

Technical Report

eTRT System

Project 3: Questionnaires for keeping track of the severity of the hearing problem.

CS 157A - Section 3

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Group 2

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I. PROBLEM STATEMENT

eTRT is a system that supports data transactions at a hypothetical small/medium clinic specializes in tinnitus retraining therapy (TRT) for the management of hearing disorders. It requires an application to collect the patient's questionnaire information and a database to store the gathered data at the end of patient visits. The Application must have a GUI for adding patient visits, filling out Tinnitus Handicap Inventory (THI) form and Tinnitus Functional Index (TFI) form. The application also calculated the total scores, sub-scores and level of severity from each form. The database must be well set up and able to handle data queries and updates effectively.

II. SOLUTION DESIGN

1. High level architecture of system:

2-tier architecture. Java application talks directly through the data source using a JDBC driver. User's commands are sent to the data source, which is a MySQL database installed locally, and results will be sent back to the users.

2-Tier Architecture

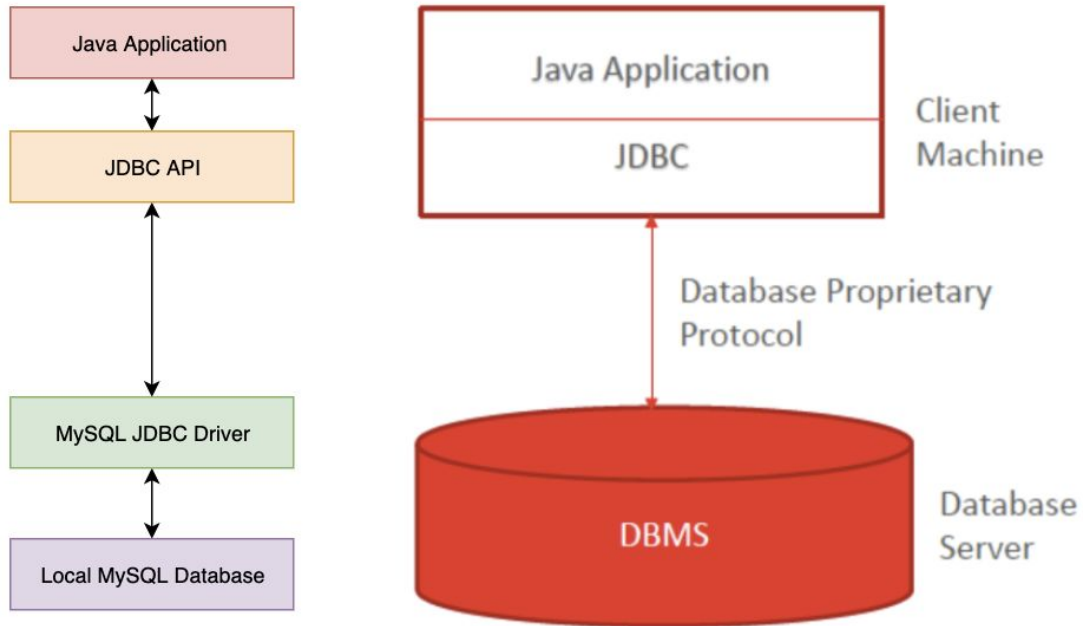


Figure 1: 2-Tier Architecture design

2. Database Design

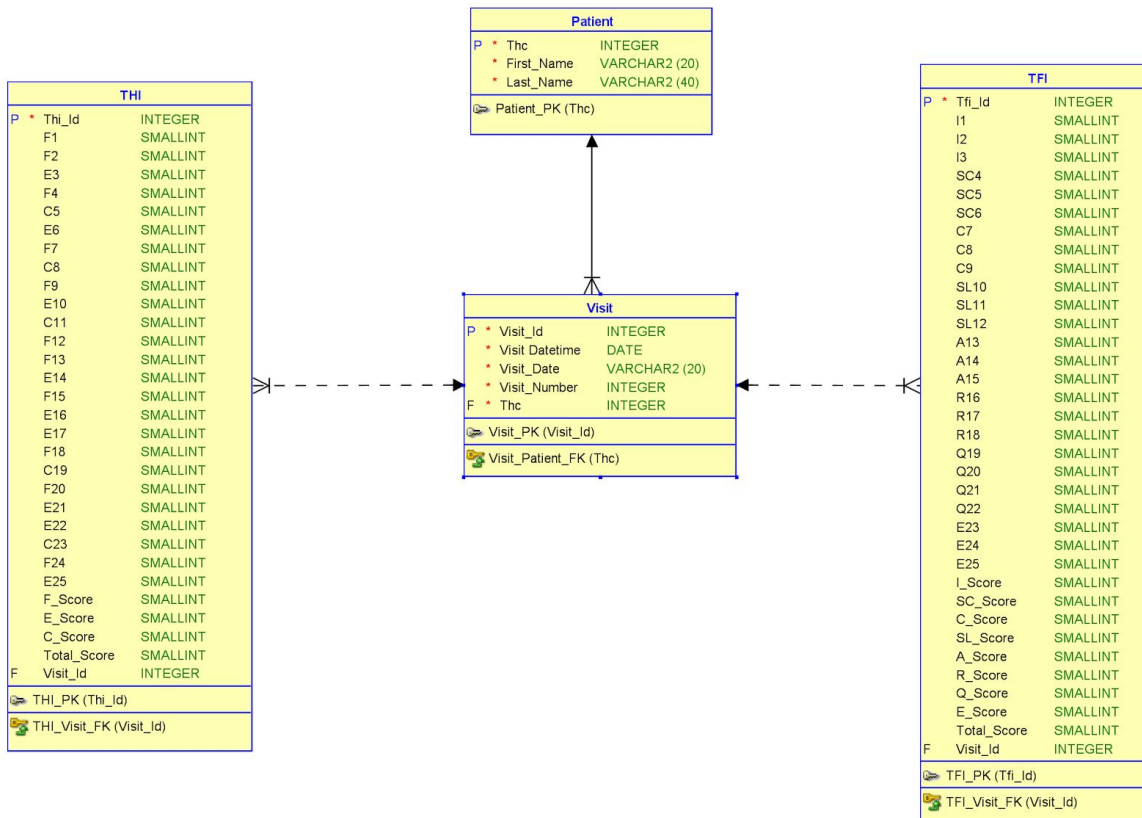


Figure 2: Database model design

For the database design, there are four tables in the database: Patient, Visti, THI, and TFI. the table design is in 3NF because it meets the 1NF, 2NF, and 3NF requirements:

- 1) All attributes in every table are **single valued** (Ex. The name of the patient is divided into first and last name attributes). There is no way to split any attribute into smaller attributes.
- 2) All non-UID attributes are dependent on the **entire UID** (Ex. Every question from the questionnaires serve as a non-UID attribute that depends on the whole questionnaire).

Table Patient: key = {Thc}. All Attributes are functionally dependent on Thc

Table Visit: key = {Visit_id}. All Attributes are functionally dependent on Visit_id

Table THI: key = {Thi_id}. All Attributes are functionally dependent on Thi_id

Table TFI: key = {**Tfi_id**}. All Attributes are functionally dependent on Tfi_id

- 3) There is no non-UID attribute that is dependent on another non-UID attribute (For example, the individual question attributes in a questionnaire are only dependent on the UID of the entire questionnaire and not other non-UID attributes).

