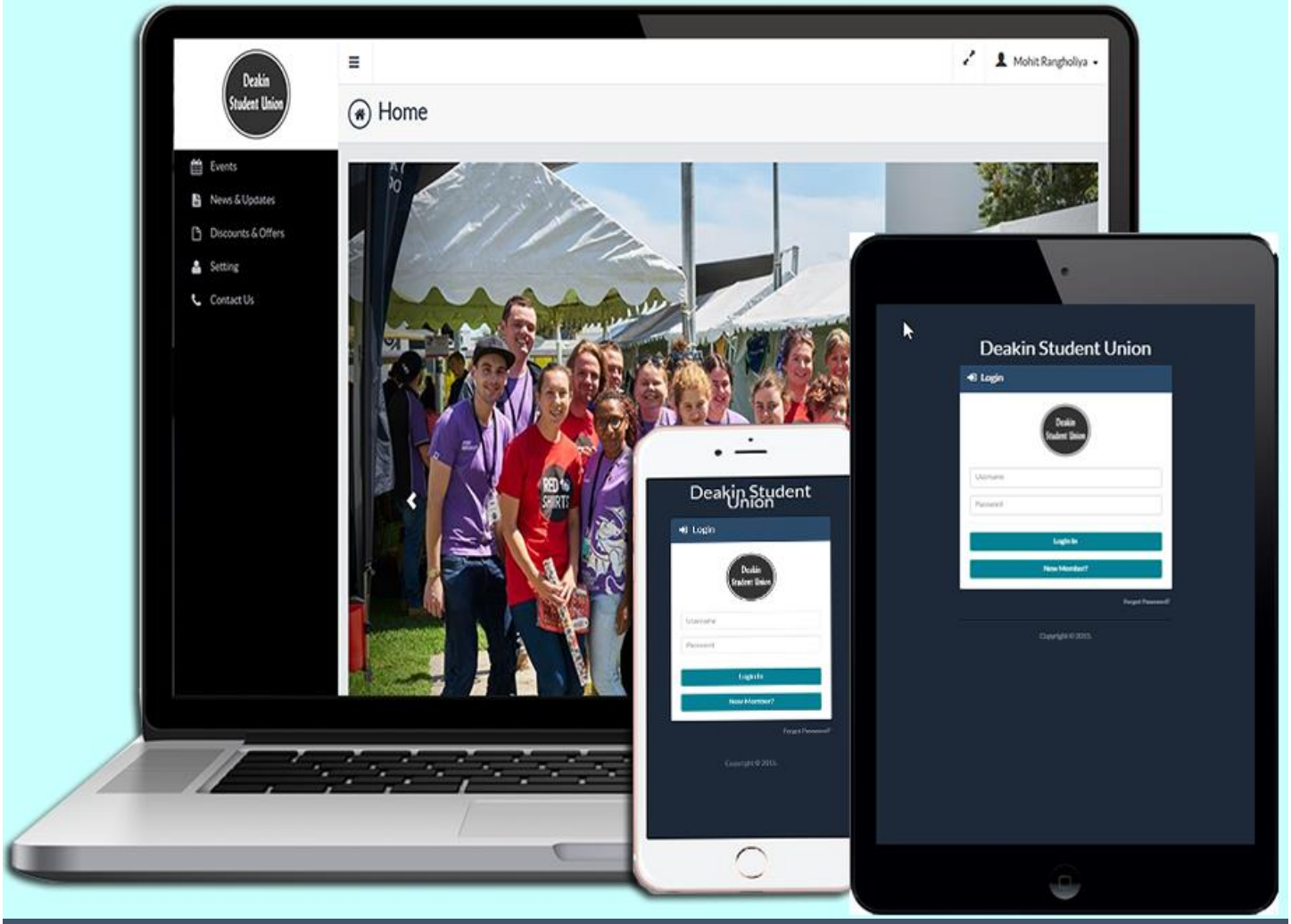
Student Union Application



Student Union Application

Team : UIX (User Interface & Experience)

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Introduction

Cloud computing has been at the heights of its implementation over the past few years. Services are now powered on the cloud like never before. Clients only need to subscribe to these services and have full access to their usage as it'd be when run in-house. PaaS is one of the services running on the cloud for application developers to have easy access to. It provides huge benefits in terms of security, reliability, robustness, privacy and transparency.

The web based application proposed in this industrial project implemented and hosted on Microsoft Azure (PaaS Provider). This allowed for a full feature that come with Azure to be fully implemented on the web based application.

The report will give a round-up overview of how the application was developed, all the features it contains and a user manual guide for students to use the web application. It also contains some of the unique services supplied by Azure to make the application a much more secured and scalable cloud based application.

Features

The student union application is a web application powered by Microsoft Azure. It's a web based application that comprises of the following features in order to run a university student union society. These features allow for automated management of several updates, news and offers within the student union community.

Members Registration

The members registration page contains details about student's personal profile which are eventually used to set up student's profile after joining the student union. This registration page is developed in a way that it allows for a **JSON** enabled editing after registering. After the registration is done, the user can now login to access all features of the student union application.

