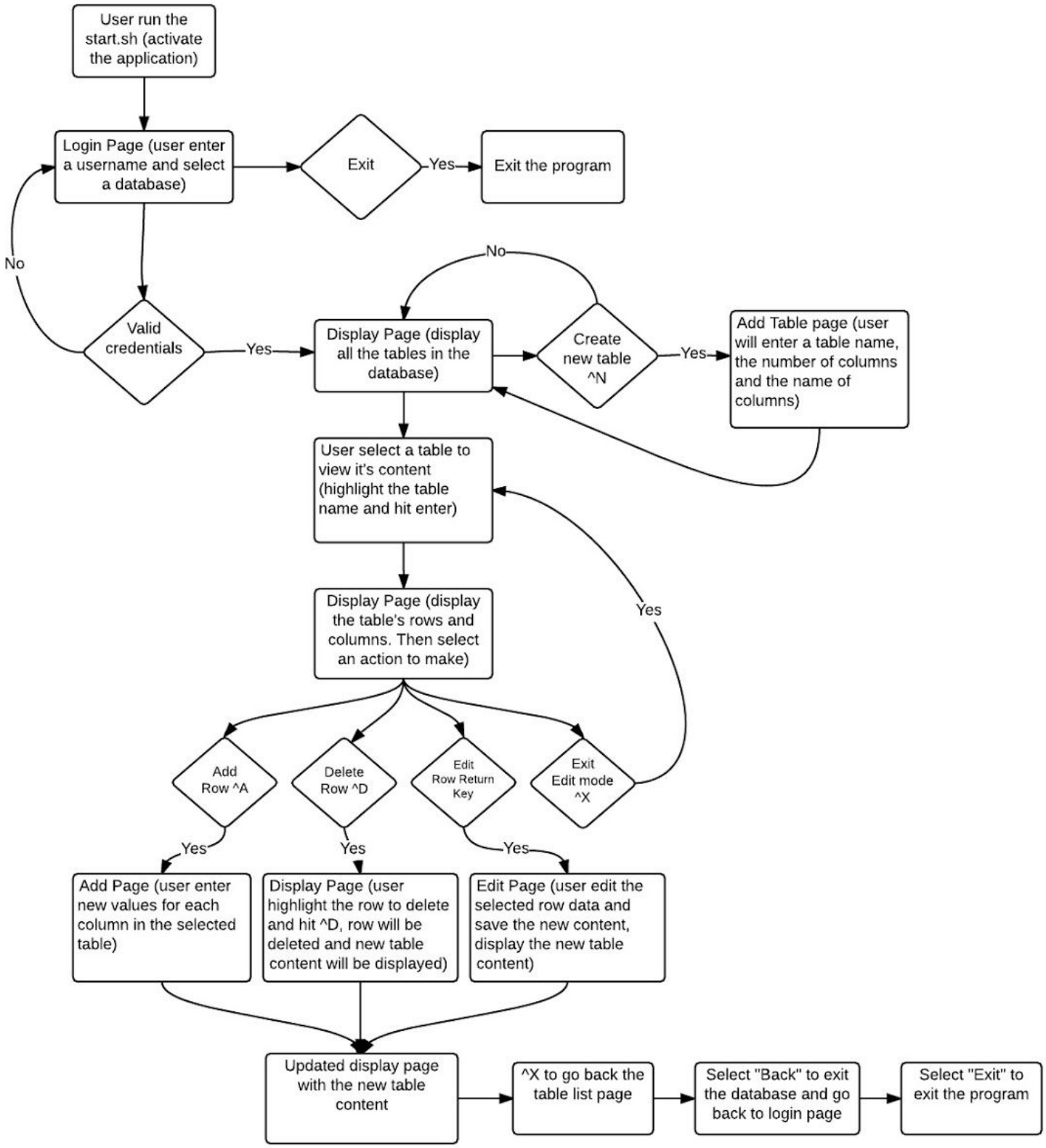
WORKINGS OF THE PROGRAM

The program works by allowing the user to connect to a Postgres or MySQL database, create tables, and manipulate table values. It uses npyscreen form classes to display “screens” to the user and has data object structure where forms must be created or added to acquire and distribute data to the data objects which in course are used to populate and acquire additional data from the user. In the course of this cycle relevant data is added, removed, or retrieved from the selected database.

