

BINGHAMTON UNIVERSITY

STATE UNIVERSITY OF NEW YORK

CS-595-10 Termination Project Report

Restaurant Review Prototype

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1. Introduction

1.1 Overview

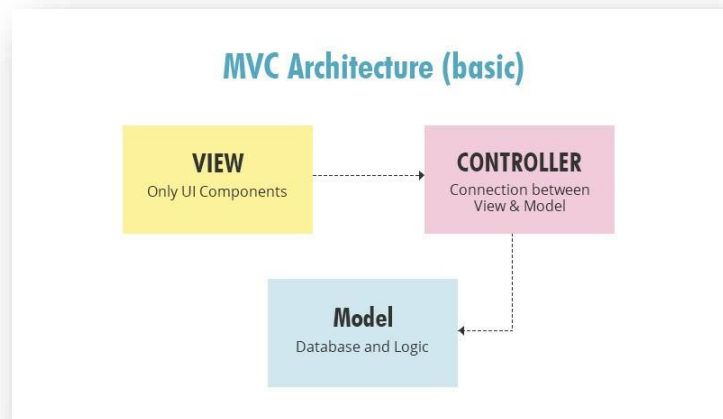
- This report demonstrates functioning of Restaurant review prototype. An efficient Web application which is developed for day to day use with the motive to solve a common problem of each person about which restaurant is good and what items to eat there based on review system.
- This web application tells user about the list of restaurants available in his area and the user can visit the restaurant page. There he can view the overall rating of the restaurant and reviews written by other customers about that restaurant.
- From this data user will be able to decide whether he wants to visit the restaurant or not.
- If he decides to visit, then what is the specialty of the restaurant. Which will greatly help the customer.
- Restaurant review prototype is a Full stack web application which has backend completely developed in Spring MVC, Spring Boot and frontend using jsp, HTML, ajax and JavaScript. It Uses database of MySQL.

1.2 Background and Motivation

- The Motivation of developing a web application came from learning and keeping up with the latest trends in the market. I have previously worked as web application developer and I find web development as a challenging and fascinating task
- This App involves making, a single page application (SPA) which is responsive and provides a simple and good UI which can be really handy to the food delivery vendors for their day-to-day business operations. I am trying to provide a seamless experience for the users of this application

I. Spring MVC -

- The Spring Framework is an application framework and inversion of control container for the Java platform. The framework's core features can be used by any Java application, but there are extensions for building web applications on top of the Java EE platform.



- *Code Consistency* - Spring framework is based on components, which begin in the same style. For instance, each component places the code in a component class or defines a

@Component decorator (metadata). These components are small interface elements independent of each other, and thus, offer you several benefits, including:

- *Reusability*
- *Simplified Unit testing*
- *Improved Reusability*
- *Ease of Maintenance*

II. Spring Boot

- Spring Boot is an open-source Java-based framework used to create a micro-Service. It is developed by Pivotal Team and is used to build stand-alone and production ready spring applications. This chapter will give you an introduction to Spring Boot and familiarizes you with its basic concepts.
- Spring Boot provides a good platform for Java developers to develop a stand-alone and production-grade spring application that you can just run. You can get started with minimum configurations without the need for an entire Spring configuration setup.
- Spring Boot offers the following advantages to its developers –
 - Easy to understand and develop spring applications
 - Increases productivity

III. Ajax

- Ajax is a set of web development techniques using many web technologies on the client-side to create asynchronous web applications. With Ajax, web applications can send and retrieve data from a server asynchronously without interfering with the display and behavior of the existing page

