

REPORT ON
STUDENT ACCOMMODATION WEB APPLICATION
INCREMENT 4

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INTRODUCTION

In the world of modern technology where the internet market has seen a revolution, Internet has been an epicenter for it. About 70% of the students' population use Internet. The project "Student Accommodation" web Application uses simple and effective design to help students find accommodations anywhere near their universities on the move. This application is given access to all the students in the university using their students ID's as a primary key. This application needs internet connection to search for places near the University for an Accommodation. All the places with vacancies near the university can be found along with a route map from the university to the desired location in search. Our aim is to help students find the accommodation that most suited to their needs as easily and as quickly as possible. We realize how essential it is to find the right student accommodation for a proper and decent academic life.

PROJECT OBJECTIVE

The objective of this application is to provide students with proper information about the available and convenient vacancies for accommodation. Also, provides the students with contact information about the available vacancies. Initially, a login registration form is granted. Students who wants to use the application can register. With the registration process, the student creates user name and password. These credentials are further used to login to the application. After a log in, students are provided with various features to search for the accommodation. Various search fields are provided with specific information such as ZIP code of the location, number of rooms required, preferred distance etc. The search result would be a list of vacancies that are available with in a specific location .Also, students are provided with additional information such as contact information, routing map from their current location to their desired location.

IMPORT EXISTING SERVICES/API:

In the fourth increment, we enhanced the features of the application by providing additional information such as rent information, parking details, maintenance, postal services, pets allowance to the users. Besides, searching the details of the vacancies that are shown up by our site, we are providing the users with additional apartment details and the maps to route to that location. All the apartments that are near to the university are stored in to the database and information about those apartments is provided.

The google maps API is used to route the user from his current location (geo location) to the location the user wish to move. Weather API is used to check for the weather conditions at that particular locations. Distance vector algorithm is used to calculate the distance from university to the desired location. Google and Twitter API are implemented to share the details of a certain available vacancy to public. An additional feature called, News Letter is added to the application. The user who is the registered member of the application can subscribe to the student accommodation application through email. When the user successfully subscribes to the site, all the newly availed vacancies will be notified to the users through emails.

We have implemented the following APIs:

News Letter API: https://sendgrid.com/docs/API_Reference/Marketing_Emails_API/index.html

User Feedback API: <http://api.sandbox.freelancer.com/User/getUserFeedback.{xml|json}>

Geo Location API: <https://developers.google.com/maps/documentation/business/geolocation/>

Direction Service API: <https://developers.google.com/maps/documentation/directions/>

Google Maps with Distance Vector: <https://developers.google.com/maps/documentation/business/>

Facebook API: <https://facebook.com/share/>

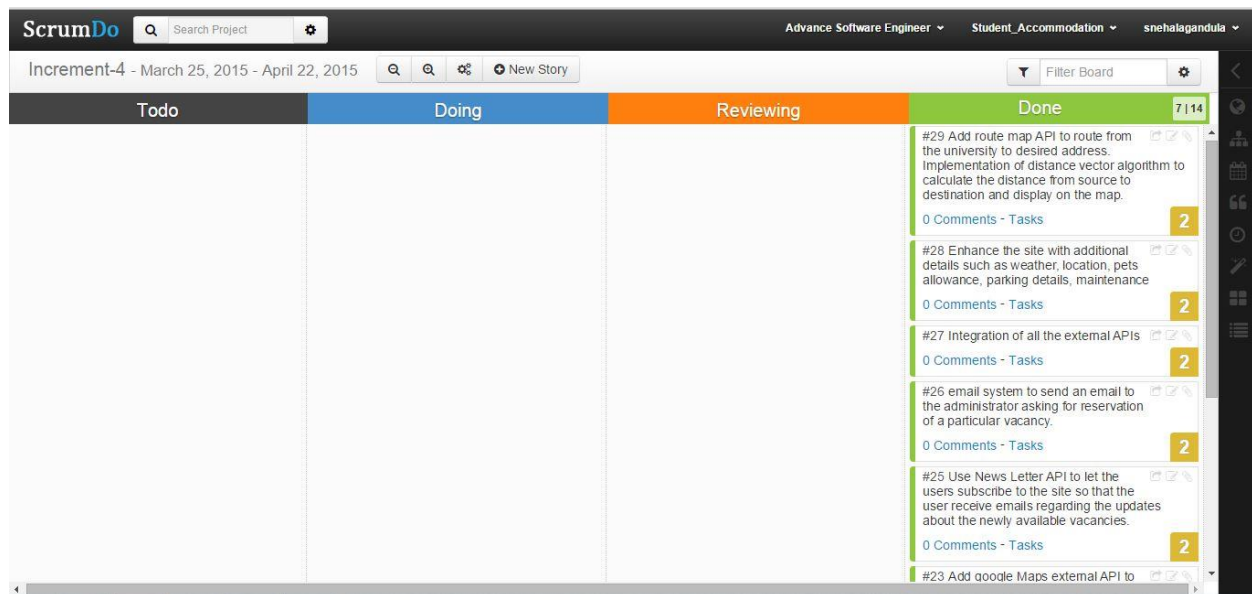
Twitter API: <https://twitter.com/share/>

Source code for the so far developed application is uploaded in GitHub.

DETAIL DESIGN OF SERVICES

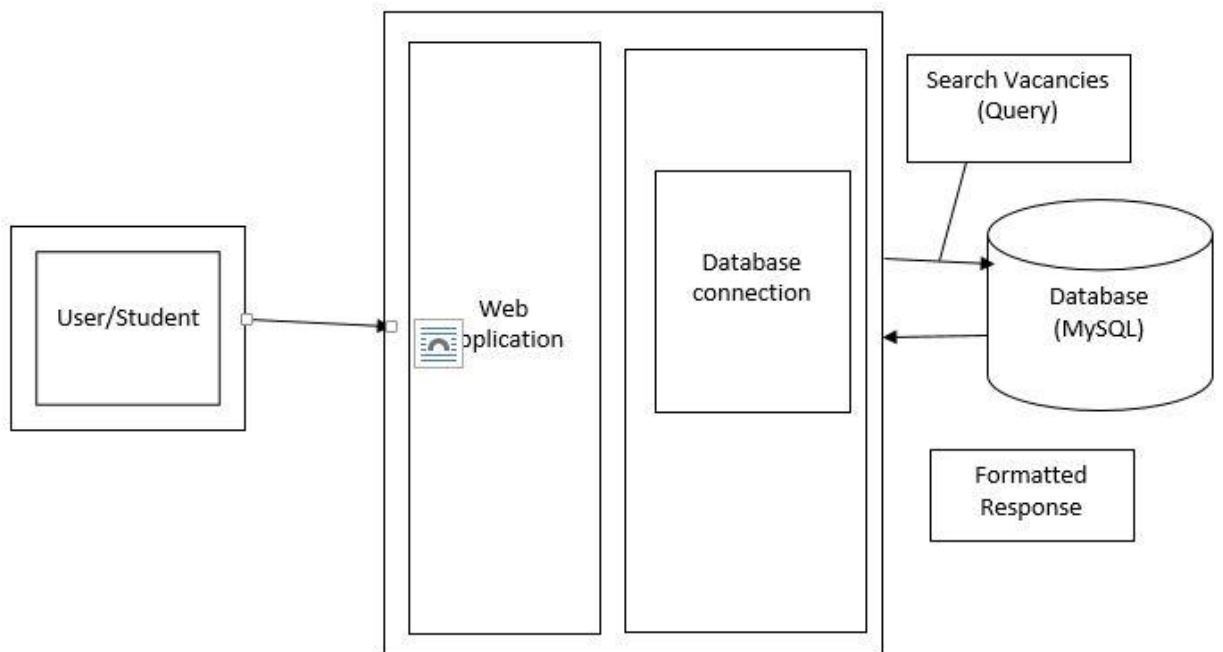
- **User stories for fourth increment**

In the fourth increment, we enhanced the features of the application by providing additional information such as rent information, parking details, maintenance, postal services, pets allowance to the users.