The structure of the application consists of a setup.sh shell script that downloads the dependencies and sets up the virtual enviroment for the program to run on. Next there is a start.sh script that starts the Postgres and MySQL servers, activates the virtual environment, and starts the application.

The program contains a login page to allow the user to select a database of choice and connect using his/her username for the selected database. The login form stores the user credentials and database chosen, then uses database classes that contain all the functionality for creating tables, displaying table contents, adding rows to a table, editing a row, and deleting rows.
For each action the application updates and alerts the user to the table information via a refreshed form class.

THEORY OF OPERATION



To install and setup the application:

1. Download the application folder
2. Navigate to the directory containing the application
3. Change permission for the setup.sh to run as a root user “chmod +x start.sh”
4. Run ./setup.sh
5. This will download all of the python tools and dependencies as well as create a virtual environment in which the dependencies will be installed. The dependencies to be installed are located in the requirements.txt
6. To run the program see below

To run the application:

I. Open the terminal and change directory to the folder where we saved the application package
II. Change permission for the start.sh to run as a root user “chmod +x start.sh”
III. run the start.sh script to open the virtual enviroment
IV. The script will run the application and start it with the login page.

The application was designed to run in Linux Ubuntu. For this application the setup.sh script will do all the work and download all the databases requirements for the user.

GETTING STARTED GUIDE

1. For a complete tutorial of how to use the program a tutorial can be downloaded from drive here: https://drive.google.com/a/oregonstate.edu/file/d/0B4dPMprTLtM9TV9ONmV0c1ZZaDg/view?usp=sharing
   or viewed on YouTube here: https://youtu.be/E57UVH-txpM.
2. Download the application package and save it to a known directory.
3. Open the terminal and change directory to the saved folder.
4. If necessary change permission to the setup file by executing the comand “chmod +x setup.sh”
5. Run the setup.sh script to download the dependencies.
6. If necessary change permission to the start file by executing the comand “chmod +x start.sh”
7. Run the start.sh to start the databases and execute the application.

8. Enter the username and select a database to view. In the case of MySQL the user name and password will the information entered upon downloading the MySQL. For PostrgreSQL it will be the Linux username, no password required.