Since all tables have one and only one primary key. The FD's in all tables are:

Key \rightarrow {Set of all other attribute}. So for each FD, the left-hand side is always a superkey \rightarrow 3NF form holds.

3. UI design:

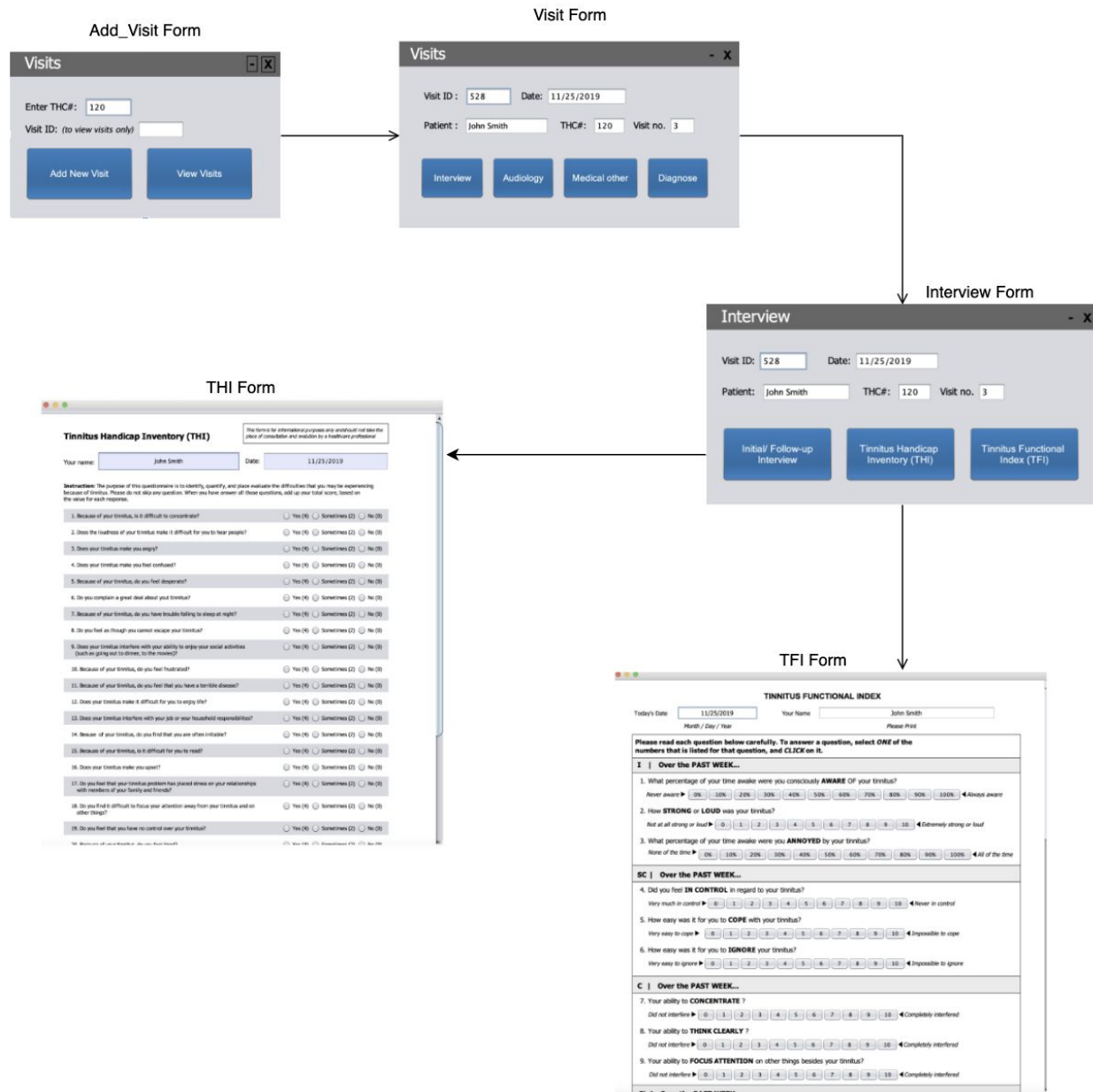


Figure 3: UI design diagram

III. TECHNOLOGY AND TOOLS

We used **Java 8** for client side and **MySQL DB 5.7** for server side, **Java Netbeans IDE** to create the GUI design and **Java Eclipse IDE** to run the program. In regards to the database, we

used the **MySQL Workbench** to create the connection and to load the sql script to create the database along with the tables. We also used **Slack** and **Github** for teamwork and files management.

IV. IMPLEMENTATION

1. Describe tables, attributes, constraints

For the sql file, it contains the four tables: **Patient**, **Visit**, **THI**, and **TFI**.

a) The **Patient table** has attributes that provide the basic information for the patient, including the patient UID thc.

Constraints: Primary Key (**Thc**) AutoIncrement

Patient		
P *	Thc	INTEGER
*	First_Name	VARCHAR2 (20)
*	Last_Name	VARCHAR2 (40)
Patient_PK (Thc)		

b) The **VISIT table** contains attributes regarding the information for a visit, such as its id, date, and visit number.

Constraints: Primary Key(**Visit_id**) AutoIncrement, Foreign Key(**Thc**) reference from **Patient**

Visit		
P *	Visit_Id	INTEGER
*	Visit Datetime	DATE
*	Visit_Date	VARCHAR2 (20)
*	Visit_Number	INTEGER
F *	Thc	INTEGER
Visit_PK (Visit_Id)		
Visit_Patient_FK (Thc)		

c) Both **questionnaire tables (THI and TFI)** have attributes that represent the score of the questions and the sums of specific questions.

THI		
P *	Thi_Id	INTEGER
	F1	SMALLINT
	F2	SMALLINT
	E3	SMALLINT
	F4	SMALLINT
	C5	SMALLINT
	E6	SMALLINT
	F7	SMALLINT
	C8	SMALLINT
	F9	SMALLINT
	E10	SMALLINT
	C11	SMALLINT
	F12	SMALLINT
	F13	SMALLINT
	E14	SMALLINT
	F15	SMALLINT
	E16	SMALLINT
	E17	SMALLINT
	F18	SMALLINT
	C19	SMALLINT
	F20	SMALLINT
	E21	SMALLINT
	E22	SMALLINT
	C23	SMALLINT
	F24	SMALLINT
	E25	SMALLINT
	F_Score	SMALLINT
	E_Score	SMALLINT
	C_Score	SMALLINT
	Total_Score	SMALLINT
F	Visit_Id	INTEGER
THI_PK (Thi_Id)		
THI_Visit_FK (Visit_Id)		

