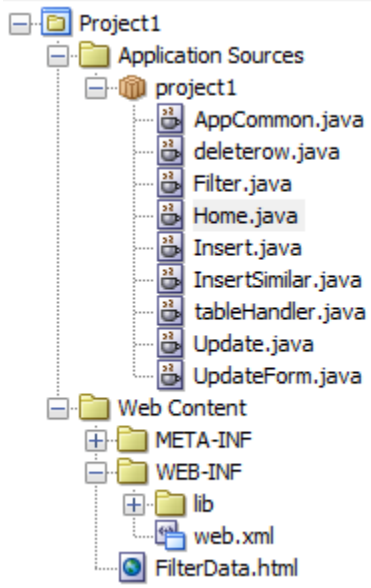
Databases Report

By Noman Noor | Album number: 302343 Signed on 2020-05-12

Description of the program:

The program is made up of 9 .java files and a HTML file.



Following are brief explanations of the purpose and implementation of each of these files.

AppCommon.java: *(helper class)*

Borrowed from the sample application (from labs), and the class AppCommon has methods defined for establishing connection and parsing data types from strings. I have modified it to remove the part for Oracle because we are only going to use SQL Studio.

tableHandler.java: *(helper class)*

Made a class tableHandler which has methods for printing tables (differently depending on if you want to print the whole table or just a part of it) including actions. It also has a method for returning the greatest IMSI so that we can recommend to the user a number greater than the current maximum IMSI which is guaranteed to not induce a primarykey clash.

Home.java: Uses PrintWriter to write an HTML page where the whole table is printed alongside actions. Every other servlet and HTML page has links back to this.

FilterData.html:

It is the form used to send data to the Filter (http servlet) via GET. There's a hyperlink provided with sample data for the filtering process so data doesn't need to be entered to test it.

Filter.java:

It generates and sends a (select * where _condition_) SQL query to SQLServer with the required conditions and the resulting set is then printed. Do note that this servlet prints a whole HTML page.

InsertSimilar.java:

It prints out a form with pre-entered values provided to it in form of a GET (using hyperlinks), which can then be edited (it recommends a new primary key using the getmaximsi method). Upon clicking submit, the servlet submits the data to Insert.java (in the form of a get).

Insert.java:

It generates a prepared statement (insert into … values…..), using values provided via GET, which is sent to SQLServer and creates the required record. After this, a select statement is sent to the SQLServer to get the newly created record which is then printed using the method defined in tableHandler.java.

Note that there is special protection against null values for nullable fields (uses setNull if required when checked using method .equals("null")) in this file and extra care has been taken to ensure that the datatypes align with what is required (e.g. setDouble for money, etc).

UpdateForm.java:

It prints out an html form with pre-entered values provided to it in the form of a GET (using hyperlinks), which can then be edited (it recommends a new primary key using the getmaximsi method). Upon clicking submit, the data is sent to Update.java (in the form of a get).

(Notice that IMSI can be changed due to a hidden input form which holds the current IMSI as PrvsIMSI.)

Update.java:

It generates a prepared statement (UPDATE … SET……..WHERE……), using values provided via GET, which is sent to SQLServer which then ends up updating the record. After this, a select statement is sent to the SQLServer to get the newly modified record which is then printed using the method defined in tableHandler.java.

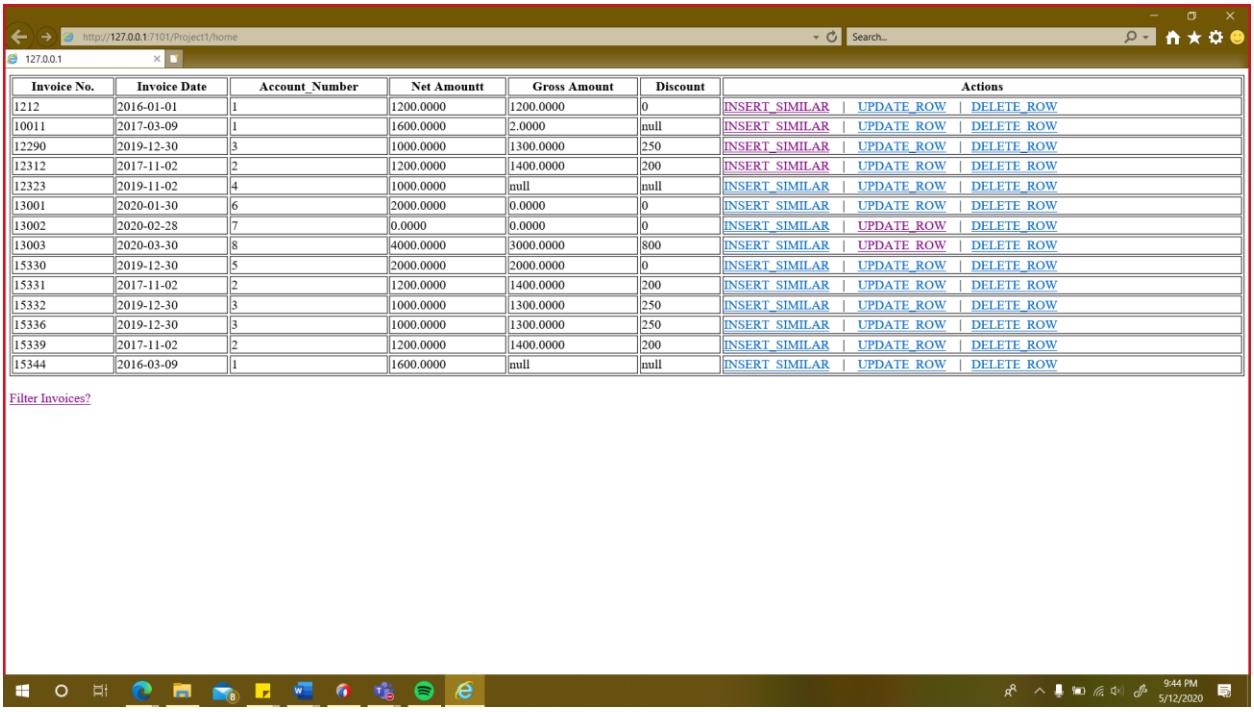
Note that there is special protection against null values for nullable fields (uses setNull if required when checked using method .equals("null")) in this file and extra care has been taken to ensure that the datatypes align with what is required (e.g. setDouble for money, etc).