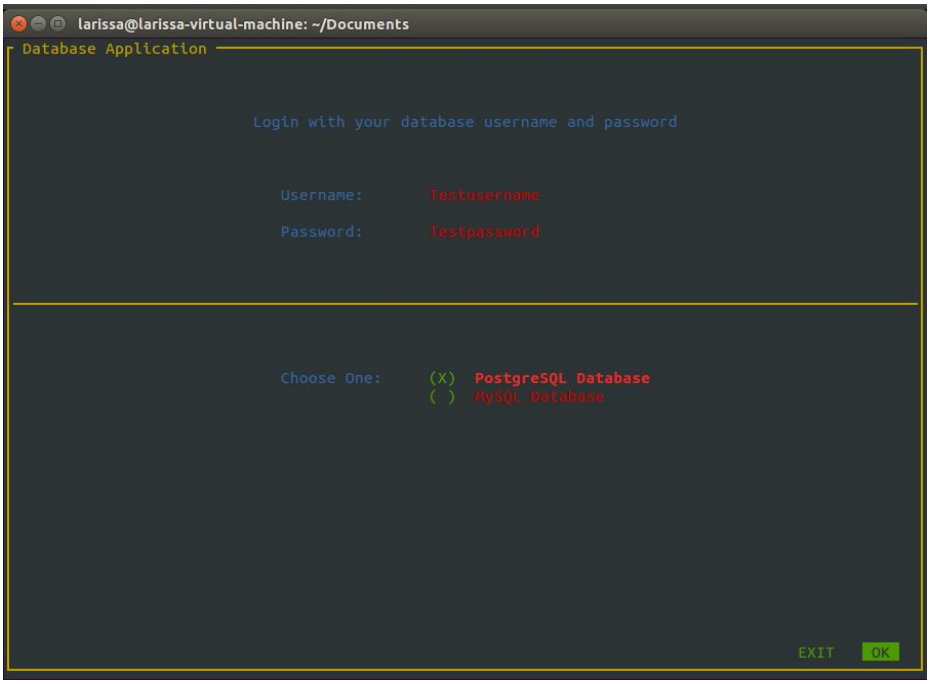


Figure 1. Login Screen

9. Database tables will be displayed on the first screen, and users can perform the following actions:

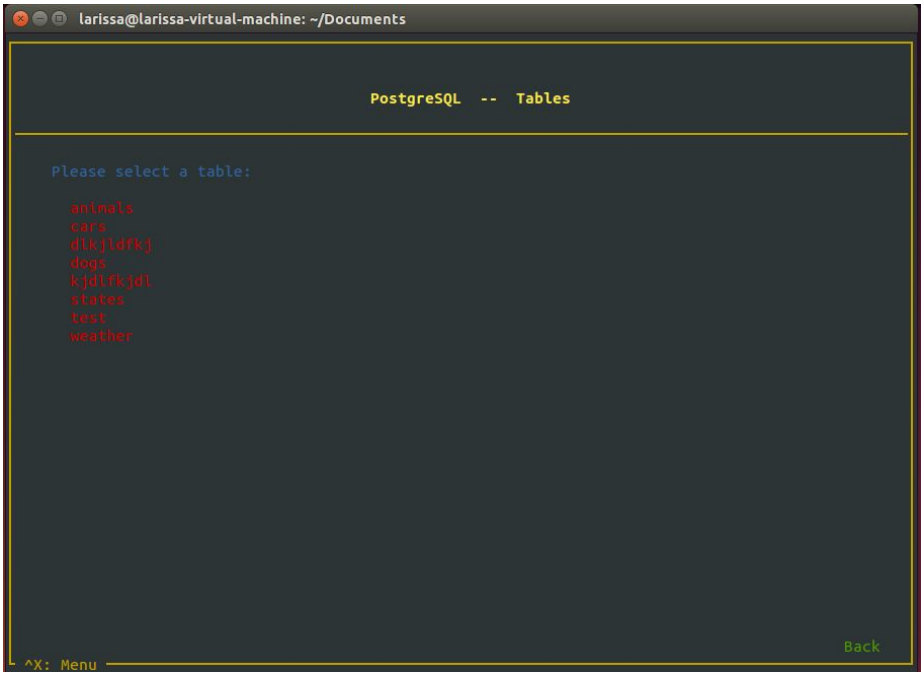


Figure 2. Existing Database Tables Displayed

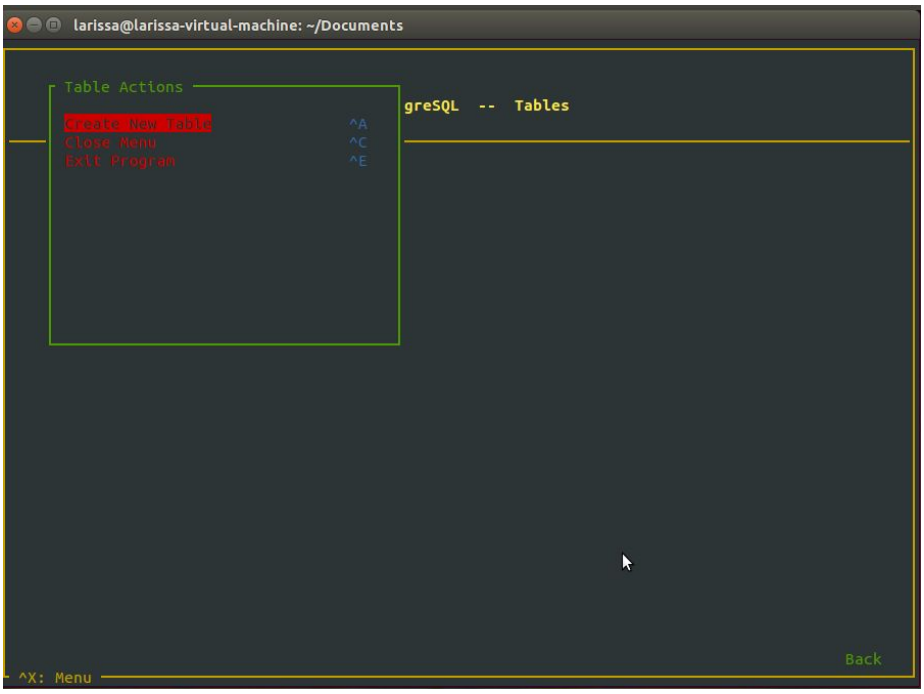


Figure 3. Alternative: Open Menu (‘^X’)

I. **Add New Table ‘ ^N ’ key:** User can enter a table name, number of columns, and the names of the columns. By hitting ‘Enter’ on the keyboard, the application will add the table to the database and return to the table list page.