TFI		
P *	Tfi_Id	INTEGER
	I1	SMALLINT
	I2	SMALLINT
	I3	SMALLINT
	SC4	SMALLINT
	SC5	SMALLINT
	SC6	SMALLINT
	C7	SMALLINT
	C8	SMALLINT
	C9	SMALLINT
	SL10	SMALLINT
	SL11	SMALLINT
	SL12	SMALLINT
	A13	SMALLINT
	A14	SMALLINT
	A15	SMALLINT
	R16	SMALLINT
	R17	SMALLINT
	R18	SMALLINT
	Q19	SMALLINT
	Q20	SMALLINT
	Q21	SMALLINT
	Q22	SMALLINT
	E23	SMALLINT
	E24	SMALLINT
	E25	SMALLINT
	I_Score	SMALLINT
	SC_Score	SMALLINT
	C_Score	SMALLINT
	SL_Score	SMALLINT
	A_Score	SMALLINT
	R_Score	SMALLINT
	Q_Score	SMALLINT
	E_Score	SMALLINT
	Total_Score	SMALLINT
F	Visit_Id	INTEGER
TFI_PK (Tfi_Id)		
TFI_Visit_FK (Visit_Id)		

Constraints: Primary Key (Thi_id), Primary Key(Tfi_id), both the TFI and THI tables have a foreign key for the visit_id referencing the VISIT table.

2. Describe the classes, use javadoc

Information regarding the Java library, classes, framework is in the Javadoc included in the dist folder: **~/CS157A-team2-topic3/dist/javadoc**

OVERVIEW PACKAGE **CLASS** USE TREE DEPRECATED INDEX HELP

PREV CLASS NEXT CLASS FRAMES NO FRAMES ALL CLASSES

SUMMARY: NESTED | FIELD | CONSTR | METHOD DETAIL: FIELD | CONSTR | METHOD

etrtsystem

Class Add_Visit_Form

```

java.lang.Object
  java.awt.Component
    java.awt.Container
      java.awt.Window
        java.awt.Frame
          javax.swing.JFrame
            etrtsystem.Add_Visit_Form
  
```

All Implemented Interfaces:

java.awt.image.ImageObserver, java.awt.MenuContainer, java.io.Serializable, javax.accessibility.Accessible, javax.swing.RootPaneContainer, javax.swing.WindowConstants

```

public class Add_Visit_Form
  extends javax.swing.JFrame
  
```

See Also:

Serialized Form

Nested Class Summary

Nested classes/interfaces inherited from class javax.swing.JFrame
javax.swing.JFrame.AccessibleJFrame
Nested classes/interfaces inherited from class java.awt.Frame
java.awt.Frame.AccessibleAWTFrame
Nested classes/interfaces inherited from class java.awt.Window
java.awt.Window.AccessibleAWTWindow, java.awt.Window.Type
Nested classes/interfaces inherited from class java.awt.Container
java.awt.Container.AccessibleAWTContainer

Figure 4: An overview of Java doc *overview-summary.html*

a) Front-end classes for all the forms

Package etrtsystem

Class Summary
Class
Add_Visit_Form
Interview_form
TFI_Form
THI_Form
Visit_Form

b) Database handling classes

Package etrt.database

Class Summary
Class
My_CNX
Project3Builder
SQLLoader
SQLUtil

My_CNX is the most important file to set up the connection to MySQL database.

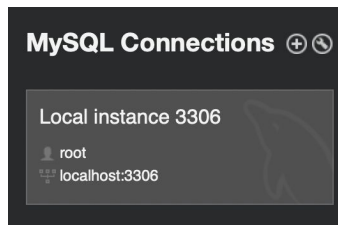
Project3Builder, SQLLoader and SQLUtil are for utility in case user does not open and run the scripts but want to set up manually from the java files.

V. INSTRUCTIONS TO DEPLOY AND RUN THE APPLICATION

1. Setting up the environment

Following this instruction will set up the database with the same **username** and **password** that are used in the Java file “My_CNX.java” to set up connections.

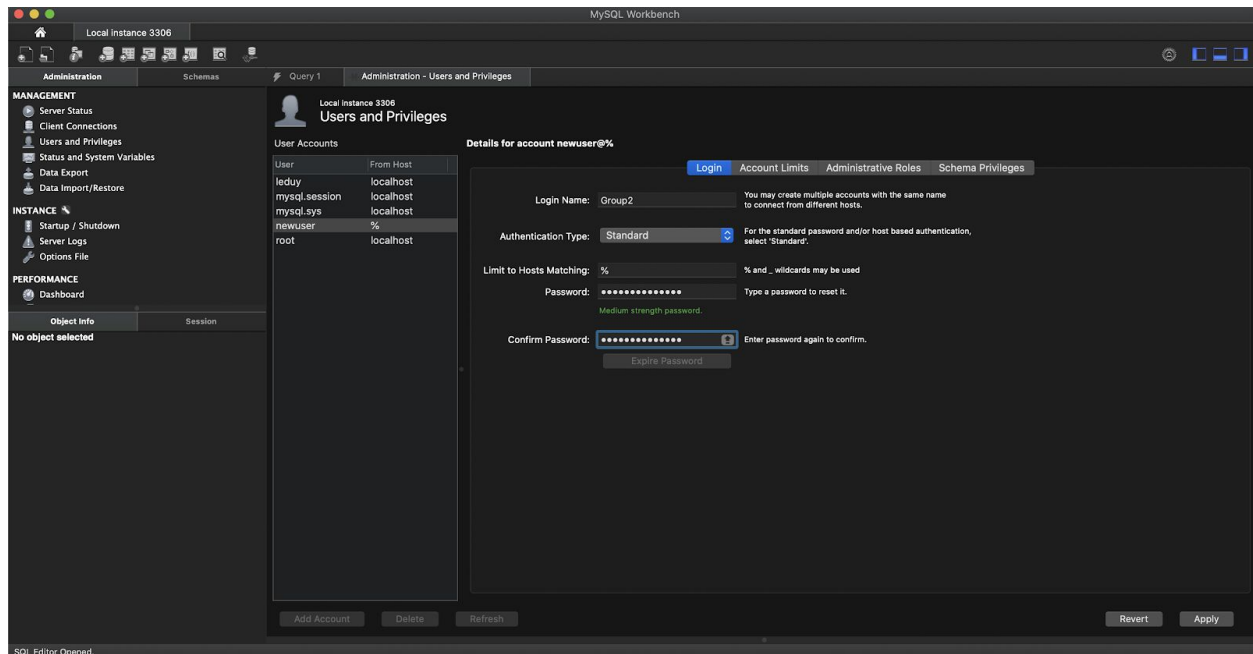
Open MySql WorkBench, go to MySQL Connections, go the the root user