IV. SQL & Workbench

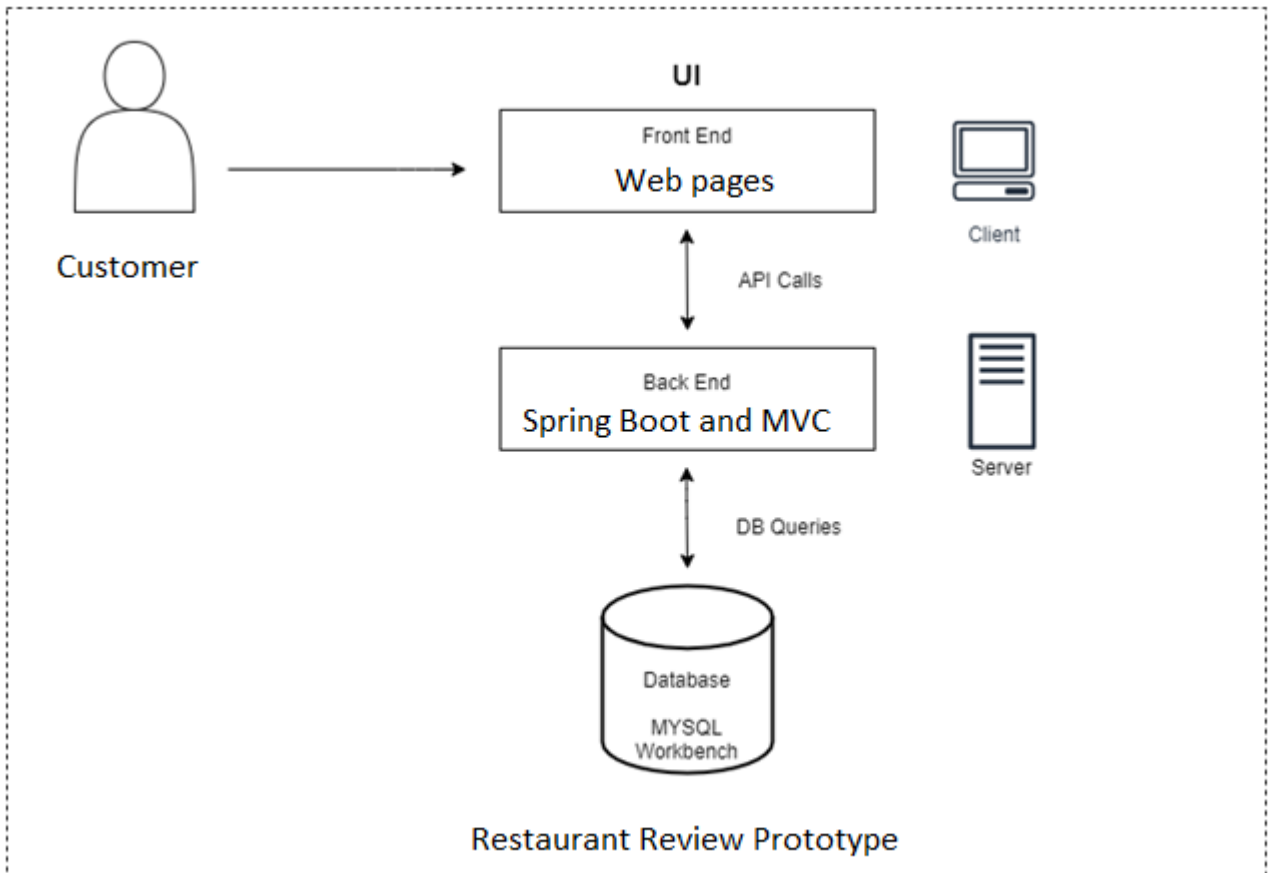
- *Faster Query Processing* - Large amount of data is retrieved quickly and efficiently. Operations like Insertion, deletion, manipulation of data is also done in almost no time.
- *Standardized Language* - Due to documentation and long establishment over years, it provides a uniform platform worldwide to all its users
- *Portable* - It can be used in programs in PCs, server, laptops independent of any platform (Operating System, etc.). Also, it can be embedded with other applications as per need/requirement/use.
- *Interactive Language* - Easy to learn and understand, answers to complex queries can be received in seconds also we can have multiple data views.
- MySQL Workbench is a visual database design tool that integrates SQL development, administration, database design, creation and maintenance into a single integrated development environment for the MySQL database system. It is the successor to DB Designer 4 from fabFORCE.net, and replaces the previous package of software, MySQL GUI Tools Bundle.