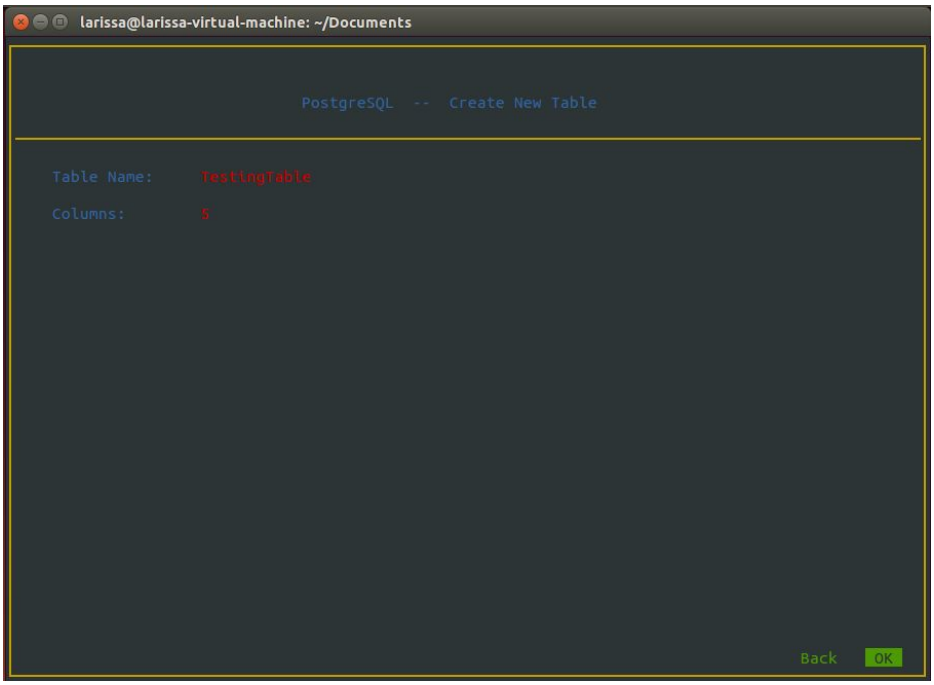


Figure 4. Enter a table name and the number of columns for your table.

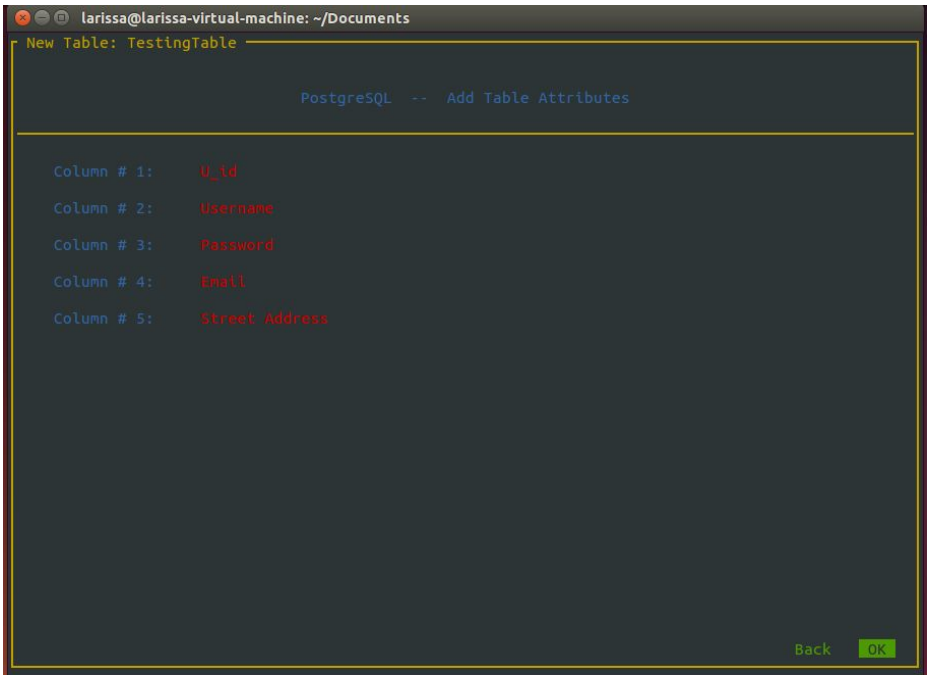


Figure 5. Enter the column names also known as table attributes.