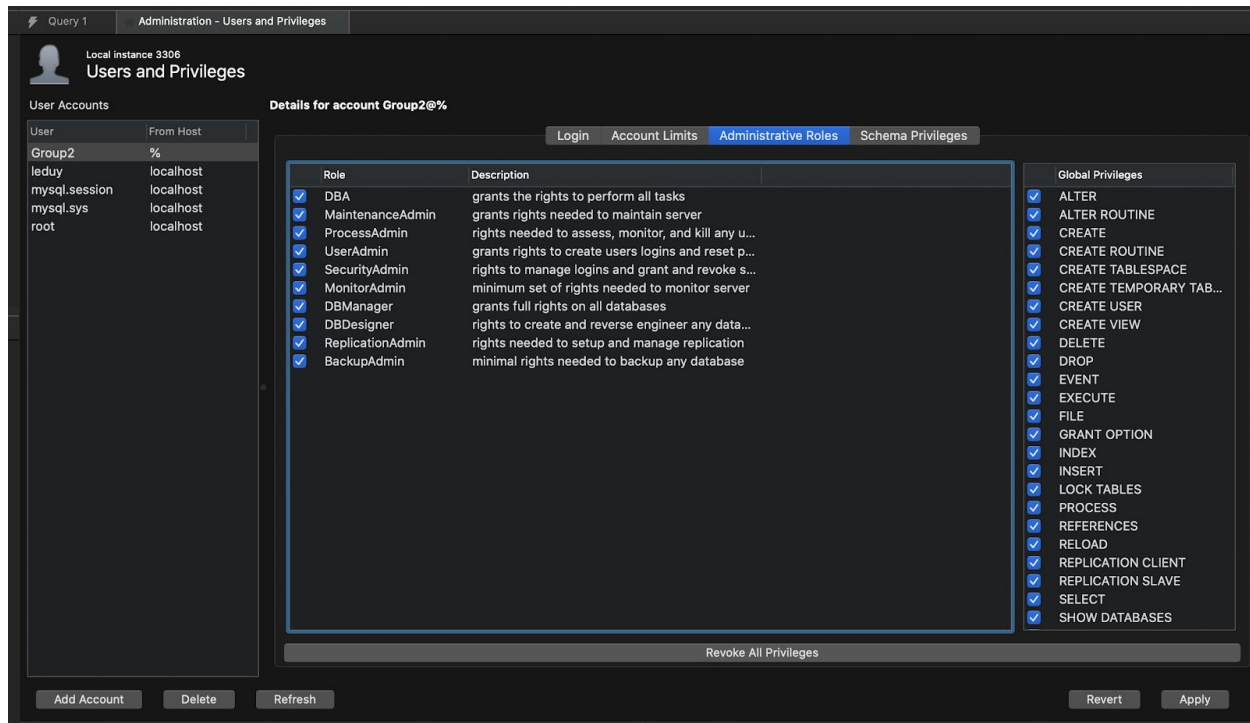
In the menu on the right, choose option “User and Privileges” and click “Add Account” on the bottom. Then, fill out the form with

Login Name: **Group2**

Password: **group#2topic#3**



In the Administrative Roles Window, chose the role as **DBA** for simplicity (OR as least DB Manager, DB Designer, Backup Admin and a Custom (References privilege)). Then, click “Apply”

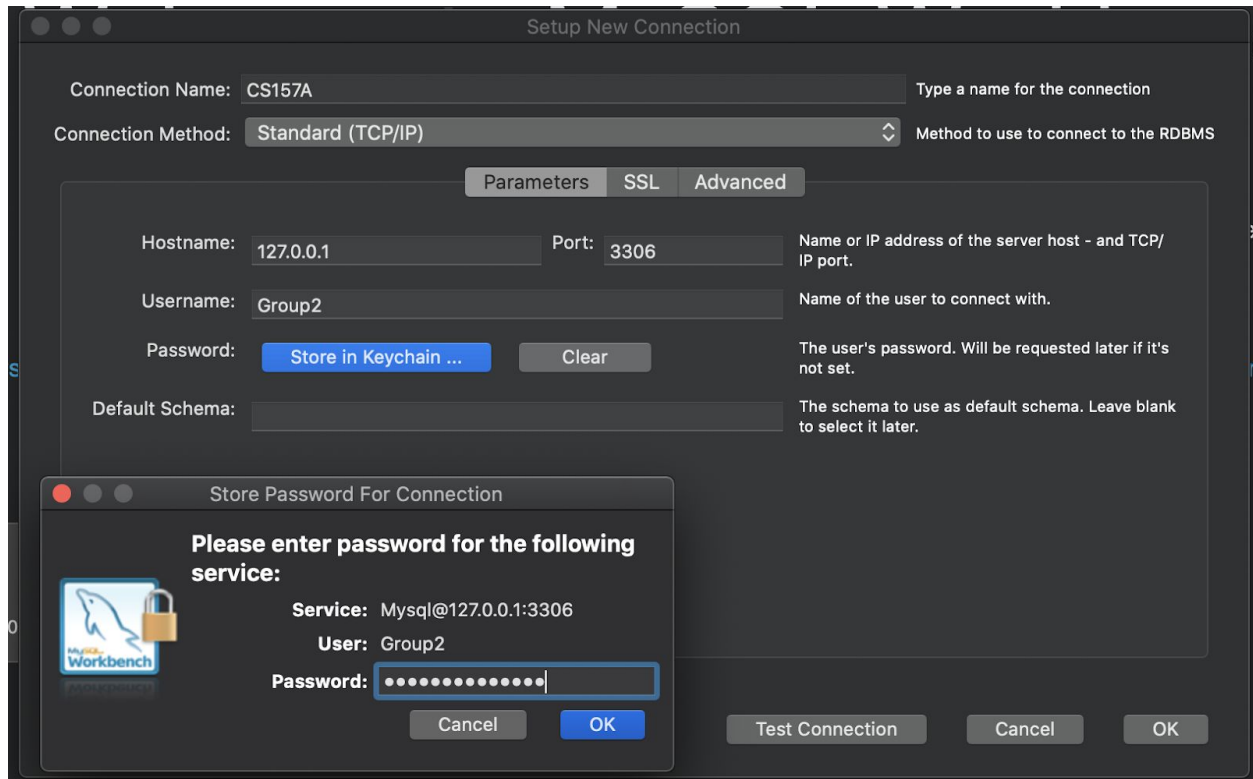


Go out to the main page and click on the “Cross” Icon to set up a new connection.

MySQL Connections (+) (-)

Then fill out the form the Connection Name: **CS157A**.

Username and Password as stated above.