deleterow.java:

Uses value (of IMSI, which is primary key) provided via GET (using hyperlinks) to make a prepared statement of the form (delete … where ….) as required, which is then sent to SQLServer. This deletes the row and confirmation is printed.

Sample Usage/Data flow:

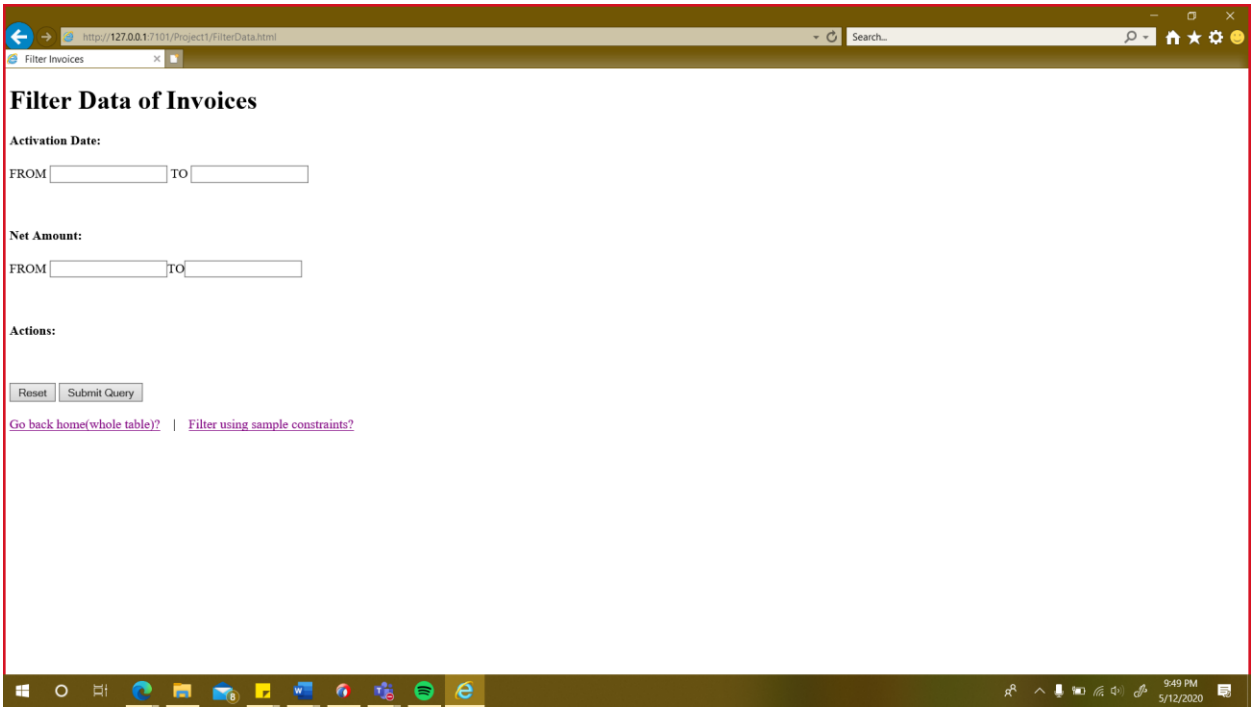
HOME: (run by default)