1.3 Project Scope

- This web application tells user about the list of restaurants available in his area and the user can visit the restaurant page. There he can view the overall rating of the restaurant and reviews written by other customers about that restaurant.
- From this data user will be able to decide whether he wants to visit the restaurant or not. If he decides to visit, then what is the specialty of the restaurant. Which will greatly help the customer.

2. Website Modules:

- The whole application was built in three modules
 - Front End – HTML, CSS, Ajax, JavaScript
 - Back End – Spring MVC and Spring Boot
 - Database – MYSQL Workbench

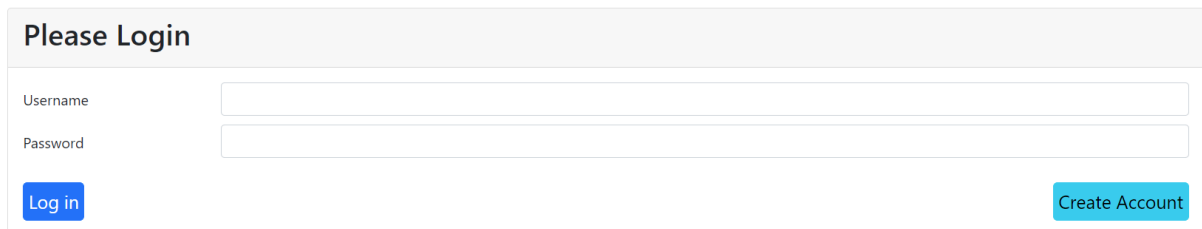


2.1 Front End

- The front end of the application is mainly built on HTML, CSS and JavaScript. Front end of the application has been divided into 2 components that is login and Dashboard which are defined using separate routes and the dashboard contains multiple components which are described later. In AngularJS, a Component is a special kind of directive that uses a simpler configuration which is suitable for a component-based application structure. This makes it easier to write an app in a way that's like using Web Components or using the new Angular's style of application architecture

Login Screen –

Login Screen is authenticated via Username and password. Firstly, user needs to register himself by clicking on create Account button.



The image shows a login form titled "Please Login". It contains two input fields: "Username" and "Password". Below the "Username" field is a blue "Log in" button. Below the "Password" field is a blue "Create Account" button.

Once user click on Create account button, User Creation web page will be featured. Where user has entered different details such as First his choice of username, password and Confirm password. Once user fill all the information, he needs to click on create account button. Name, Last Name,

Register For An Account

First Name:

Last Name :

User Name :

Password :

Confirm Password :

Back
Create Account

Once user click on create account button, a entry for the particular user is created on MySQL data base and encryption of password will happen.

Now with those credentials user can login to the system.

The screenshot shows the MySQL Workbench interface. On the left, the Navigator pane displays the 'restaurantsreviewapplication' database schema, including tables like 'authority', 'rating', 'restaurant_list', 'restaurantlist', 'review', 'users', 'sakila', 'sys', and 'world'. The 'users' table is selected, and its structure is shown in the 'Table: users' section:

```

Columns:
  id          bigint AI PK
  first_name  varchar(255)
  last_name   varchar(255)
  password    varchar(255)
  user_name   varchar(255)
  
```

The SQL Editor shows the query: `SELECT * FROM restaurantsreviewapplication.users;`. The Result Grid displays the following data:

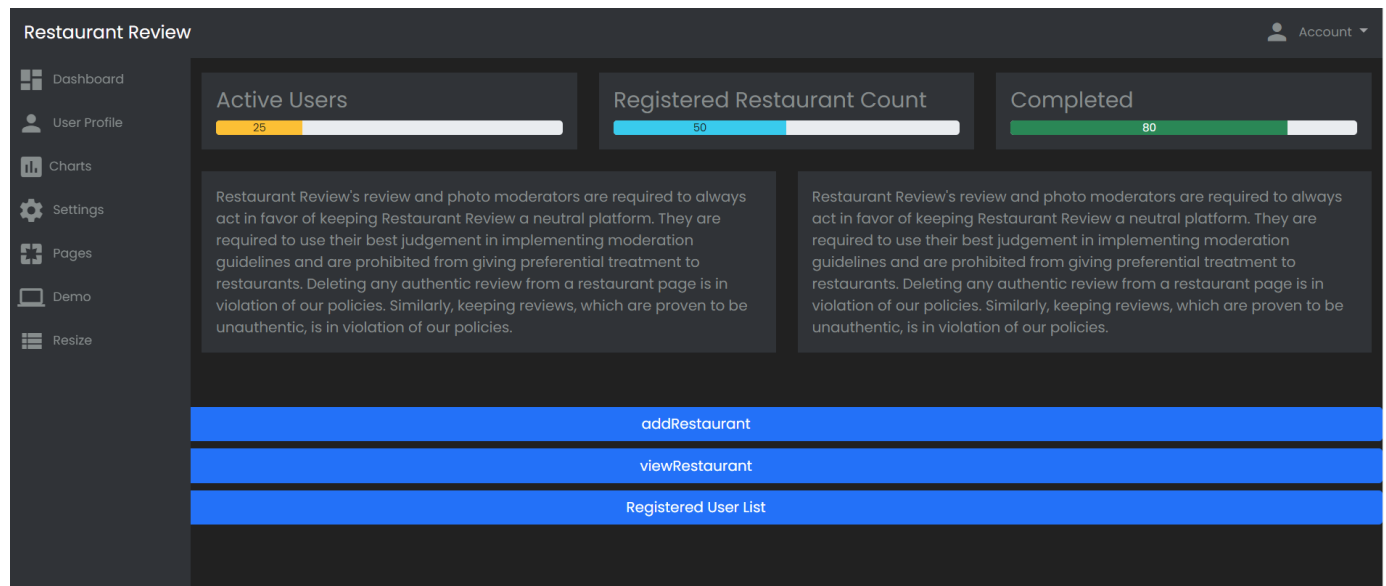
id	first_name	last_name	password	user_name
1	shrjeet	Rupnar	\$2a\$10\$0y0U8Y12r2PK3EpD.HxBh.B/5iHMDA.M...	shrjeet
2	mayur	khomne	\$2a\$10\$j/nPUnKvBWEvj5dc9R7Zt.M76SPGgizVl...	mayur
3			\$2a\$10\$t/YVTTDkD/8IYA38Q8syuV5IVTy4Allw...	
4	Abhay	Halikar	\$2a\$10\$yJOG7Br1Qfe93Fe5IqR.VA5krRzVJyIf...	abhayhalikar
5	chaitanya	kulkarni	\$2a\$10\$ZACp0tRf1pvHYbWx52x.9B/ukjQg7F...	chaitanya
6	Test777		\$2a\$10\$ms04.WpnzIV8T6fFzW.1OdqaQfOqqp2...	Test777

The bottom pane shows the 'Action Output' with the message: '1 13:54:04 SELECT * FROM restaurantsreviewapplication.users LIMIT 0, 1000 6 row(s) returned'.

Dashboard –

Dashboards consist of multiple options such as

- Active Users List
- Add Restaurant
- View Restaurant



Add Restaurant

Whenever a new restaurant wants to join the network, they can click on add restaurant tab.

The form is titled 'Register For a Restaurant'. It contains three input fields: 'Restaurant Name:', 'Restaurant Address:', and 'Restaurant Status:'. Below the 'Restaurant Status:' field, there are two buttons: a blue 'Back' button on the left and a blue 'Create a Restaurant' button on the right.

Here they can fill all the information related to their restaurant and click on create restaurant. A new restaurant will be automatically will get created.