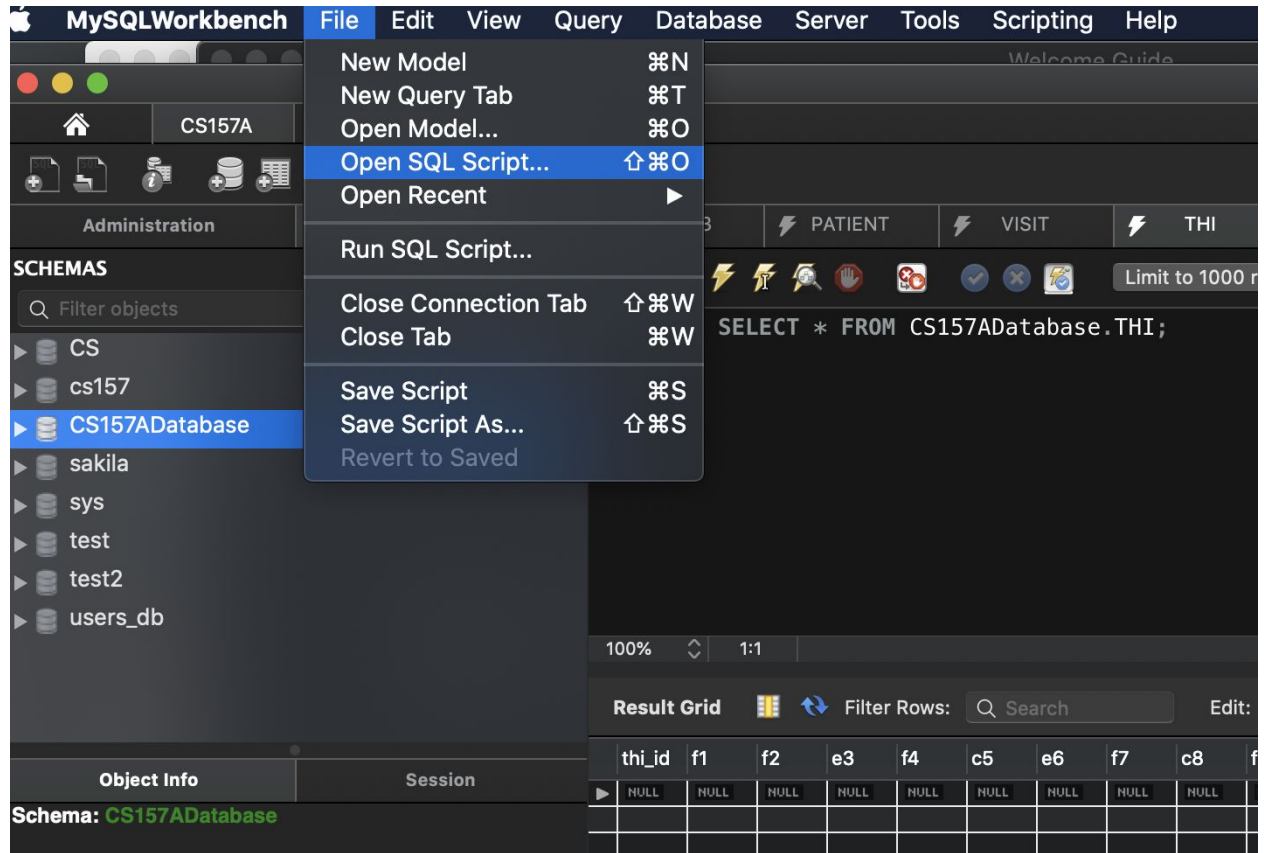



Then, login as user Group2.

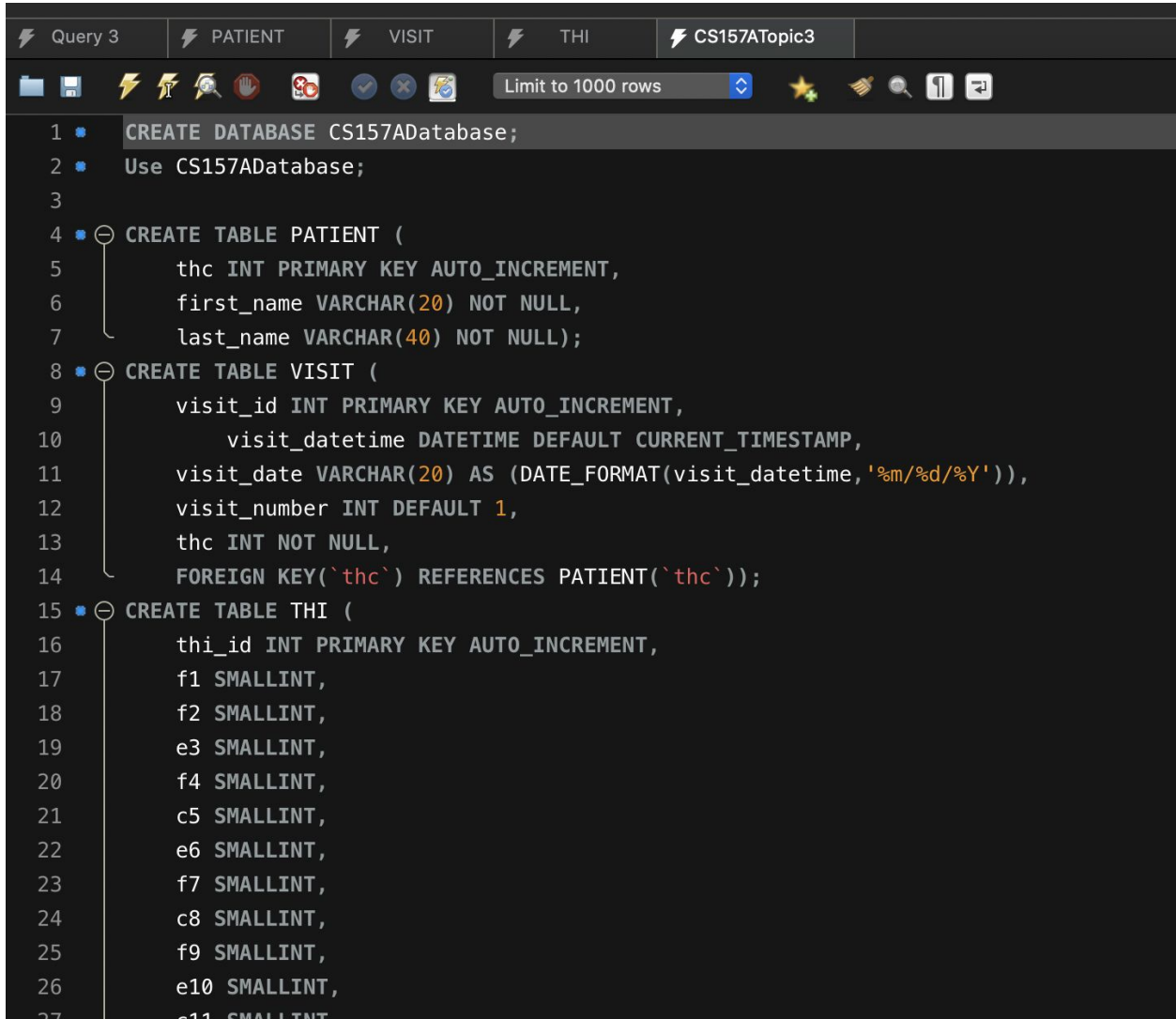
If you want to run the application using your own MySQL account, please open file “My_CNX.java” in the ~/CS157A-team2-topic3/eTRT System/src/etrtdatabase/My_CNX.java, then replace the fields **DATABASE_URL**, **USERNAME** and **PASSWORD** with your MySQL user account information.

```
public class My_CNX {
    // init database constants
    private static final String DATABASE_DRIVER = "com.mysql.jdbc.Driver";
    private static final String DATABASE_URL = "jdbc:mysql://localhost:3306/CS157ADatabase?autoReconnect=true&useSSL=false";
    private static final String USERNAME = "Group2";
    private static final String PASSWORD = "group#2topic#3";
    private static final String MAX_POOL = "250";
}
```