- **Search Mechanism used to find Vacancies**
 - Application offers search of the vacancies across the whole distributed database. It supports nested search with the previous search results. For instance, when the student searches for a vacancy at a certain location more than once, the new search is applied to the results of the previous search. This way, the search can be refined until the student finds the type of vacancy he was looking for.

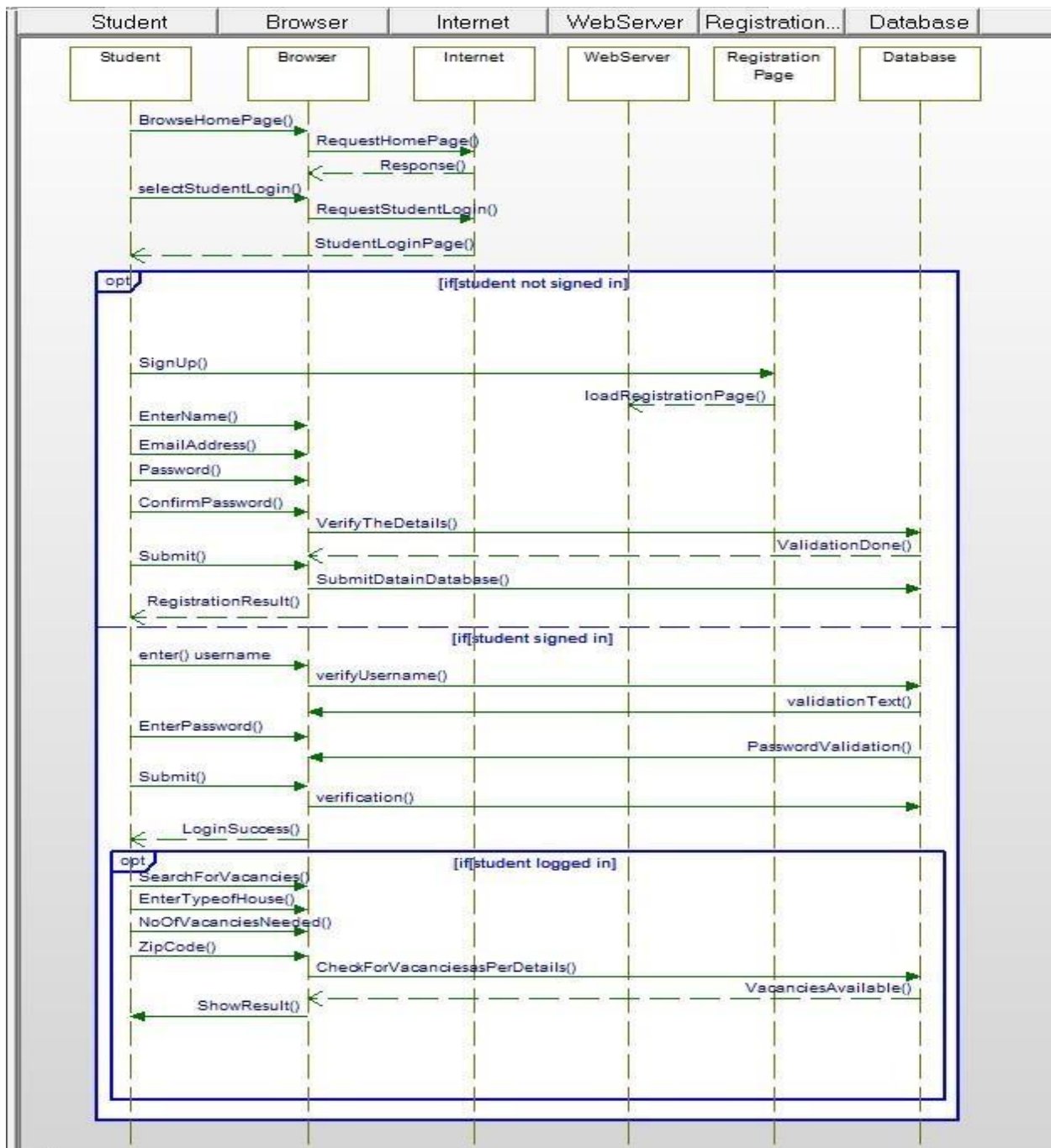
- **Flow Diagram for Database Connection**