View Restaurant List:

When a User click on view Restaurant button it will take him to Restaurant List page where he can view list of all the restaurant with their status.

Restaurant List

Id	Title	Address	Status
2	Moghul	4700 Vestal Pkwy E, Vestal, NY 13850	open
4	The Halal Guys	4700 Vestal Pkwy E, Vestal, NY 13850	open
5	Popeyes Louisiana Kitchen	164 Main St, Binghamton, NY 13905	open

Whenever any user clicks on the hyper link of restaurant name it will take them to the restaurant page of the particular restaurant. Where they can view all the reviews related to that restaurant.

Welcome to - Moghul Restaurant

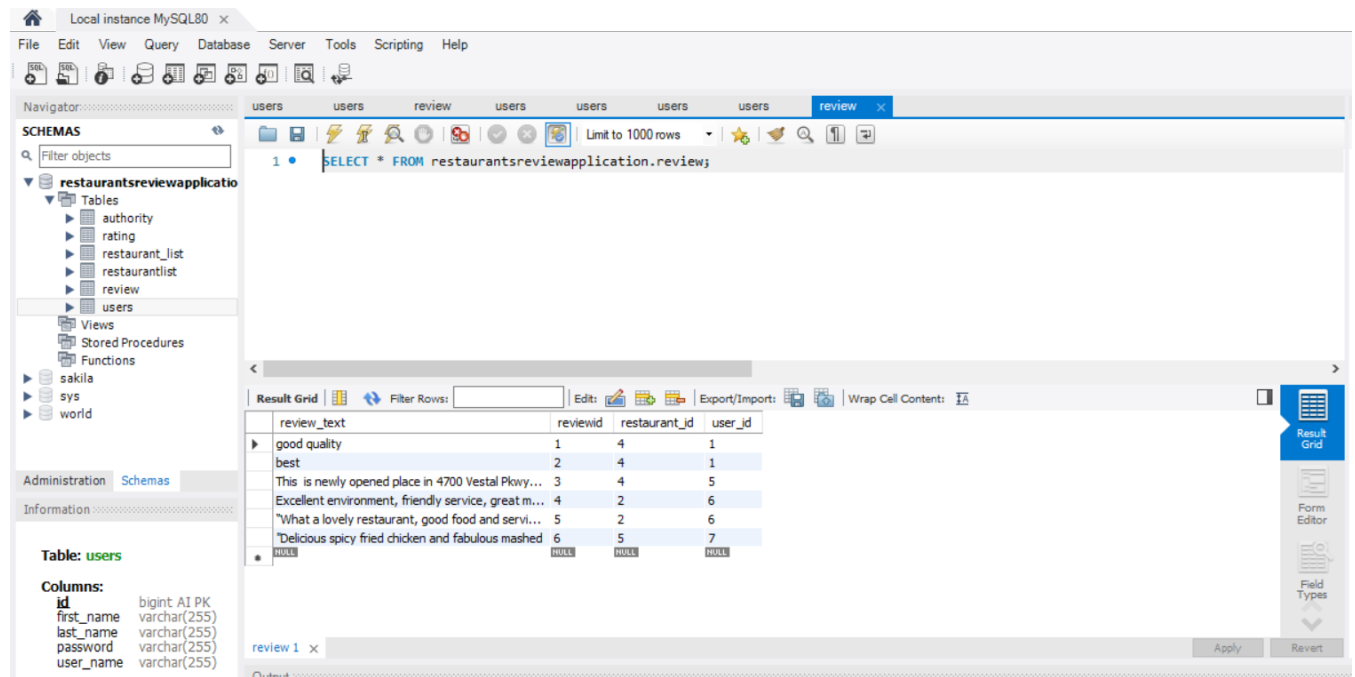
6
Excellent environment, friendly service, great menu choices and really decent food and at affordable prices. Will be back.

6
"What a lovely restaurant, good food and service and atmosphere, definitely hope to go back.