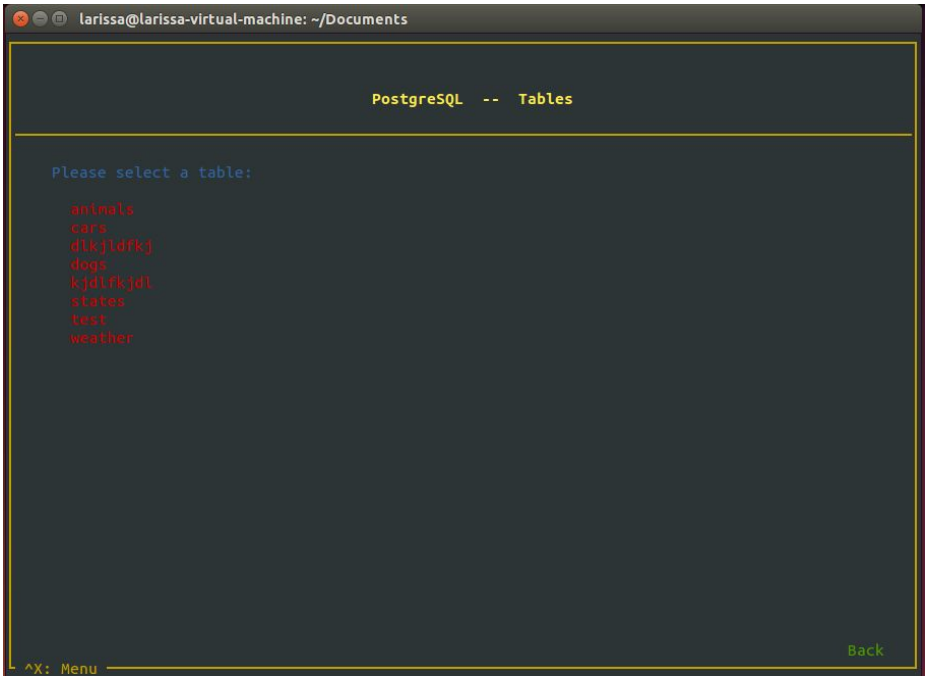


Figure 6. Return to the list of database tables.

II. Highlight a table name using the keyboard arrows '↞↟↠↡' and hit 'Enter' to display the content of the selected table.