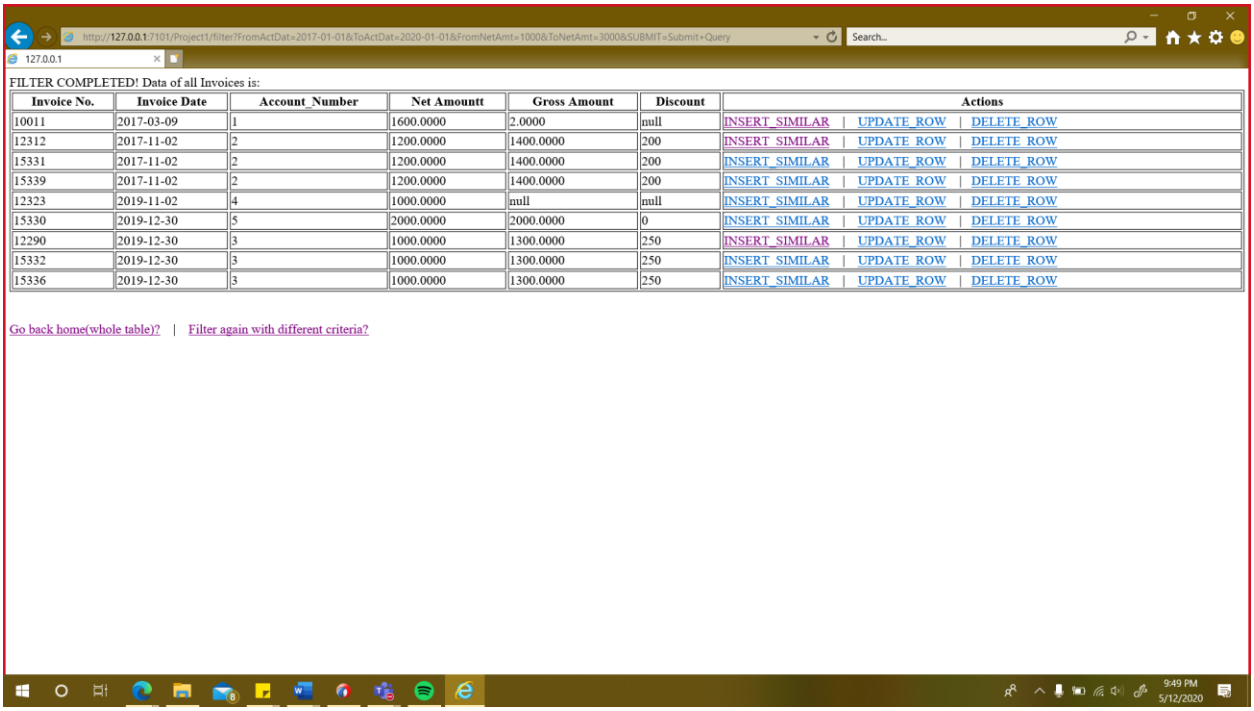
Invoice No.	Invoice Date	Account_Number	Net Amountt	Gross Amount	Discount	Actions
1212	2016-01-01	1	1200.0000	1200.0000	0	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
10011	2017-03-09	1	1600.0000	2.0000	null	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
12290	2019-12-30	3	1000.0000	1300.0000	250	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
12312	2017-11-02	2	1200.0000	1400.0000	200	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
12323	2019-11-02	4	1000.0000	null	null	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
13001	2020-01-30	6	2000.0000	0.0000	0	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
13002	2020-02-28	7	0.0000	0.0000	0	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
13003	2020-03-30	8	4000.0000	3000.0000	800	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15330	2019-12-30	5	2000.0000	2000.0000	0	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15331	2017-11-02	2	1200.0000	1400.0000	200	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15332	2019-12-30	3	1000.0000	1300.0000	250	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15336	2019-12-30	3	1000.0000	1300.0000	250	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15339	2017-11-02	2	1200.0000	1400.0000	200	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15344	2016-03-09	1	1600.0000	null	null	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW

Filter Invoices?

CLICKING ON FILTER:

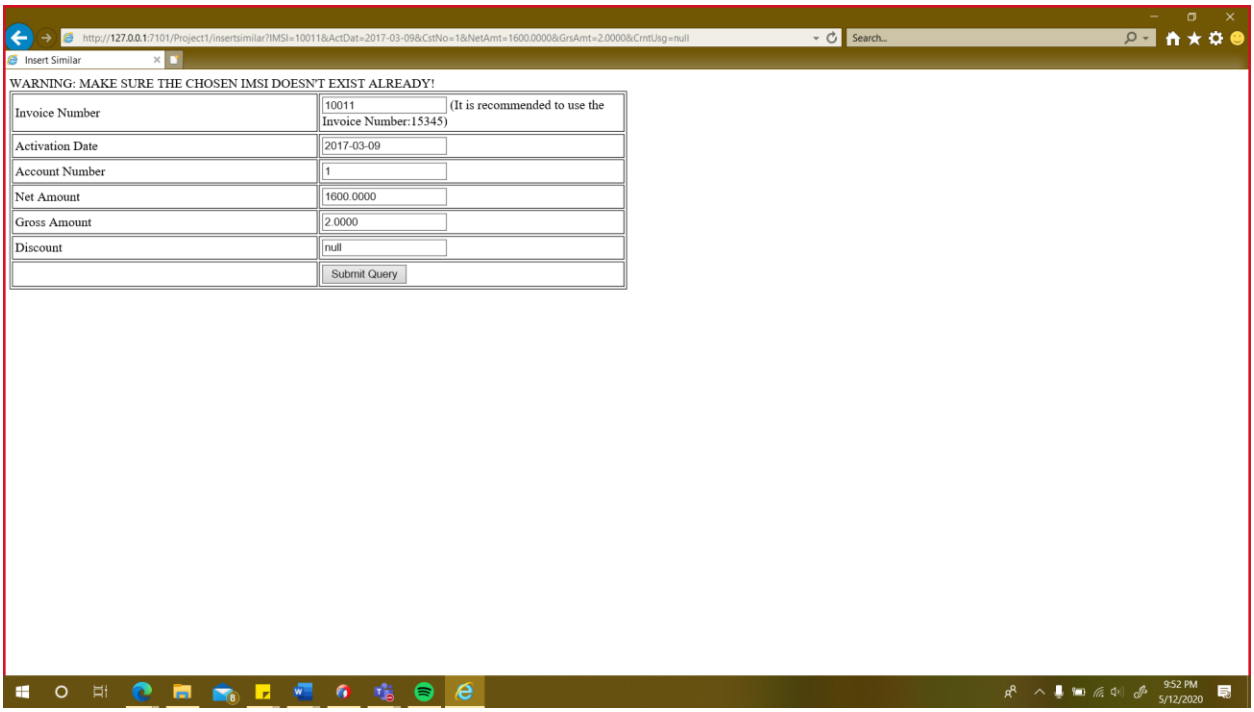


Using sample data, we get:



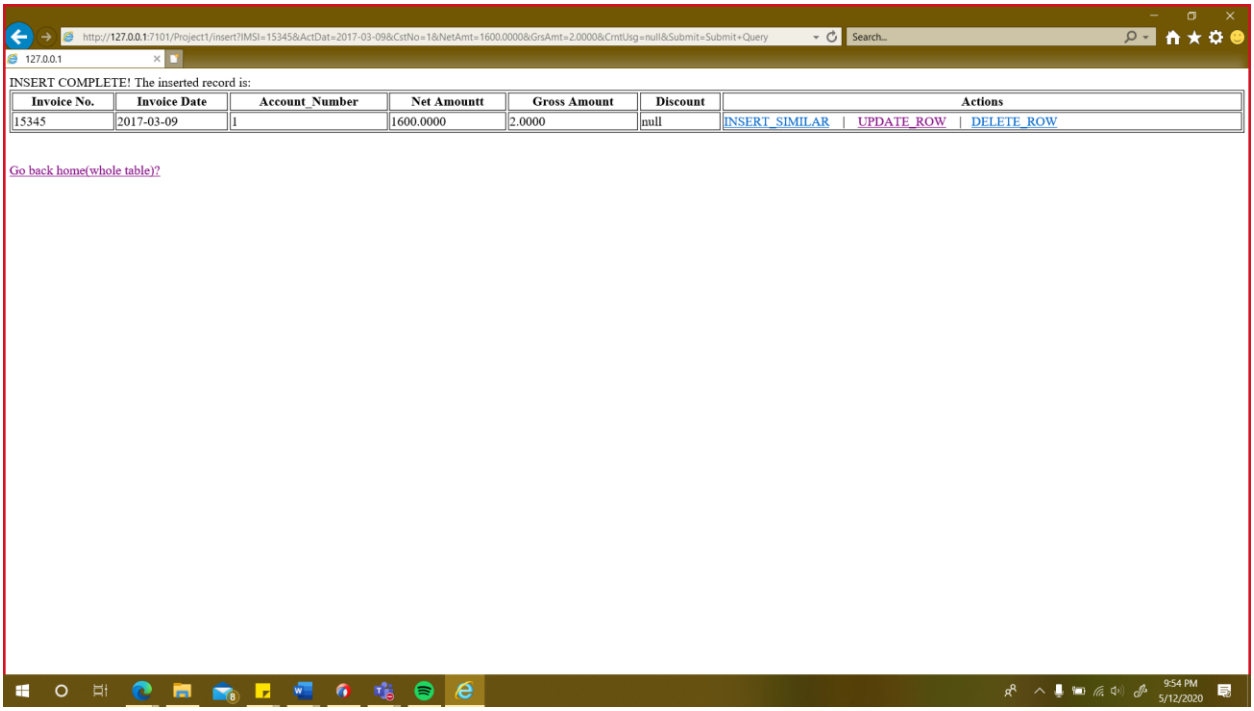
INSERTING VALUES:

Let us insert a record similar to the first one from the above image (filtered data), we get:

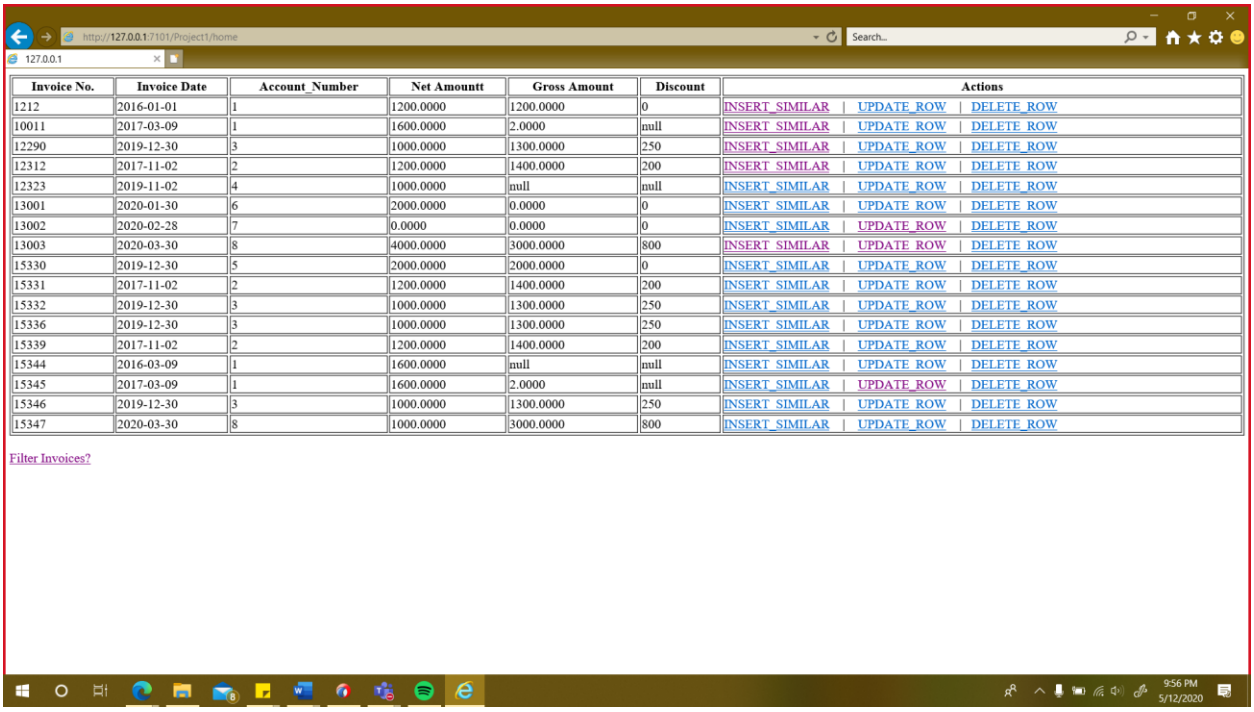


(note that an unused Invoice number is always suggested (here 15345) to avoid PKey clash).

Submitting with the suggested Invoice number, we get:



Similarly, let us insert two other rows to get the following table:

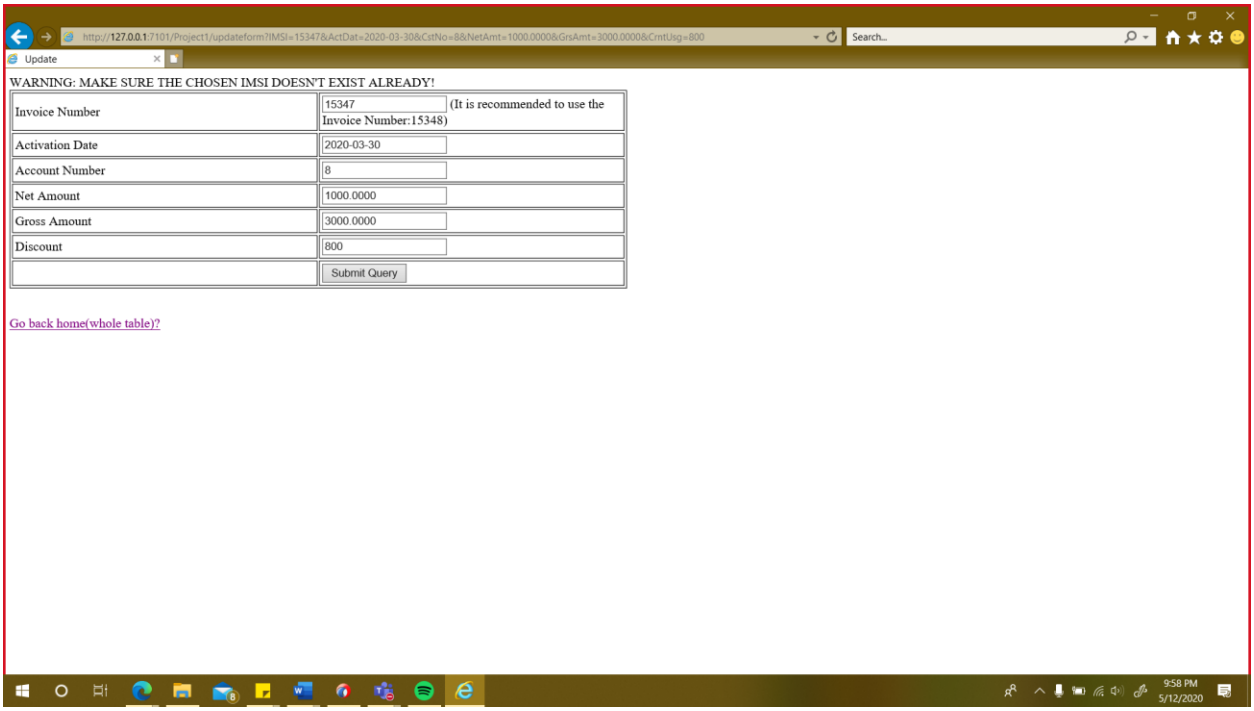


Invoice No.	Invoice Date	Account_Number	Net Amountt	Gross Amount	Discount	Actions
1212	2016-01-01	1	1200.0000	1200.0000	0	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
10011	2017-03-09	1	1600.0000	2.0000	null	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
12290	2019-12-30	3	1000.0000	1300.0000	250	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
12312	2017-11-02	2	1200.0000	1400.0000	200	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
12323	2019-11-02	4	1000.0000	null	null	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
13001	2020-01-30	6	2000.0000	0.0000	0	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
13002	2020-02-28	7	0.0000	0.0000	0	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
13003	2020-03-30	8	4000.0000	3000.0000	800	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15330	2019-12-30	5	2000.0000	2000.0000	0	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15331	2017-11-02	2	1200.0000	1400.0000	200	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15332	2019-12-30	3	1000.0000	1300.0000	250	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15336	2019-12-30	3	1000.0000	1300.0000	250	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15339	2017-11-02	2	1200.0000	1400.0000	200	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15344	2016-03-09	1	1600.0000	null	null	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15345	2017-03-09	1	1600.0000	2.0000	null	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15346	2019-12-30	3	1000.0000	1300.0000	250	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15347	2020-03-30	8	1000.0000	3000.0000	800	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW

Filter Invoices?