Open the SQL Script on MySQL Workbench from ~/CS157A-team2-topic3/CS157ATopic3.sql



Then run it to set up the database by clicking on the 



```

1 CREATE DATABASE CS157ADatabase;
2 Use CS157ADatabase;
3
4 CREATE TABLE PATIENT (
5     thc INT PRIMARY KEY AUTO_INCREMENT,
6     first_name VARCHAR(20) NOT NULL,
7     last_name VARCHAR(40) NOT NULL);
8
9 CREATE TABLE VISIT (
10     visit_id INT PRIMARY KEY AUTO_INCREMENT,
11     visit_datetime DATETIME DEFAULT CURRENT_TIMESTAMP,
12     visit_date VARCHAR(20) AS (DATE_FORMAT(visit_datetime, '%m/%d/%Y')),
13     visit_number INT DEFAULT 1,
14     thc INT NOT NULL,
15     FOREIGN KEY(`thc`) REFERENCES PATIENT(`thc`));
16
17 CREATE TABLE THI (
18     thi_id INT PRIMARY KEY AUTO_INCREMENT,
19     f1 SMALLINT,
20     f2 SMALLINT,
21     e3 SMALLINT,
22     f4 SMALLINT,
23     c5 SMALLINT,
24     e6 SMALLINT,
25     f7 SMALLINT,
26     c8 SMALLINT,
27     f9 SMALLINT,
28     e10 SMALLINT,
29     c11 SMALLINT

```

After that, the database is fully set up. Belows are how the database is gonna look like with some initial data that are already inserted from the script file.

TABLE: PATIENT

	thc	first_name	last_name	
►	120	John	Smith	
	121	Kim	Nguyen	
	122	Juan	Carlos	
	123	Mike	Jones	
	124	Chloe	Hernandez	
	125	Sarah	Wilson	
	NULL	NULL	NULL	

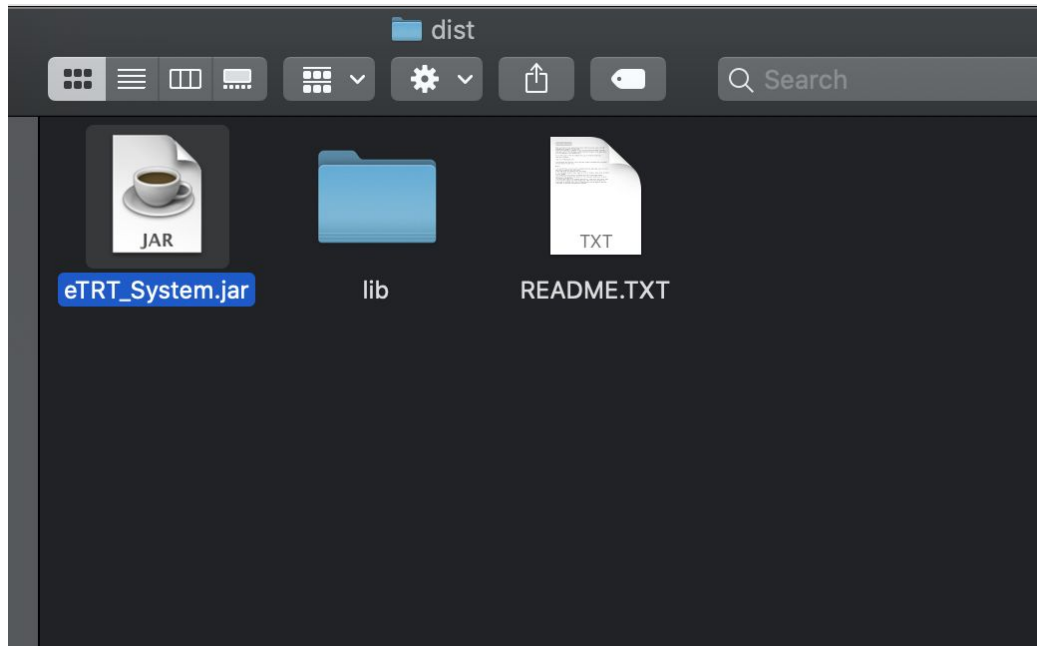
TABLE: VISIT

	visit_id	visit_datetime	visit_date	visit_number	thc
►	520	2019-11-25 16:20:38	11/25/2019	1	120
	521	2019-11-25 16:20:38	11/25/2019	1	121
	522	2019-11-25 16:20:38	11/25/2019	1	122
	523	2019-11-25 16:20:38	11/25/2019	1	123
	524	2019-11-25 16:20:38	11/25/2019	1	124
	525	2019-11-25 16:20:38	11/25/2019	1	125

TABLE: THI AND TFI are empty

Now, to run the application, click on the jar file “**eTRT_System.jar**” inside the folder “dist”

~/CS157A-team2-topic3/dist



2. Project Walkthrough

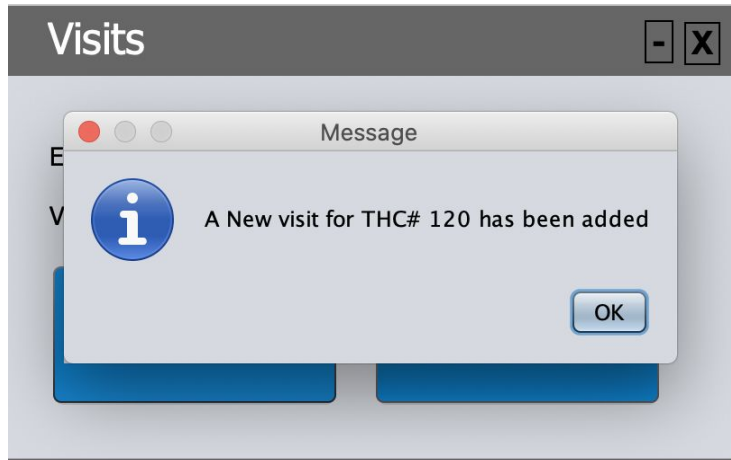
a) Visits Form

After you open the application, first, fill out the Visit form to add new Visit from 120 to 125.

Leave the Visit ID blank because it's only needed to view an existing visit.

A screenshot of a Java Swing window titled 'Visits'. The window has a light gray background and a dark gray title bar with standard window controls. It contains two text input fields. The first is labeled 'Enter THC#:' and contains the text '120'. The second is labeled 'Visit ID: (to view visits only)' and is currently empty. Below these fields are two blue rectangular buttons with white text. The left button is labeled 'Add New Visit' and the right button is labeled 'View Visits'.