Also, there is a Box at the bottom where they can post their reviews if they want to.

Write your Review:	
Add A Review:	<input type="text"/>
<input type="button" value="Post"/>	

Once the user writes their review and click on the post button a review will be added to the database MySQL database table called review.



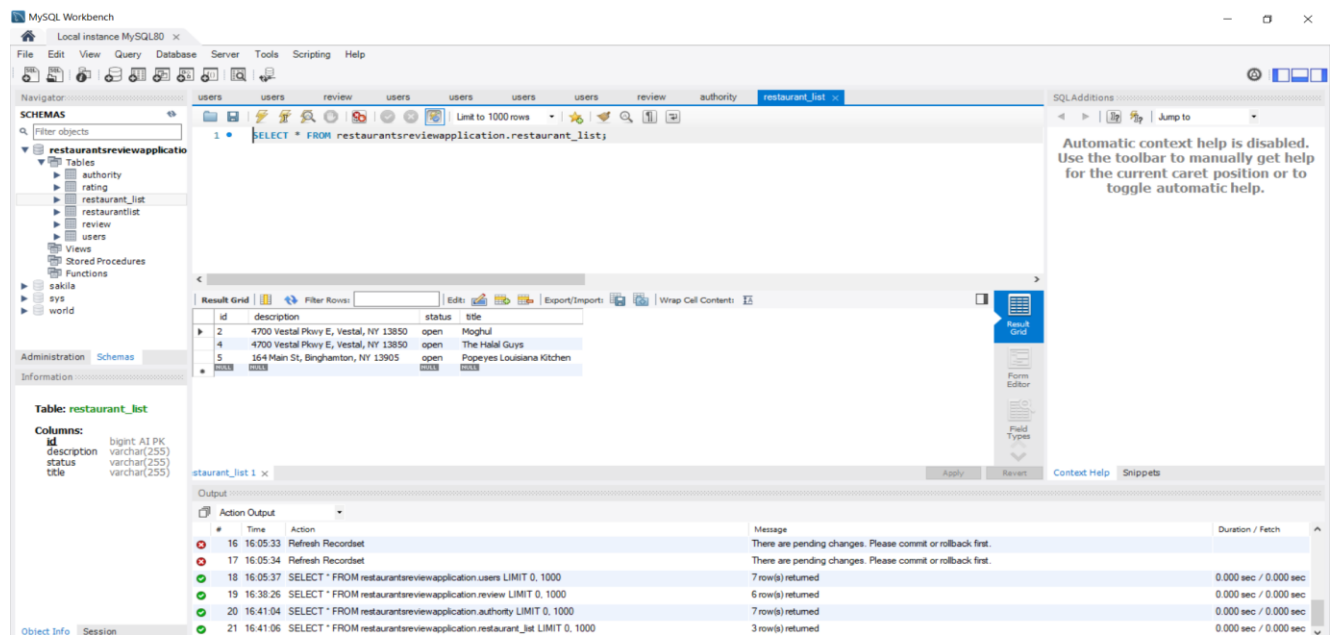
Backend:

The backend of this application uses Spring MVC and Spring Boot framework of java.

We connect to SQL workbench using Some queries in the node which is used as Database for this project.

Database:

The database I have used in this project is MYSQL with SQL Workbench which works as a GUI for the database. A relational database organizes data into one or more data tables in which data types may be related to each other; these relations help structure the data. SQL is a language programmer use to create, modify, and extract data from the relational database, as well as control user access to the database. In addition to relational databases and SQL, an RDBMS like MySQL works with an operating system to implement a relational database ina computer's storage system, manages users, allows for network access, and facilitates testing database integrity and creation of backups.



Sample DB Table.

The schema which is store in the database is stored in JSON format. JSON is an open standard file format, and data interchange format, that uses human- readable text to store and transmit data objects consisting of attribute–value pairs and array data types (or any other serializable value). It is a very common data format, with a diverse range of applications, such as serving as a replacement for XML in AJAX systems.