UPDATING VALUES:

Updating the last record from above picture, we get:

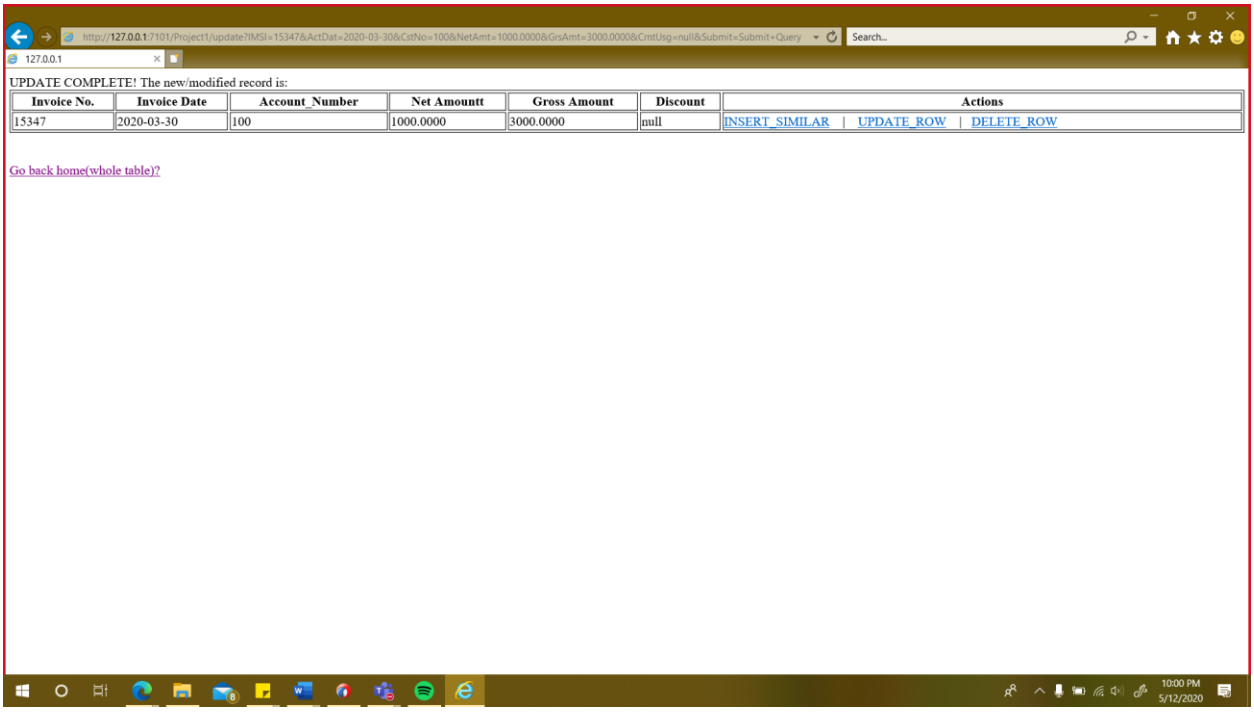


WARNING: MAKE SURE THE CHOSEN IMSI DOESN'T EXIST ALREADY!

Invoice Number	15347 (It is recommended to use the Invoice Number:15348)
Activation Date	2020-03-30
Account Number	8
Net Amount	1000.0000
Gross Amount	3000.0000
Discount	800
	Submit Query

Go back home(whole table)?

Changing customer number to 100 and discount to null, we get:

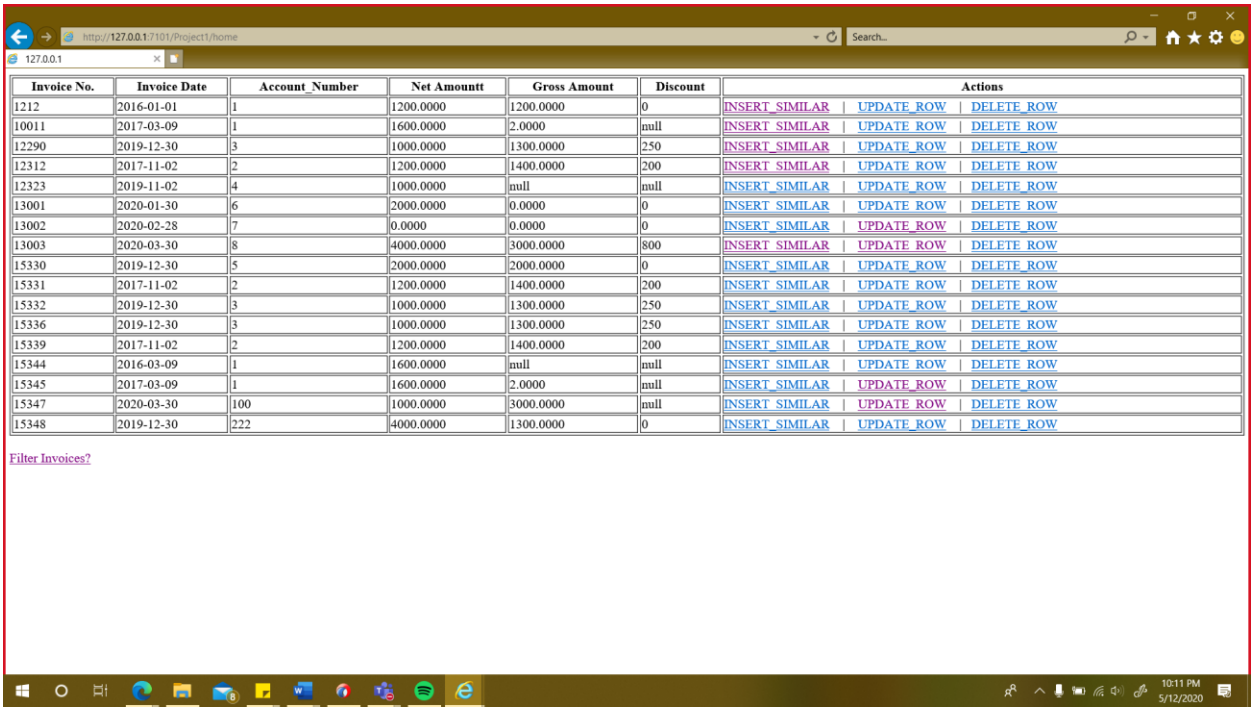


UPDATE COMPLETE! The new/modified record is:

Invoice No.	Invoice Date	Account_Number	Net Amountt	Gross Amount	Discount	Actions
15347	2020-03-30	100	1000.0000	3000.0000	null	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW

Go back home(whole table)?

After updating the second last and third last records, we get:



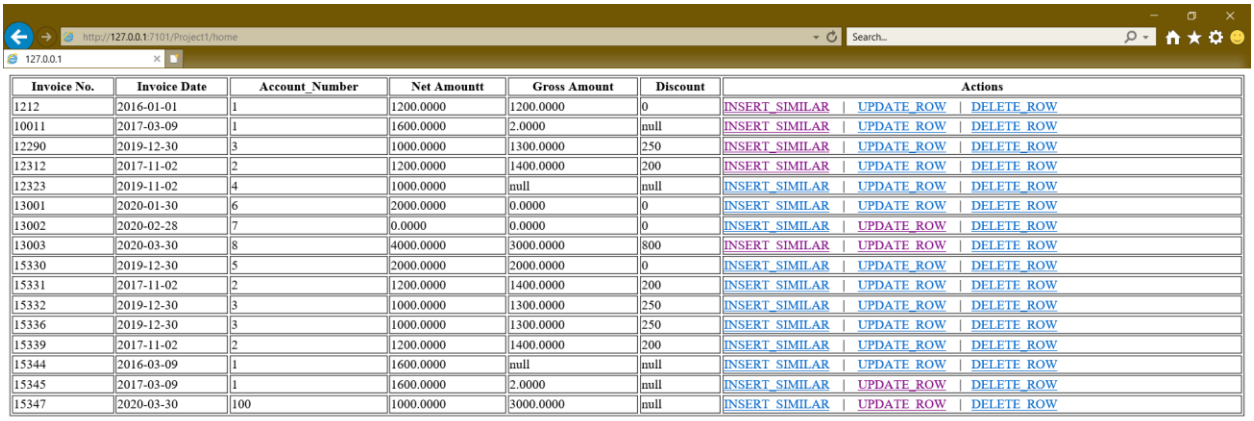
Invoice No.	Invoice Date	Account_Number	Net Amountt	Gross Amount	Discount	Actions
1212	2016-01-01	1	1200.0000	1200.0000	0	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
10011	2017-03-09	1	1600.0000	2.0000	null	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
12290	2019-12-30	3	1000.0000	1300.0000	250	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
12312	2017-11-02	2	1200.0000	1400.0000	200	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
12323	2019-11-02	4	1000.0000	null	null	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
13001	2020-01-30	6	2000.0000	0.0000	0	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
13002	2020-02-28	7	0.0000	0.0000	0	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
13003	2020-03-30	8	4000.0000	3000.0000	800	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15330	2019-12-30	5	2000.0000	2000.0000	0	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15331	2017-11-02	2	1200.0000	1400.0000	200	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15332	2019-12-30	3	1000.0000	1300.0000	250	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15336	2019-12-30	3	1000.0000	1300.0000	250	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15339	2017-11-02	2	1200.0000	1400.0000	200	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15344	2016-03-09	1	1600.0000	null	null	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15345	2017-03-09	1	1600.0000	2.0000	null	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15347	2020-03-30	100	1000.0000	3000.0000	null	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15348	2019-12-30	222	4000.0000	1300.0000	0	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW

Filter Invoices?

(Notice that IMSI can be changed due to a hidden input form which holds the current IMSI as PrvsIMSI.)