Click on “Add New Visit” to add a new visit to the database

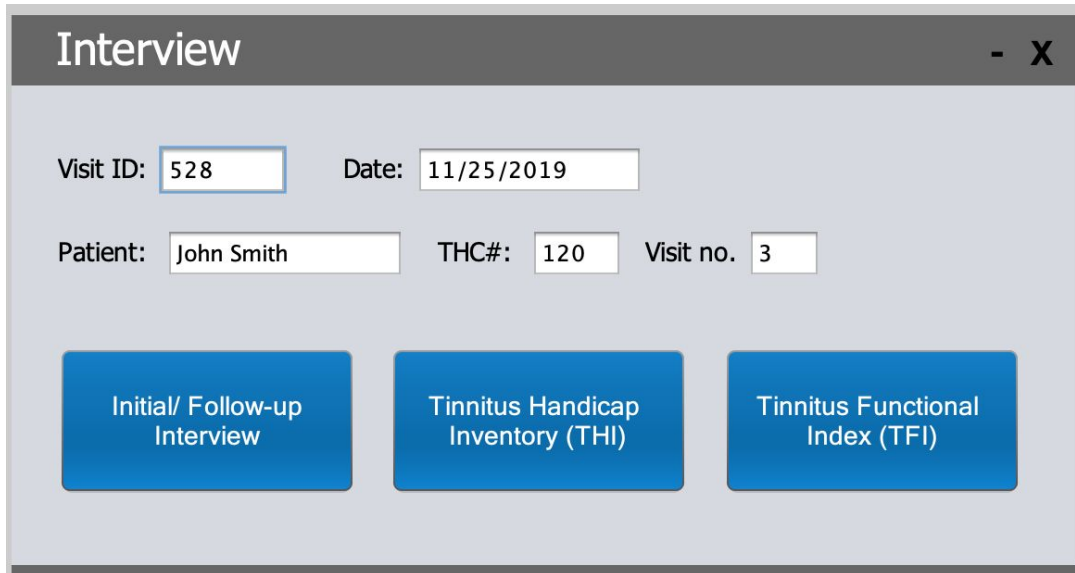


All other information about the customer, such as Visit ID, Date, Patient's name, THC#, Visit no. are automatically filled. Click on the "Interview" button to proceed

A screenshot of the 'Visits' form. The title bar says 'Visits' with a close button. The form contains several input fields with pre-filled data: 'Visit ID : 528', 'Date: 11/25/2019', 'Patient : John Smith', 'THC#: 120', and 'Visit no. 3'. Below these fields are four blue buttons: 'Interview', 'Audiology', 'Medical other', and 'Diagnose'.

b) Interview Form

Because our project's topic only cover THI and TFI form so only those 2 buttons can be clicked to open a new form.



Interview - X

Visit ID: 528 Date: 11/25/2019

Patient: John Smith THC#: 120 Visit no. 3

Initial/ Follow-up Interview Tinnitus Handicap Inventory (THI) Tinnitus Functional Index (TFI)

Click on either “Tinnitus Handicap Inventory (THI)” or “Tinnitus Functional Index (TFI)”

c) THI Form

The patient’s name and current date is automatically filled.

Now, fill out the form.

Tinnitus Handicap Inventory (THI)

This form is for informational purposes only and should not take the place of consultation and evaluation by a healthcare professional

Your name:

John Smith

Date:

11/25/2019

Instruction: The purpose of this questionnaire is to identify, quantify, and place evaluate the difficulties that you may be experiencing because of tinnitus. Please do not skip any question. When you have answer all those questions, add up your total score, based on the value for each response.

- Because of your tinnitus, is it difficult to concentrate? ☐ Yes (4) ☐ Sometimes (2) ☐ No (0)
- Does the loudness of your tinnitus make it difficult for you to hear people? ☐ Yes (4) ☐ Sometimes (2) ☐ No (0)
- Does your tinnitus make you angry? ☐ Yes (4) ☐ Sometimes (2) ☐ No (0)
- Does your tinnitus make you feel confused? ☐ Yes (4) ☐ Sometimes (2) ☐ No (0)
- Because of your tinnitus, do you feel desperate? ☐ Yes (4) ☐ Sometimes (2) ☐ No (0)
- Do you complain a great deal about your tinnitus? ☐ Yes (4) ☐ Sometimes (2) ☐ No (0)
- Because of your tinnitus, do you have trouble falling to sleep at night? ☐ Yes (4) ☐ Sometimes (2) ☐ No (0)
- Do you feel as though you cannot escape your tinnitus? ☐ Yes (4) ☐ Sometimes (2) ☐ No (0)
- Does your tinnitus interfere with your ability to enjoy your social activities (such as going out to dinner, to the movies)? ☐ Yes (4) ☐ Sometimes (2) ☐ No (0)
- Because of your tinnitus, do you feel frustrated? ☐ Yes (4) ☐ Sometimes (2) ☐ No (0)
- Because of your tinnitus, do you feel that you have a terrible disease? ☐ Yes (4) ☐ Sometimes (2) ☐ No (0)
- Does your tinnitus make it difficult for you to enjoy life? ☐ Yes (4) ☐ Sometimes (2) ☐ No (0)
- Does your tinnitus interfere with your job or your household responsibilities? ☐ Yes (4) ☐ Sometimes (2) ☐ No (0)
- Because of your tinnitus, do you find that you are often irritable? ☐ Yes (4) ☐ Sometimes (2) ☐ No (0)
- Because of your tinnitus, is it difficult for you to read? ☐ Yes (4) ☐ Sometimes (2) ☐ No (0)
- Does your tinnitus make you upset? ☐ Yes (4) ☐ Sometimes (2) ☐ No (0)
- Do you feel that your tinnitus problem has placed stress on your relationships with members of your family and friends? ☐ Yes (4) ☐ Sometimes (2) ☐ No (0)
- Do you find it difficult to focus your attention away from your tinnitus and on other things? ☐ Yes (4) ☐ Sometimes (2) ☐ No (0)
- Do you feel that you have no control over your tinnitus? ☐ Yes (4) ☐ Sometimes (2) ☐ No (0)
- Because of your tinnitus, do you feel tired? ☐ Yes (4) ☐ Sometimes (2) ☐ No (0)

Then, you can save the form if you didn't finish or submit the form if you already finished (No fields are left blank)

4. Does your tinnitus make you feel confused? ☐ Yes (4) ☐ Sometimes (2) ☒ No (0)

5. Because of your tinnitus, do you feel desperate? ☐ Yes (4) ☒ Sometimes (2) ☐ No (0)

6. Do you complain a great deal about your tinnitus? ☒ Yes (4) ☐ Sometimes (2) ☐ No (0)

7. Because of your tinnitus, do you have trouble falling to sleep at night? ☐ Yes (4) ☒ Sometimes (2) ☐ No (0)

8. Do you feel as though you cannot escape your tinnitus? ☐ Yes (4) ☐ Sometimes (2) ☒ No (0)

9. Does your tinnitus interfere with your ability to enjoy your social activities (such as going out to dinner, to the movies)? ☐ Yes (4) ☐ Sometimes (2) ☒ No (0)