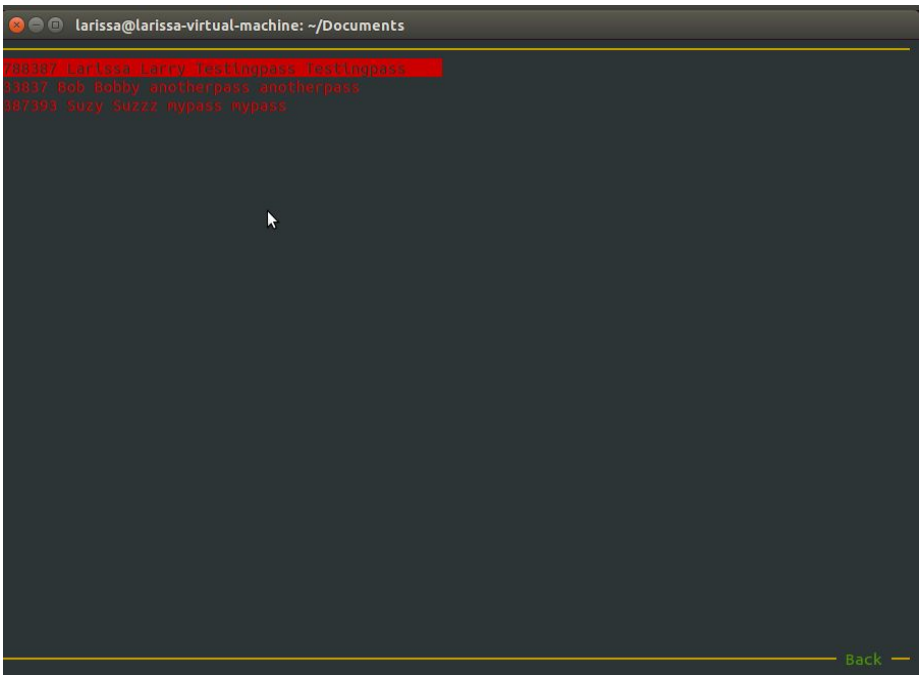


Figure 7. The data records are displayed. Hit ‘Enter’ to select.

III. Select ‘Back’ to exit the database and go back to the login page.

10. By highlighting a table name and hitting the ‘Enter’ key, the application will change forms to display the content of the selected table, and we can perform the following actions:

    I. **Add New Row ‘^A’ key:** Application will change forms to Add row form and display a window of the table columns with empty value fields for the user to enter. User will enter the values and select ‘OK’ to add the new row to the database, or select ‘Back’ to exit the Add row mode.

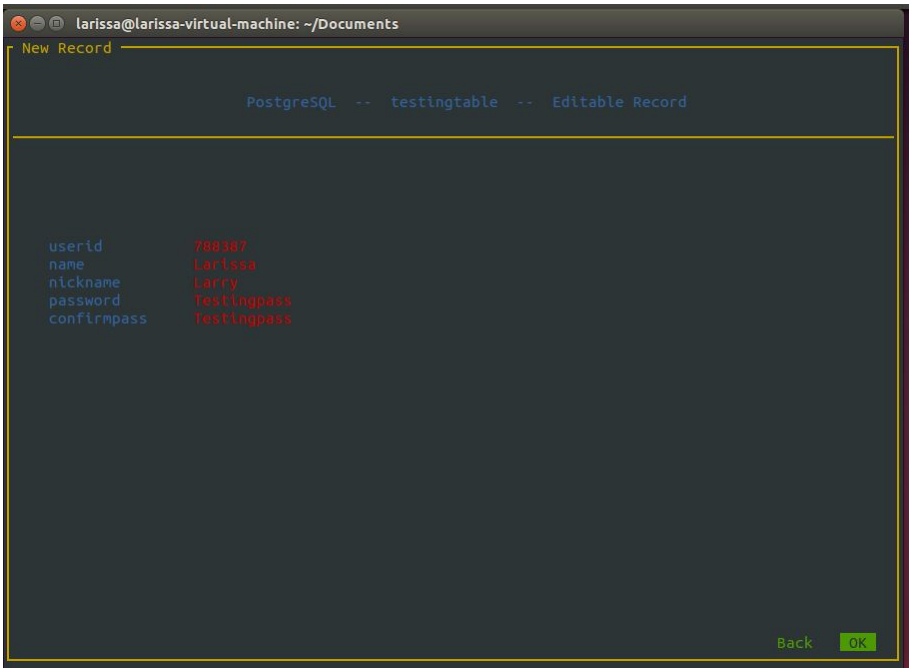


Figure 8. Add a row to the table by entering data for a New Record.

II. **Edit Record by Highlighting Row and hit 'Enter'**: Application will change forms to Edit Row form and display a window of the table columns with the existing values in the test fields, user will be able to change the content of any text field and select 'OK' to save the updated row to the database, or select 'Back" to exit the Edit Record screen.