DELETING VALUES:

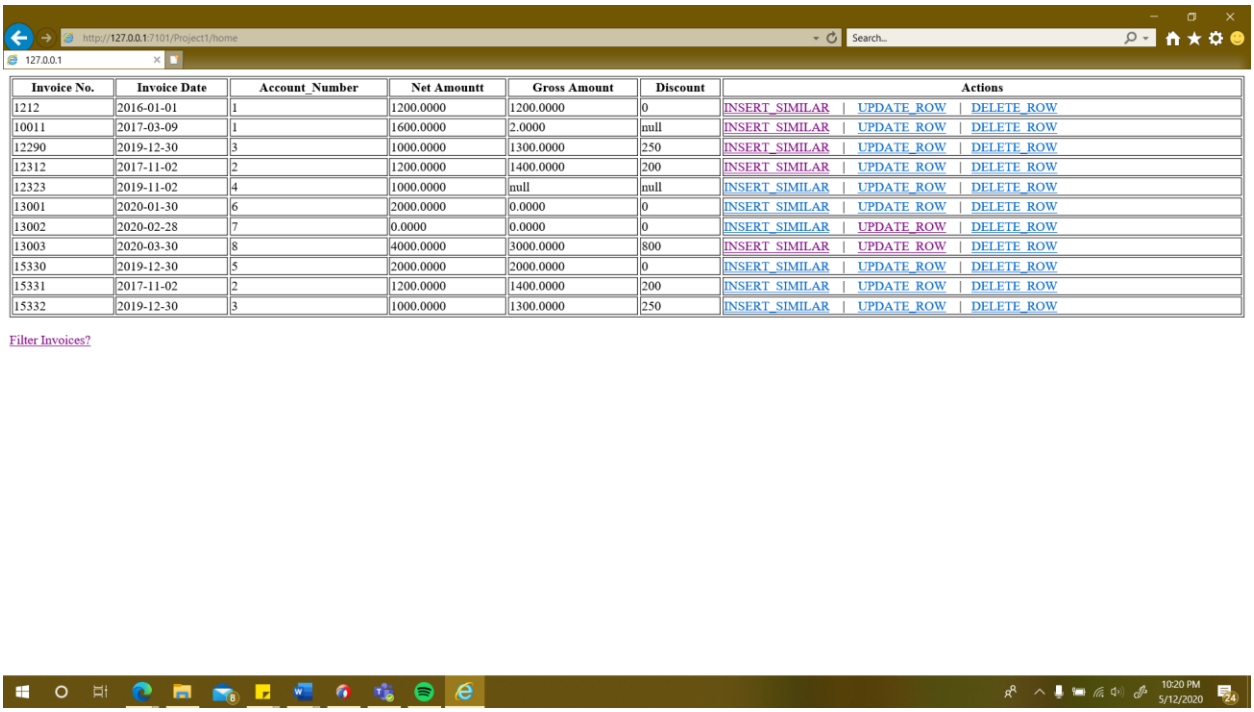
Deleting the last record (newly inserted):



Invoice No.	Invoice Date	Account_Number	Net Amountt	Gross Amount	Discount	Actions
1212	2016-01-01	1	1200.0000	1200.0000	0	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
10011	2017-03-09	1	1600.0000	2.0000	null	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
12290	2019-12-30	3	1000.0000	1300.0000	250	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
12312	2017-11-02	2	1200.0000	1400.0000	200	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
12323	2019-11-02	4	1000.0000	null	null	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
13001	2020-01-30	6	2000.0000	0.0000	0	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
13002	2020-02-28	7	0.0000	0.0000	0	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
13003	2020-03-30	8	4000.0000	3000.0000	800	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15330	2019-12-30	5	2000.0000	2000.0000	0	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15331	2017-11-02	2	1200.0000	1400.0000	200	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15332	2019-12-30	3	1000.0000	1300.0000	250	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15336	2019-12-30	3	1000.0000	1300.0000	250	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15339	2017-11-02	2	1200.0000	1400.0000	200	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15344	2016-03-09	1	1600.0000	null	null	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15345	2017-03-09	1	1600.0000	2.0000	null	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15347	2020-03-30	100	1000.0000	3000.0000	null	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW

Filter Invoices?

Now, deleting the last 5 rows of the remaining records(last 2 of them are newly inserted and the rest were already there), we get:



Invoice No.	Invoice Date	Account_Number	Net Amountt	Gross Amount	Discount	Actions
1212	2016-01-01	1	1200.0000	1200.0000	0	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
10011	2017-03-09	1	1600.0000	2.0000	null	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
12290	2019-12-30	3	1000.0000	1300.0000	250	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
12312	2017-11-02	2	1200.0000	1400.0000	200	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
12323	2019-11-02	4	1000.0000	null	null	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
13001	2020-01-30	6	2000.0000	0.0000	0	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
13002	2020-02-28	7	0.0000	0.0000	0	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
13003	2020-03-30	8	4000.0000	3000.0000	800	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15330	2019-12-30	5	2000.0000	2000.0000	0	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15331	2017-11-02	2	1200.0000	1400.0000	200	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW
15332	2019-12-30	3	1000.0000	1300.0000	250	INSERT_SIMILAR | UPDATE_ROW | DELETE_ROW

Filter Invoices?

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CONCLUSION:

Thus, we can conclude that the simulated data flow was successful, and the project is hence functioning as intended and required. I have made a great number of tweaks to enable ease of use, safety, and functionality, as have been brought to attention by notes previously, and hope that it is visible from the project.

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'***I certify that this assignment is entirely my own work, performed independently and without any help from sources which are not allowed.***'

(Signed by Noman Noor)

NOMAN NOOR

2020-05-12