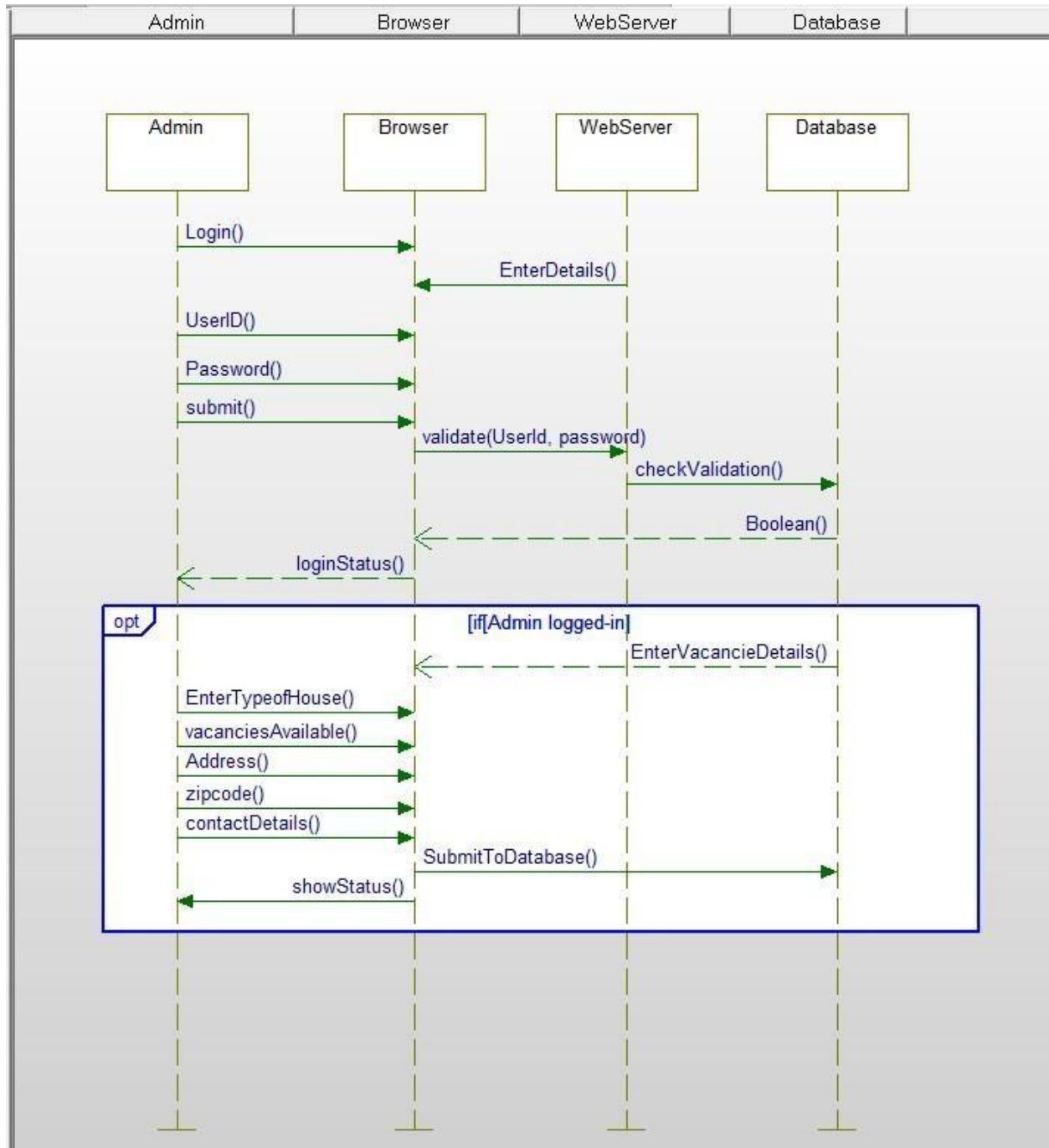
- **Sequence Diagram**

A sequence diagram is an interaction diagram that provides the collaboration of objects depending on a particular time sequence.

The following is the sequence diagram that shows the flow of processes that operates one after the other in a certain order. The sequence diagram is to show the flow of student registration and login form with certain validations.

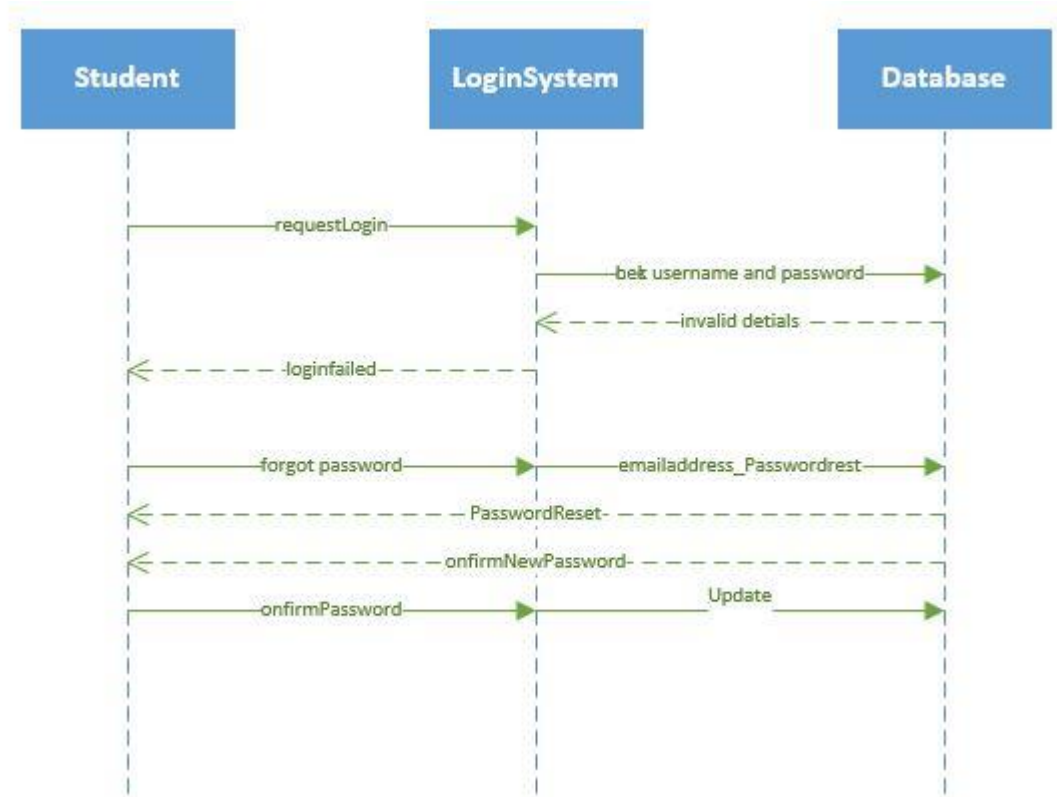


The following sequence diagram is used for the administrator to login to the system with the pre-assigned username and password. The administrator can add the details of the vacancies that are available at a certain location. When a particular vacancy is filled or booked by someone else, the details of that vacancy will be removed from the database to make the search easier.