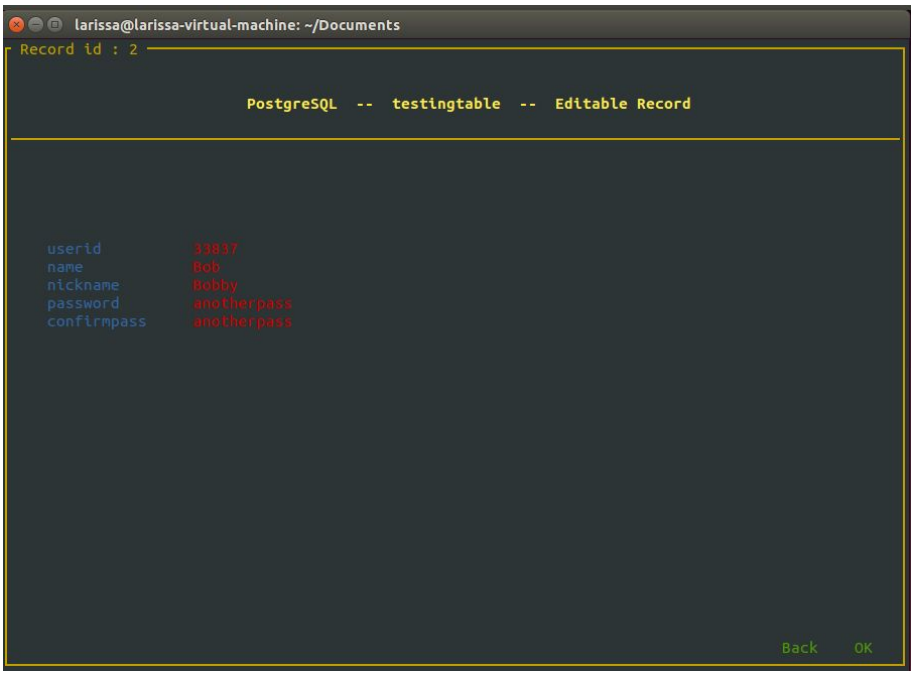


Figure 9. Viewing a record will allow you to update fields at your convenience.

III. **Delete a Row ‘^D’ key:** User can highlight any row and hit the ^D key to delete that row, Application will delete the row from the database and update the content of the display page to display the new table content.

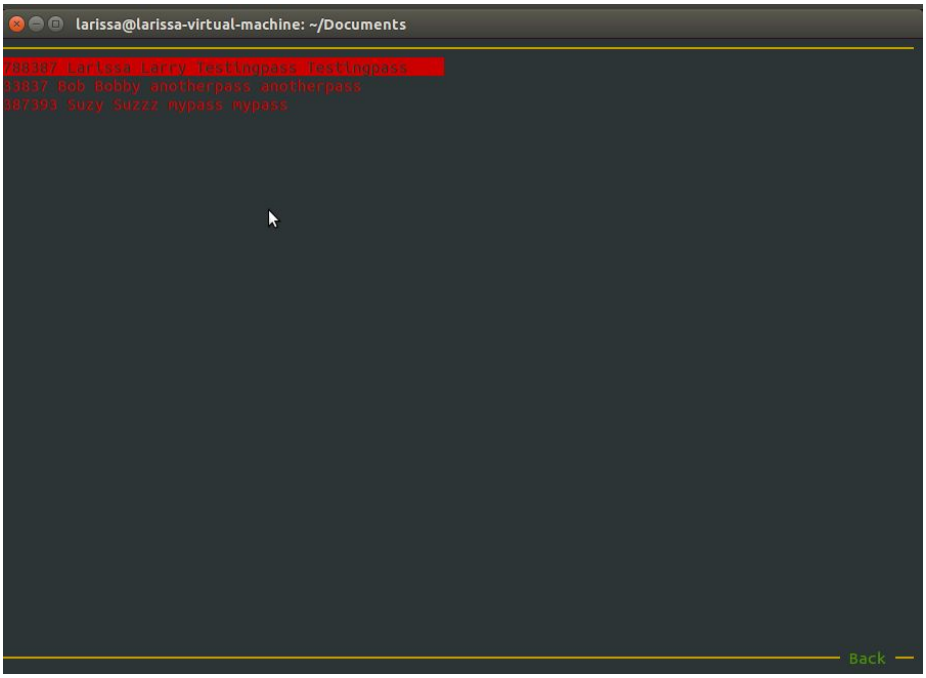


Figure 10. Highlight the row you want to delete and hit ‘^D’

IV. **Exit displaying the table using ‘ ^X ’ key or selecting ‘Back’:** Application will change forms to the display table list page.

11. User can repeat the process (#6) to select another table, add, edit or delete rows.
12. Or user can select ‘Back’ button to exit the database and go back the Login page.
13. User ran repeat the process from step 8 to use a different database.
14. Selecting the ‘Exit’ button on the Login page will exit the application