Screenshot of Database Schema.

MySQL Workbench

Local instance MySQL80 x

File Edit View Query Database Server Tools Scripting Help

Navigator: users users review users users users review authority restaurant_list authority x

SCHEMAS

Filter objects

▼ restaurantsreviewapplicatio

Tables

- authority
- rating
- restaurant_list
- restaurantlist
- review
- users

Views

Stored Procedures

Functions

Information

Table: authority

Columns:

- id bigint AI PK
- authority varchar(255)
- user_id bigint

1 • SELECT * FROM restaurantsreviewapplicatio.authority;

Result Grid

id	authority	user_id
1	ROLE_USER	1
2	ROLE_USER	2
3	ROLE_USER	3
4	ROLE_USER	4
5	ROLE_USER	5
6	ROLE_USER	6
7	ROLE_USER	7
*	NULL	NULL

authority 1 x

Apply Revert

MySQL Workbench

Local instance MySQL80 x

File Edit View Query Database Server Tools Scripting Help

Navigator: users users review users users users users review authority restaurant_list authority rating x

SCHEMAS

Filter objects

▼ restaurantsreviewapplicatio

Tables

- authority
- rating
- restaurant_list
- restaurantlist
- review
- users

Views

Stored Procedures

Functions

Information

Table: rating

Columns:

- rating float
- users_id bigint PK
- restaurant_list_id bigint PK

1 • SELECT * FROM restaurantsreviewapplicatio.rating;

Result Grid

rating	users_id	restaurant_list_id
*	NULL	NULL

rating 1 x

Apply Revert

MySQL Workbench

Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

Navigator: users review users users users users review authority restaurant_list authority rating restaurant_list

Limit to 1000 rows

1 • `SELECT * FROM restaurantsreviewapplication.restaurant_list;`

Table: restaurant_list

Columns:

- id: bigint AI PK
- description: varchar(255)
- status: varchar(255)
- title: varchar(255)

id	description	status	title
2	4700 Vestal Pkwy E, Vestal, NY 13850	open	Moghul
4	4700 Vestal Pkwy E, Vestal, NY 13850	open	The Halal Guys
5	164 Main St, Binghamton, NY 13905	open	Popeyes Louisiana Kitchen

Result Grid

Filter Rows:

Apply Revert

MySQL Workbench

Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

Navigator: users users users users review authority restaurant_list authority rating restaurant_list restaurantlist review

Limit to 1000 rows

1 • `SELECT * FROM restaurantsreviewapplication.review;`

Table: review

Columns:

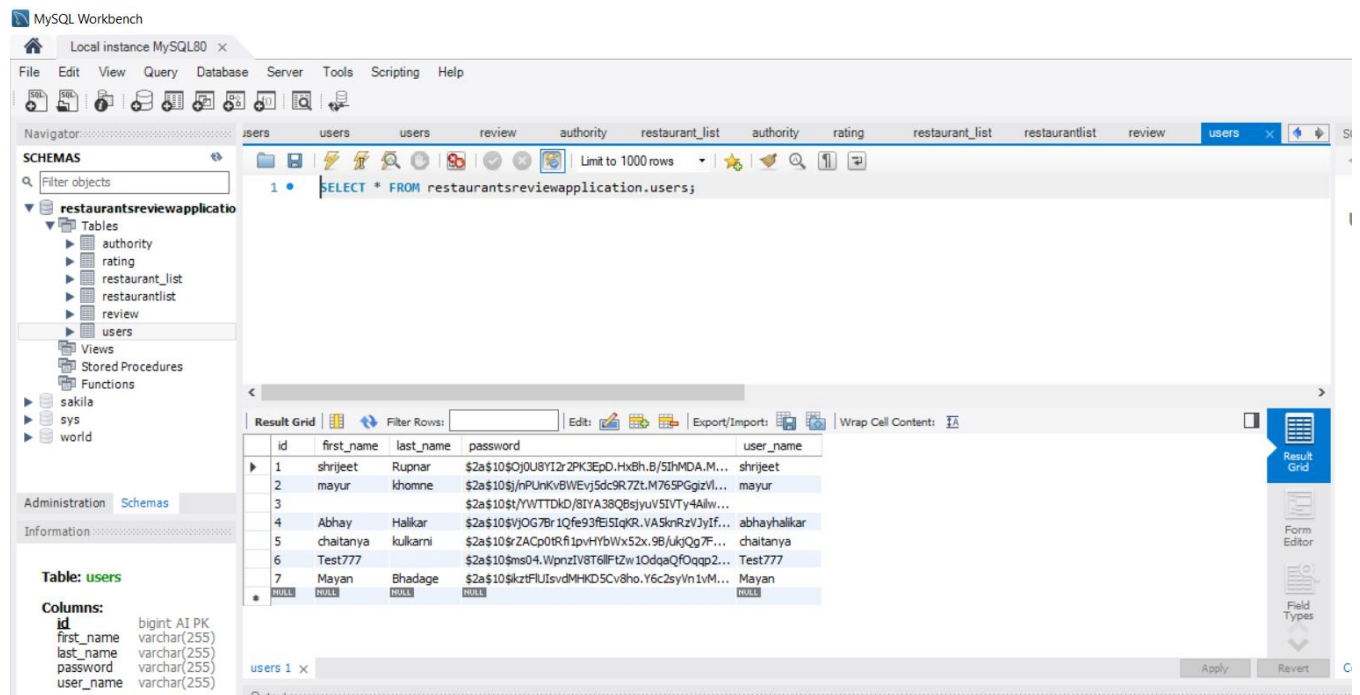
- review_text: varchar(255)
- reviewid: bigint AI PK
- restaurant_id: bigint
- user_id: bigint

review_text	reviewid	restaurant_id	user_id
good quality	1	4	1
best	2	4	1
This is newly opened place in 4700 Vestal Pkwy...	3	4	5
Excellent environment, friendly service, great m...	4	2	6
"What a lovely restaurant, good food and servi...	5	2	6
"Delicious spicy fried chicken and fabulous mashed	6	5	7

Result Grid

Filter Rows:

Apply Revert



Testing:

Application has been tested both via Black box and white box test methods. Each of the endpoints involved have been thoroughly tested using Postman. The application makes use of both GET, POST and PUT requests. Each of the endpoints were tested in Postman to see if the appropriate status response and payload were being sent or returned. Also, in addition to the API Testing I have manually Conducted the Unit test and the Module tests for this application.

Conclusion:

The main aim to develop this project was to gain knowledge and have exposure towards making a web application using the latest languages which are being used in the market. It certainly helped me in identifying the latest trends in the market and to work on something which can be broken down into various interconnected components and modules and integration of them into a single web application.

With introduction of database and Spring MVC, Spring Boot as a backend I was successfully able to develop a full stack application and got introduced to various testing methodologies. Also, I got a chance to use latest version of Spring in this application which will be helpful for me in future. This Web Application still has few bugs and modifications which can make it a useful application in day-to-day

life which I plan to integrate in the future.

Future Scope:

This system currently is developed for customers who are visiting any restaurant. I plan to further extend it to all kinds of groceries. Also, I want to integrate this system with single sign on. I plan to integrate various payment gateways in this system where users can order food online and my current target of the system is my home country in future, I plan to extend this as a whole food management system. I also plan to create different screen for different users (customers, Delivery people), since currently this app can only be accessed and used by vendors. Also, I plan to take a domain and deploy this application on web.

References:

1. <https://spring.io/guides/gs/spring-boot/>
2. <https://spring.io/guides/gs/serving-web-content/>
3. <https://www.mysql.com/>
4. <https://www.mysql.com/products/workbench/>
5. https://www.w3schools.com/css/css_howto.asp
6. https://en.wikipedia.org/wiki/MySQL_Workbench