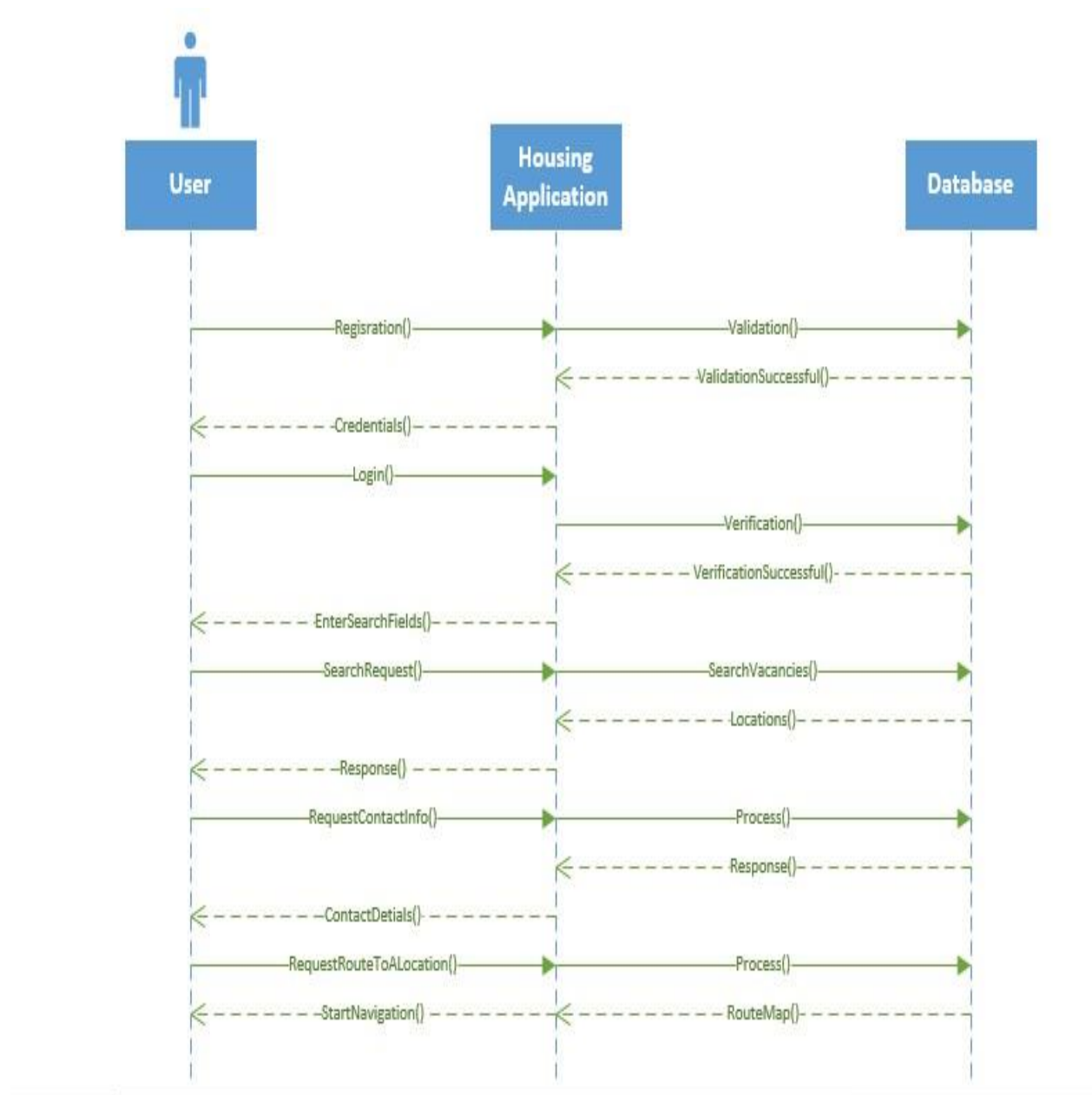


Sequence Diagram for Password Reset:

The following sequence diagram is used to reset the student password. The user first reset the password by submitting his email address. A random 6 digit code is generated and sent to given email address. Now, the password can be reset by entering the random 6 digit code along with a new password.



Sequence diagram representing entire flow of the application:



- **Class Diagram**

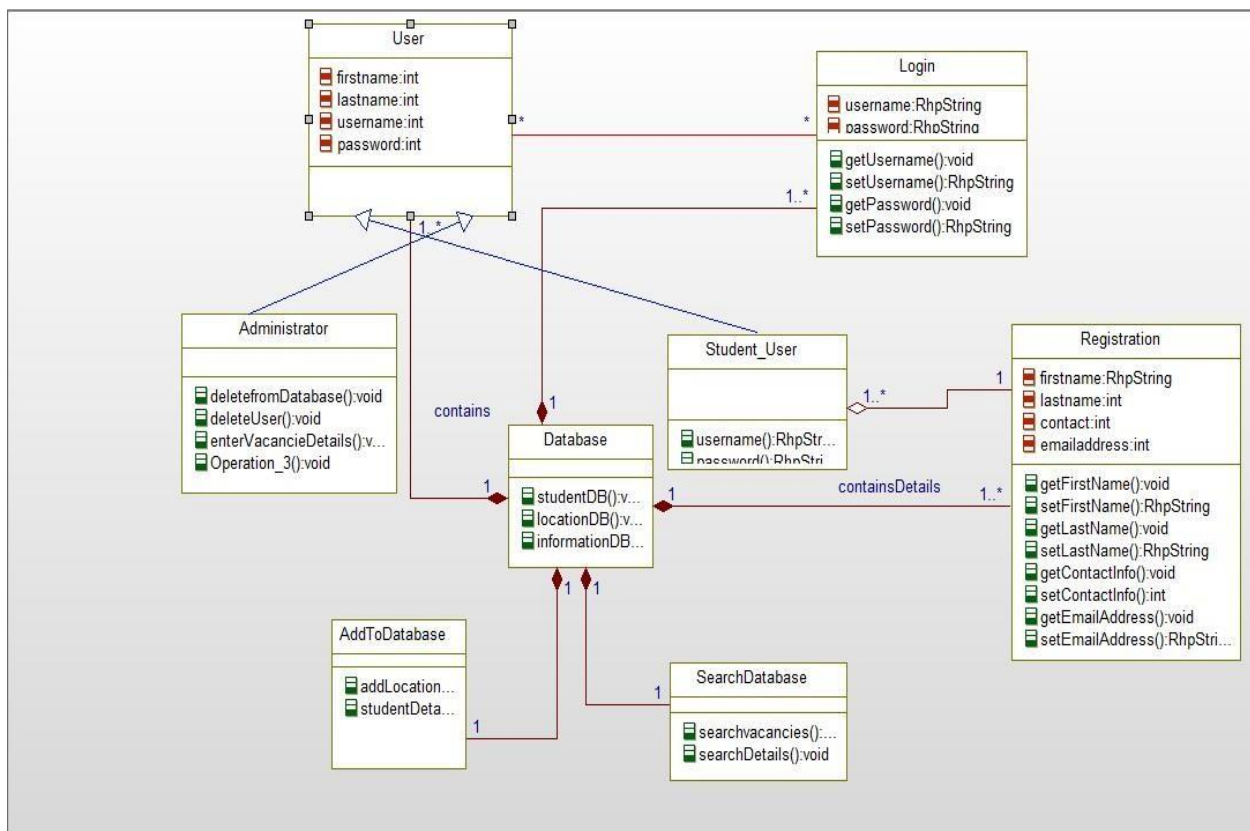
The following class diagram describes a student or an administrator log-in to the website.

The system has two types of users, student user and the administrator. The student log-in to the account only if the student is already registered in to the system.

The student or admin logs-in to the system by entering the username and password, the system then validates the provided log-in details, and if successful, the system connects the user to the account for further access. If not successful, the system allows repeated attempts to the user and prevents the entry until the log-in is successful.