10. Because of your tinnitus, do you feel frustrated? ☐ Yes (4) ☒ Sometimes (2) ☐ No (0)

11. Because of your tinnitus, do you feel that you have a terrible disease? ☐ Yes (4) ☒ Sometimes (2) ☐ No (0)

12. Does your tinnitus make it difficult for you to enjoy life? ☐ Yes (4) ☐ Sometimes (2) ☒ No (0)

13. Does your tinnitus interfere with your job or your household responsibilities? ☐ Yes (4) ☒ Sometimes (2) ☐ No (0)

14. Because of your tinnitus, do you find that you... ☐ Yes (4) ☐ Sometimes (2) ☒ No (0)

15. Because of your tinnitus, is it difficult for you... ☐ Yes (4) ☒ Sometimes (2) ☐ No (0)

16. Does your tinnitus make you upset? ☐ Yes (4) ☐ Sometimes (2) ☒ No (0)

17. Do you feel that your tinnitus problem has... with members of your family and friends? ☐ Yes (4) ☒ Sometimes (2) ☐ No (0)

18. Do you find it difficult to focus your attention on other things? ☐ Yes (4) ☐ Sometimes (2) ☒ No (0)

19. Do you feel that you have no control over your tinnitus? ☐ Yes (4) ☒ Sometimes (2) ☐ No (0)

20. Because of your tinnitus, do you feel tired? ☐ Yes (4) ☐ Sometimes (2) ☒ No (0)

21. Because of your tinnitus, do you feel depressed? ☐ Yes (4) ☒ Sometimes (2) ☐ No (0)

22. Does your tinnitus make you feel anxious? ☐ Yes (4) ☐ Sometimes (2) ☒ No (0)

23. Do you feel that you can no longer cope with your tinnitus? ☐ Yes (4) ☒ Sometimes (2) ☐ No (0)

24. Does your tinnitus get worse when you are under stress? ☐ Yes (4) ☐ Sometimes (2) ☒ No (0)

25. Does your tinnitus make you feel insecure? ☐ Yes (4) ☒ Sometimes (2) ☐ No (0)

The sum of all responses is your THI Score >>> 32

0-16: Slight or no handicap (Grade 1)
 18-36: Mild handicap (Grade 2)
 38-56: Moderate handicap (Grade 3)
 58-76: Severe handicap (Grade 4)
 78-100: Catastrophic handicap (Grade 5)

d) TFI Form

Repeat the same step to fill out the TFI form

TINNITUS FUNCTIONAL INDEX

Today's Date Your Name

Month / Day / Year *Please Print*

Please read each question below carefully. To answer a question, select *ONE* of the numbers that is listed for that question, and *CLICK* on it.

I | Over the PAST WEEK...

- What percentage of your time awake were you consciously **AWARE** OF your tinnitus?
 Never aware ► ◀ Always aware
- How **STRONG** or **LOUD** was your tinnitus?
 Not at all strong or loud ► ◀ Extremely strong or loud
- What percentage of your time awake were you **ANNOYED** by your tinnitus?
 None of the time ► ◀ All of the time

SC | Over the PAST WEEK...

- Did you feel **IN CONTROL** in regard to your tinnitus?
 Very much in control ► ◀ Never in control
- How easy was it for you to **COPE** with your tinnitus?
 Very easy to cope ► ◀ Impossible to cope
- How easy was it for you to **IGNORE** your tinnitus?
 Very easy to ignore ► ◀ Impossible to ignore

C | Over the PAST WEEK...


- Your ability to **CONCENTRATE** ?
 Did not interfere ► ◀ Completely interfered
- Your ability to **THINK CLEARLY** ?
 Did not interfere ► ◀ Completely interfered
- Your ability to **FOCUS ATTENTION** on other things besides your tinnitus?
 Did not interfere ► ◀ Completely interfered

SL | Over the PAST WEEK...

Click Submit

Q Over the PAST WEEK, how much has your tinnitus interfered with...	Did not interfere ▼	Completely interfered ▼
19. Your enjoyment of SOCIAL ACTIVITIES ?	0 1 2 3 4 5 6 7 8 9 10	
20. Your ENJOYMENT OF LIFE ?	0 1 2 3 4 5 6 7 8 9 10	
21. Your RELATIONSHIPS with family, friends and other people	0 1 2 3 4 5 6 7 8 9 10	
22. How often did your tinnitus cause you to have difficulty performing your WORK OR OTHER TASK , such as home maintenance, school work, or caring for children or others?	Never had difficulty ► 0 1 2 3 4 5 6 7 8 9 10 ◀ Always had difficulty	
E Over the PAST WEEK...		
23. How ANXIOUS or WORRIED	Not at all anxious or worried ► 0 1 2 3 4 5 6 7 8 9 10	Extremely anxious or worried
24. How BOTHERED or UPSET	Not at all bothered or upset ► 0 1 2 3 4 5 6 7 8 9 10	Extremely bothered or upset
25. How DEPRESSED were you	Not at all depressed ► 0 1 2 3 4 5 6 7 8 9 10	Extremely depressed

Message

 TFI form has been submitted.

Overall TFI Score: 82

I (Intrusive): 93

SC (Sense Of Control): 70

C (Cognitive): 93

SL (Sleep): 93

A (Auditory): 90

R (Relaxation): 63

Q (Quality of life): 73

E (Emotional distress): Invalid: Skip more than 1 item in section E

OK

Now check MySQL Workbench to view all the database's updates

VISIT TABLE

Result Grid					
Filter Rows:		Search			
visit_id	visit_datetime	visit_date	visit_number	thc	
522	2019-11-25 16:20:38	11/25/2019	1	122	
523	2019-11-25 16:20:38	11/25/2019	1	123	
524	2019-11-25 16:20:38	11/25/2019	1	124	
525	2019-11-25 16:20:38	11/25/2019	1	125	
526	2019-11-25 16:20:56	11/25/2019	2	120	
527	2019-11-25 16:21:19	11/25/2019	2	121	
528	2019-11-25 17:16:29	11/25/2019	3	120	
NULL	NULL	NULL	NULL	NULL	

THI TABLE

Result Grid				Filter Rows:		Search		Edit:		Export/Import:																				
thi_id	f1	f2	e3	f4	c5	e6	f7	c8	f9	e10	c11	f12	f13	e14	f15	e16	e17	f18	c19	f20	e21	e22	c23	f24	e25	f_score	e_score	c_score	total_score	visit_id
100	4	2	0	0	2	4	2	0	0	2	2	0	2	0	2	0	2	0	2	0	2	0	2	0	2	12	12	8	32	528

TFI TABLE

Result Grid																														Filter Rows:		Q Search		Edit:		Export/Import:			
tft_id	i1	i2	i3	sc4	sc5	sc6	c7	c8	c9	sl10	sl11	sl12	a13	a14	a15	r16	r17	r18	q19	q20	q21	q22	e23	e24	e25	l_score	sc_score	c_score	sl_score	a_score									
50	10	6	5	5	6	9	10	7	10	8	10	9	10	8	10	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	70	66	90	90	93										
51	10	9	9	6	8	7	10	8	10	10	8	10	10	7	10	10	5	4	7	7	8	NULL	NULL	NULL	93	70	93	93	90										
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL									

VI. CONTRIBUTIONS

- Duy Le: GUI design (Java Swing), Database design and Technical Report
- Ivan Hernandez: Data Modeling (Relational Model, Sql script), Database design, Technical Report
- Theron: Technical Report and Testing

OUR GITHUB LINK: <https://github.com/leduy10192/CS157A-team2-topic3>