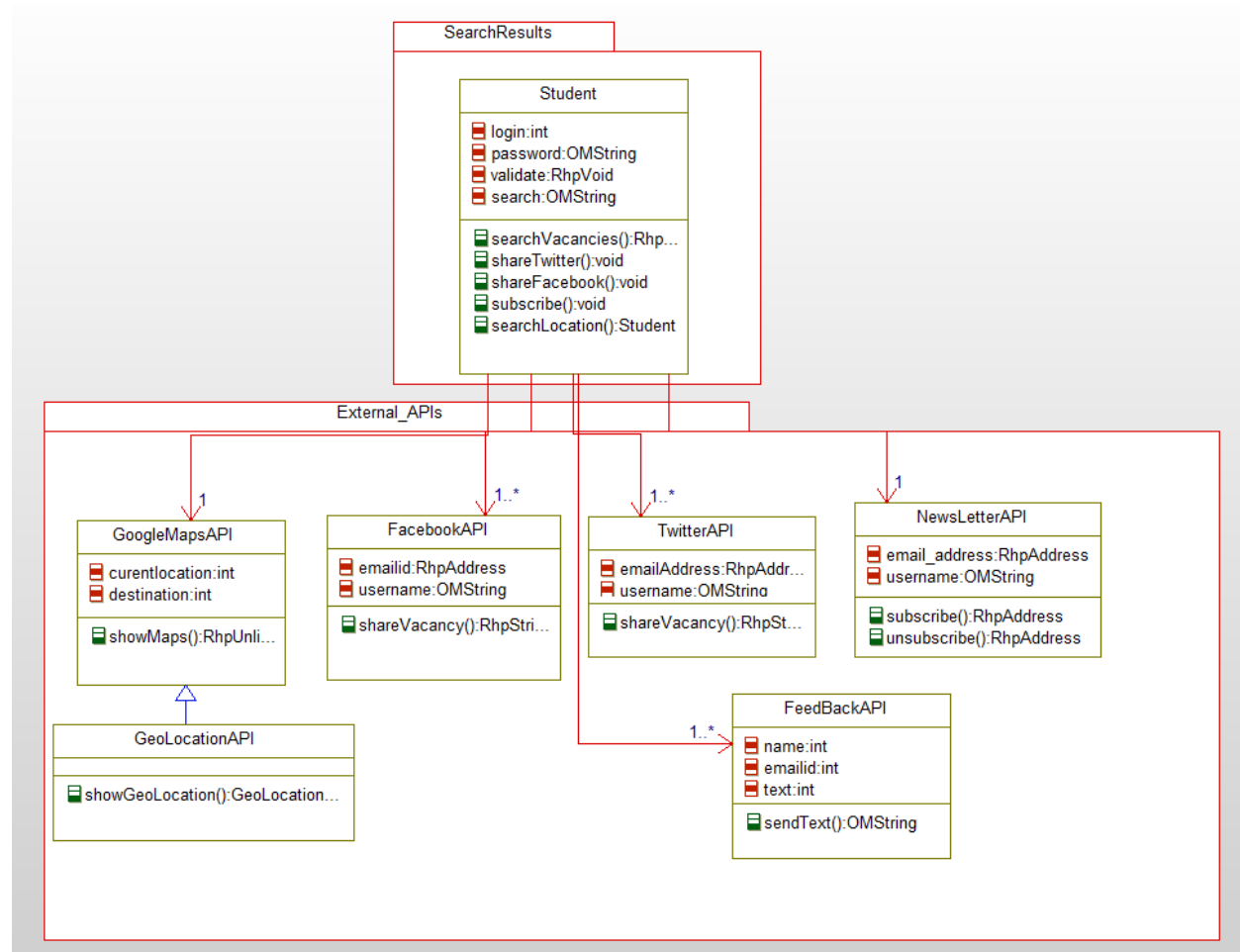
Database is created to store the information about the vacancies available at a certain location. When a student registers for the application all the details of the students are stored in a database for authorization. When a user logs in to the system, the entered details are checked in the database, if the details are available in the database, further access is given to the system.

Upon Search for the accommodation at a certain location, a new page is displayed providing all the details about available vacancies at that location. Also, google maps from the university to the desired location is shown, this helps user estimate the distance from source to destination. We at the desired location can also be determined through Geo-locations.



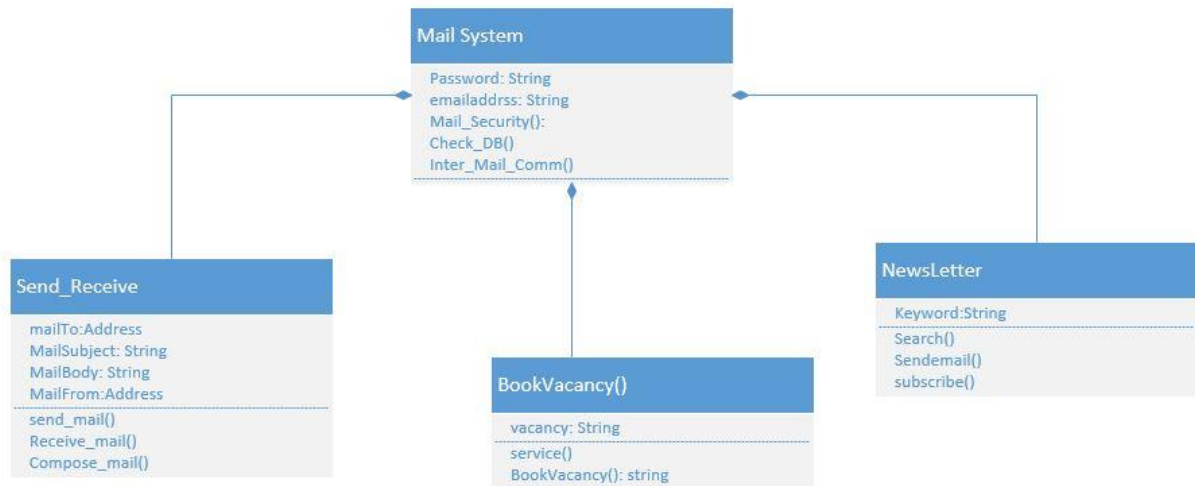
Class diagram representing external API call:

In this application, we have created interfaces for external APIs. The Facebook and Twitter APIs are used to share the details of certain vacancies to other user. The objective of News Letter is to make students who are already registered for the application to subscribe to the site. As the result of subscription, the user get updates about the newly available vacancies at their desired certain location. Feedback API is used to enter the feedback about the performance of the site. The given feedback will be received as an email to the developers. As a result, further improvements will be made according to the user requirements.

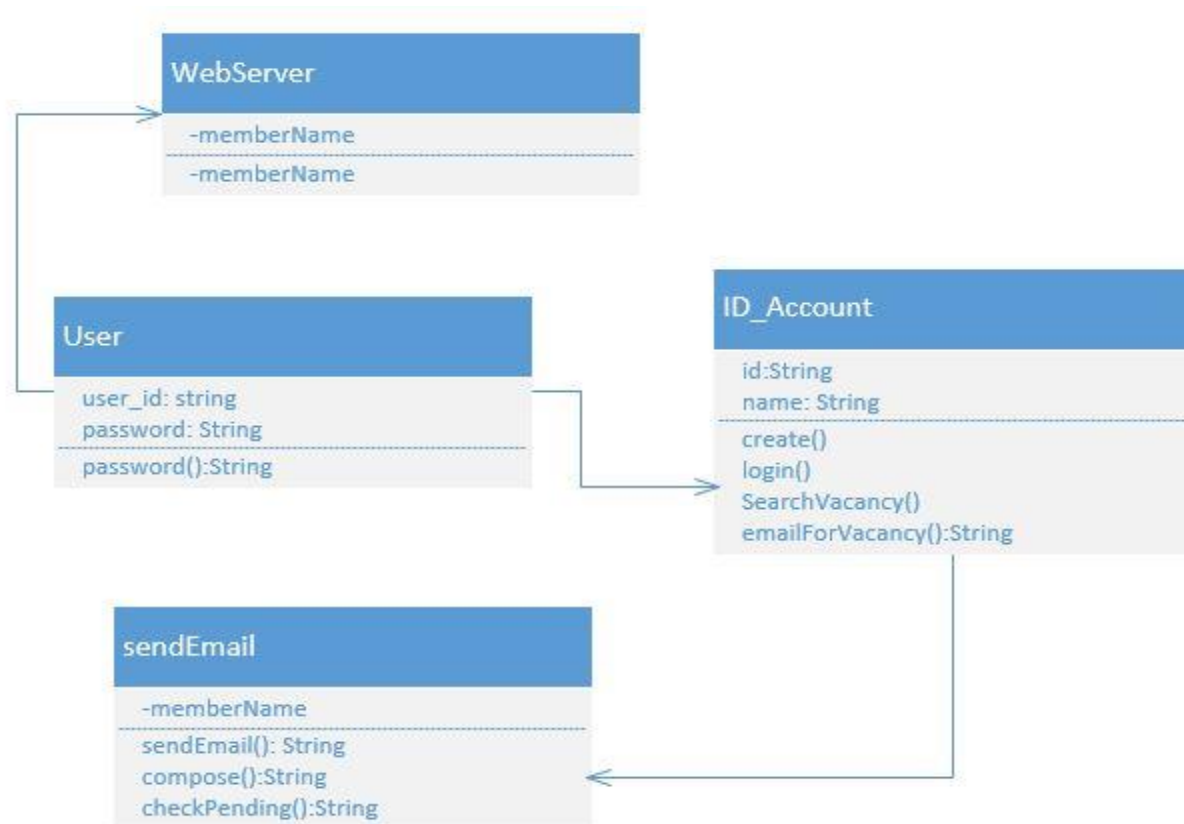


Class Diagram representing the Email System in News Letter:

In the feature called News Letter, the user who has registered to the site can subscribe to the application to receive emails about newly available vacancies that are updated by the administrator.



Class diagram representing the email system to send an email to the administrator for booking a vacancy.



IMPLEMENTATION:

- **Implementation of Test Cases**
 - **Database Testing Test Scenarios:**
 - Table should have primary key in a column
 - Upon a page submit, check whether the data saved into database is correct.
 - Database name should be given depending on the type of the page created.
 - Length of the field that is shown on the web page should be same as its length in database field.
 - Database fields should be designed with correct data type and data length.
 - Check the datatypes and its properties of their fields in database.
 - Verify the data in the database.
 - Logical names for the database are given according the database name.
 - For primary key column in database, null values should not be allowed.
 - All the required data tables must be created.
 - **Search Result Grid Test Scenarios:**
 - A symbol representing the page load is shown when it takes longer time expected to load the page
 - Verify if all the search fields are filled to search for the vacancies
 - Total number of vacancies should be displayed in the form of a table
 - The search criteria that is used to search for a particular vacancy should be displayed.
 - Duplicate information should not be displayed.
 - A check box should be enabled to check a particular vacancy. As a result, the user can send an email to the administrator requesting for a reservation of a particular vacation.
 - Verify whether or not all the rows and columns are displayed on the web page.
 - **Sending Emails Test Scenarios:**
 - Check if email is sent to proper email address.
 - Check if the body of the email is in valid format
 - Check if the user is successfully subscribed to the newsletter.
 - Email address that the user use to subscribe should be same as the one with which the user register to the application.

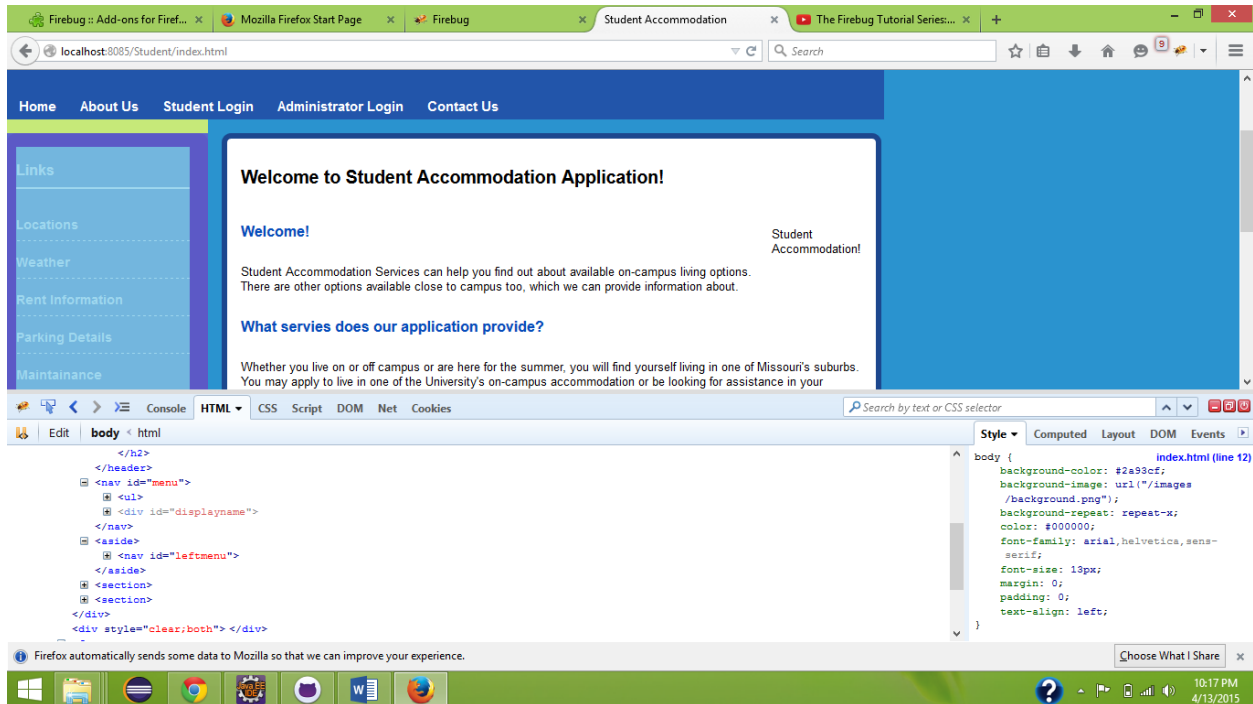
TESTING:

Testing is an important component in software development process. Testing is done to check the quality of the software that works at crucial circumstances.

Performance Testing:

- **Firebug Testing:** This acts as an extension to the web browser by supporting debugging and testing of the website. It also helps in monitoring the website.

We have tested home page of our web application using firebug:



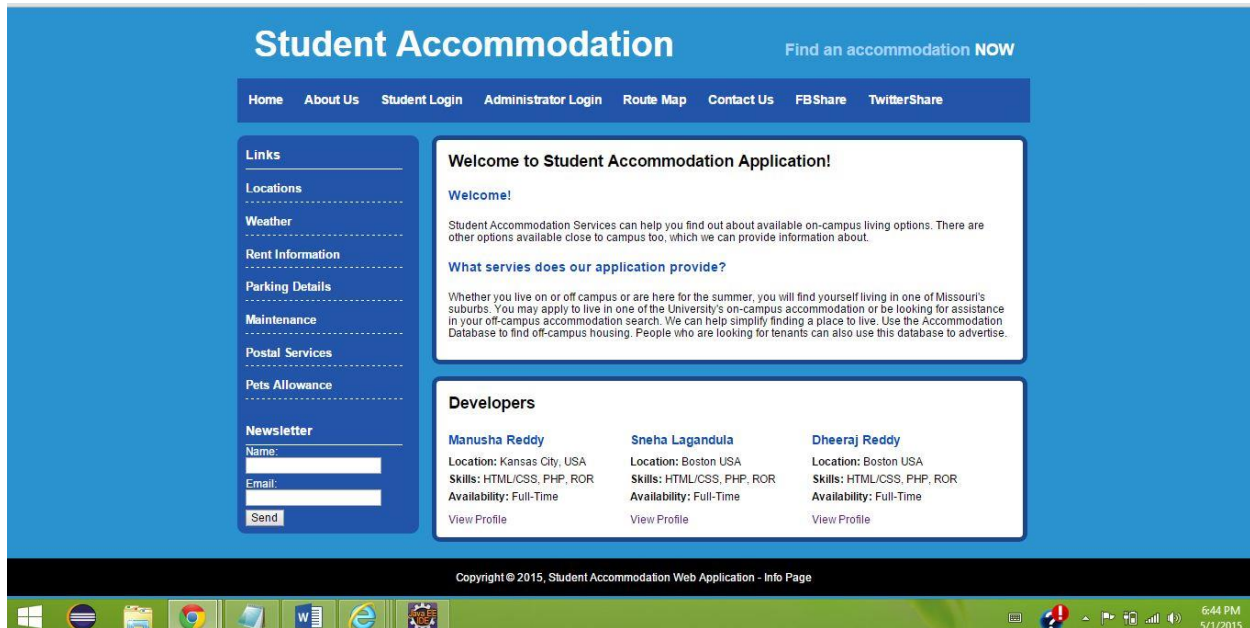
Firebug Testing for Home Page

DEPLOYMENT

- ScrumDo: https://www.scrumdo.com/projects/project/student_accommodation/iteration/122921/board
- GITHUB:

REPORT:

The following is the home page of our application.



The following page is About us page where the user is provided with details about house accommodation process.

The screenshot displays the 'Student Accommodation' website. The header features the title 'Student Accommodation' and a link 'Find an accommodation NOW'. A navigation bar includes links for Home, About Us, Student Login, Administrator Login, Route Map, Contact Us, FBShare, and TwitterShare. On the left, a sidebar contains links for Locations, Weather, Rent Information, Parking Details, Maintenance, Postal Services, and Pets Allowance, along with a newsletter sign-up form. The main content area is titled 'Details about Housing' and provides information on the accommodation process, including a list of steps and a 'BACK' button. The footer shows the copyright notice 'Copyright © 2015, Student Accommodation'.

Student Accommodation

Find an accommodation **NOW**

Home About Us Student Login Administrator Login Route Map Contact Us FBShare TwitterShare

Links

Locations

Weather

Rent Information

Parking Details

Maintenance

Postal Services

Pets Allowance

Newsletter

Name:

Email:

Details about Housing

Accommodation Process

If you have an issue for which you require a specific type of housing, it is crucial that you inform us of your needs as soon as possible - preferably prior to or at the time you submit your Housing Contract. Accommodations / action plans from elementary, middle, or high school do not follow you to college. And unlike those institutions, we are not legally permitted to share your medical information with other offices - nor they with us. So, if you told an advisor or Admissions representative about your needs, unless you gave them specific, written permission to contact the DOR about those issues, they CANNOT let us know. You will need to contact us personally in regards to any housing needs.

There are three basic steps to the Accommodation Process:

Step 1. Contract For Housing and Submit a Housing Accommodation Request Form

Step 2. Register with the Student Disability Resources office (SDR)

Step 3. Your Request is Reviewed

Once your contract, Housing Accommodation Request Form, and documentation have been received, your request will be evaluated by DOR and SDR staff. SDR staff will make a recommendation as to the necessity of your request. If needed, we may contact you for clarification or additional information. Please be aware that there may be a difference between what you want or think you should have and what the law and medical opinion tells us is required. In some cases, your approved accommodation may differ from what you requested. Approval of all requests is at the discretion of Iowa State University.

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The student can login to the system if and only if he is already registered to the application. The user is provided with password reset and registration form.

The screenshot displays the 'Student Accommodation' website with the 'STUDENT LOGIN' page active. The header and navigation bar are identical to the previous screenshot. The sidebar on the left remains the same. The main content area is titled 'STUDENT LOGIN' and features a login form with fields for 'Username:' (containing 'mbxw8') and 'Password:' (masked with dots). A 'Login' button is present, along with links for 'New User??' and 'Forgot Password?'. The footer shows the copyright notice 'Copyright © 2015, Student Accommodation'.

Student Accommodation

Find an accommodation **NOW**

Home About Us Student Login Administrator Login Route Map Contact Us FBShare TwitterShare

Links

Locations

Weather

Rent Information

Parking Details

Maintenance

Postal Services

Pets Allowance

Newsletter

Name:

Email:

STUDENT LOGIN

Username:

Password:

[New User??](#) [Forgot Password??](#)

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After entering details into the search field, the user will be provided with a list information related to the search.

The screenshot displays the 'Student Accommodation' website. The header includes the site name and a 'Find an accommodation NOW' button. A navigation bar contains links for Home, About Us, Student Login, Administrator Login, Route Map, Contact Us, FBShare, and TwitterShare. On the left, a sidebar lists various services: Links, Locations, Weather, Rent Information, Parking Details, Maintenance, Postal Services, Pets Allowance, and a Newsletter sign-up form. The main content area, titled 'Nearby Apartments Based On Search', features a table with search results.

Checkbox	Apartment	Address	Zipcode	Contact	Email
<input checked="" type="checkbox"/>	1BHK	Plaza Towers	64110	816789432	Plaza@housing.in
<input type="checkbox"/>	1BHK	Plaza Towers	64110	816789432	Plaza@housing.in
<input type="checkbox"/>	1BHK	Holmes	64110	980657432	holmes@housing.in
<input type="checkbox"/>	1BHK	HolmesStreet	64110	980657432	holmes@housing.in
<input type="checkbox"/>	1BHK	TroostAvenue	64110	980657432	holmes@housing.in

Below the table is a button that says 'Send an email to book the apartment'.

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Administrator is the one who can update the database with newly available vacancies at a particular location.

This screenshot shows the same 'Student Accommodation' website, but with the 'LOGIN AS AN ADMINISTRATOR' form displayed in the main content area. The sidebar and navigation elements remain identical to the previous screenshot.

LOGIN AS AN ADMINISTRATOR

Username:

Password:

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The administrator can enter the details of newly available vacancy in the following form.

The screenshot shows the 'Student Accommodation' website interface. The header includes the site name and a 'Find an accommodation NOW' link. A navigation bar contains links for Home, About Us, Student Login, Administrator Login, Route Map, Contact Us, FBShare, and TwitterShare. On the left, a sidebar lists various links and a newsletter sign-up form. The main content area features the 'Enter Vacancy Details' form, which includes fields for 'Enter Type Of House' (a dropdown menu), 'Vacancies available', 'Enter address', 'Enter Zipcode', 'Contact Number', and 'Enter Email-Address'. Below these fields are 'SUBMIT' and 'View Dashboard' buttons. The footer displays the copyright notice 'Copyright © 2015, Student Accommodation'. The Windows taskbar at the bottom shows the time as 6:53 PM on 5/1/2015.

Student Accommodation Find an accommodation NOW

Home About Us Student Login Administrator Login Route Map Contact Us FBShare TwitterShare

Links
Locations
Weather
Rent Information
Parking Details
Maintenance
Postal Services
Pets Allowance
Newsletter
Name:
Email:
Send

Enter Vacancy Details

Enter Type Of House : 1BHK

Vacancies available : 4

Enter address: Plaza

Enter Zipcode: 64110

Contact Number: 978456345

Enter Email-Address: Plaza@housing.in

SUBMIT

View Dashboard

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6:53 PM 5/1/2015

After successful storage of the vacancies, the administrator will be provided with a pop up message notifying the successful storage.

This screenshot shows the same website interface as the previous one, but with a success message. The 'Enter Vacancy Details' form area now displays the text 'House Details Successfully Stored!' and a 'Back' button. All other elements, including the navigation bar, sidebar, and footer, remain the same. The Windows taskbar at the bottom shows the time as 6:53 PM on 5/1/2015.

Student Accommodation Find an accommodation NOW

Home About Us Student Login Administrator Login Route Map Contact Us FBShare TwitterShare

Links
Locations
Weather
Rent Information
Parking Details
Maintenance
Postal Services
Pets Allowance
Newsletter
Name:
Email:
Send

House Details Successfully Stored!

Back

Copyright © 2015, Student Accommodation

6:53 PM 5/1/2015

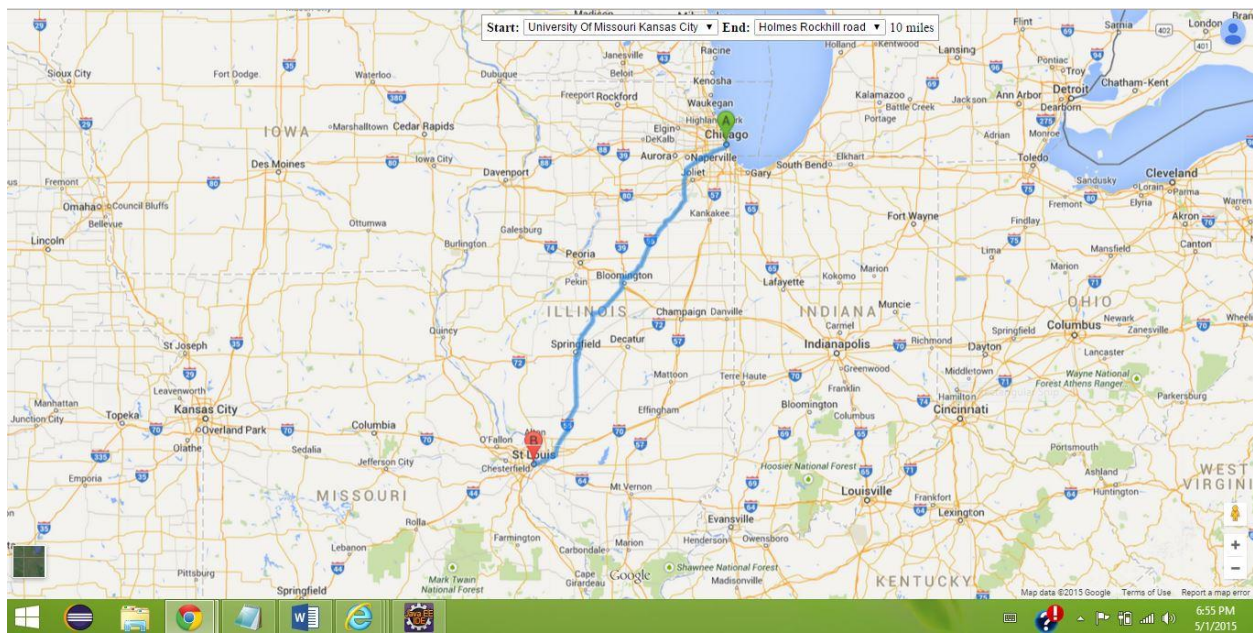
A dashboard is generated giving the graphical view of the vacancies that are in pending state, reserved and open state.

The screenshot shows a web application titled "Student Accommodation" with a navigation bar containing links: Home, About Us, Student Login, Administrator Login, Route Map, Contact Us, FBShare, and TwitterShare. A sidebar on the left lists various services: Links, Locations, Weather, Rent Information, Parking Details, Maintenance, Postal Services, Pets Allowance, and a Newsletter sign-up form. The main content area is titled "Dashboard for Requests Pending and Chart View" and displays a table of accommodation requests.

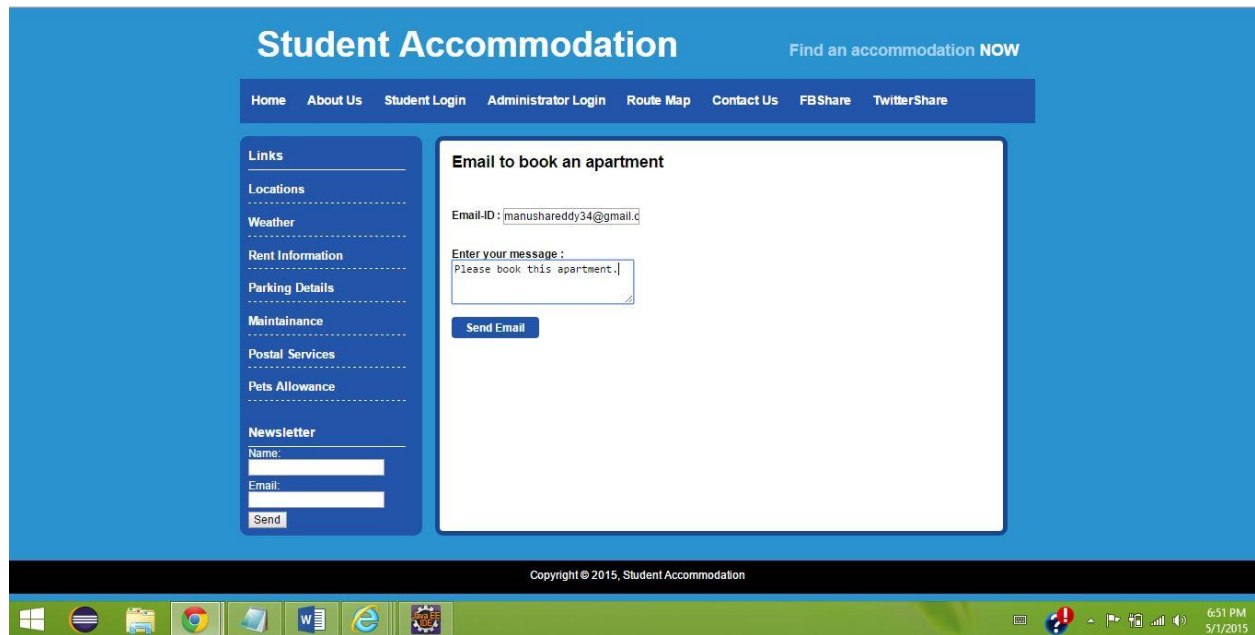
Apartment	Vacancy	Status
1BHK	4	Pending
2BHK	2	Pending
1BHK	5	Pending
4BHK	1	Pending
1BHK	4	Approved
1BHK	4	Approved
2BHK	3	Approved

Copyright © 2015, Student Accommodation Web Application - Info Page

A google routing map along with the distance matrix algorithm is used to estimate the distance from the university to the desired location.



The student can send an email to the administrator requesting him to reserve a particular vacancy.



Two external APIs facebook and twitter are used to share the details of certain vacancy to the friends and other members.