Events

The events feature contains information about upcoming, present and past events within the student union community. The events page is designed in such a way that allows for an interactive interface. The JavaScript enabled page comprises of a calendar of the present month. Each date contained in the calendar has embedded links for different events for that day. On mouse hover, the events are displayed through JavaScript pop up.

News and Update

The news and update feature contains all about what's going on in the university, the latest trends, entertainment news and other updates that'd be of huge interest to university students. In the news and update page, all major news are shown with a thumbnail picture representing news image. On click of the thumbnail, user is redirected to another page containing a full information about the news.

Discount and offers

The discount and offer feature contains information about all discounts that are provided by the union. These discounts range from shopping to entertainments and events. In the discount and offer page, an image representing the provider of the discount and then the date the offer was uploaded as well as the location of the company. On click of **"read more"**, more details about the offer and discount is displayed.

Settings

The settings feature allows individual users to manage their profile and details in the student union application. It allows for editing, updating and deleting profile contents. In the settings page, all profile information of the user can be changed and then updated on the database.

Contact Us

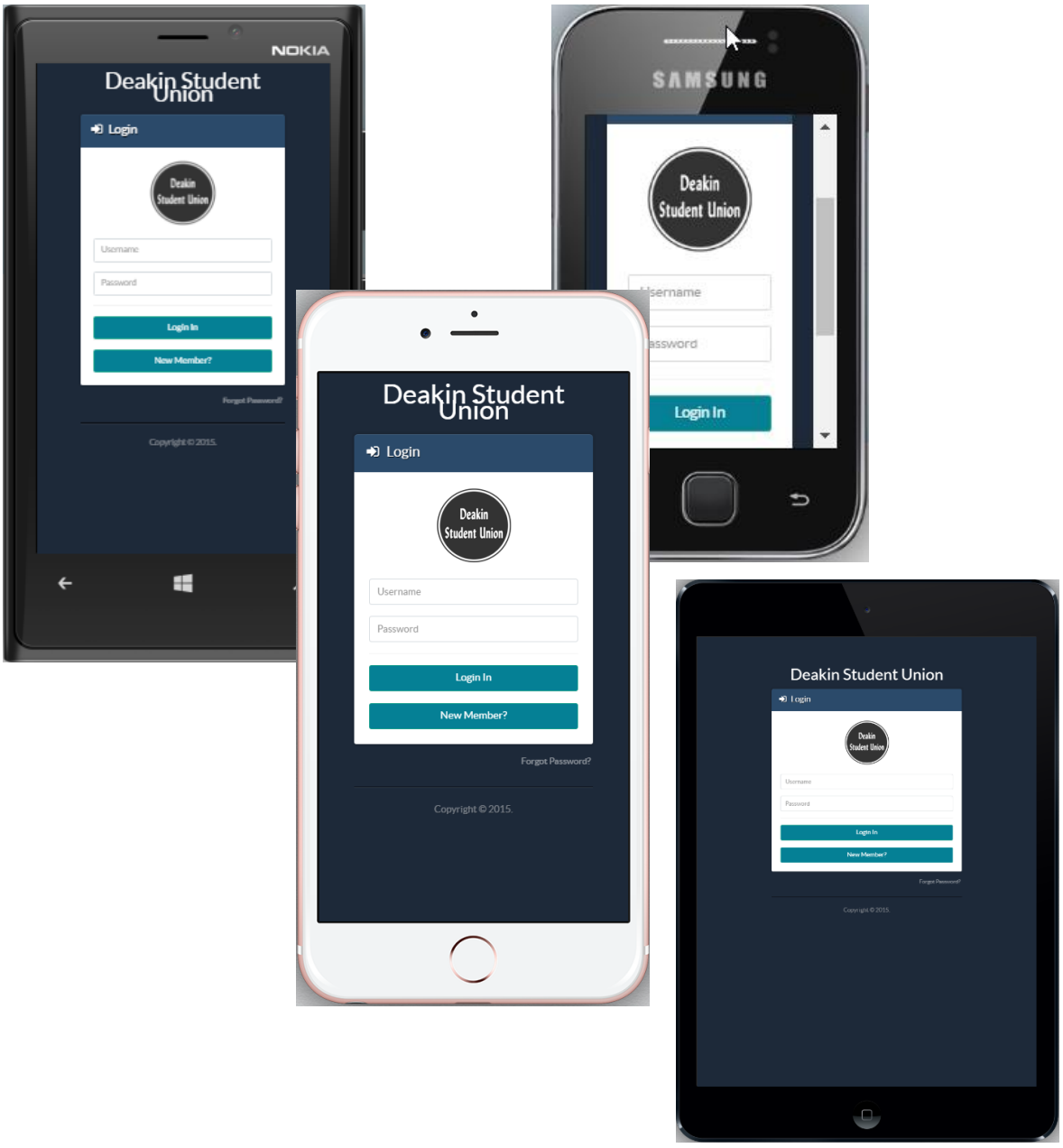
The contact us feature is an enquiry form where students can submit their queries and get reverts from the student union management.

Reliability

Device compatibility

The student union app was designed to be responsive on different devices. Through the implementation of twitter bootstrap, the student union app is able to fit in perfectly into different platforms and still maintains its quality and features. The figure below shows how the app is displayed on different devices:

Online testing link : http://mobt.me/SfNl



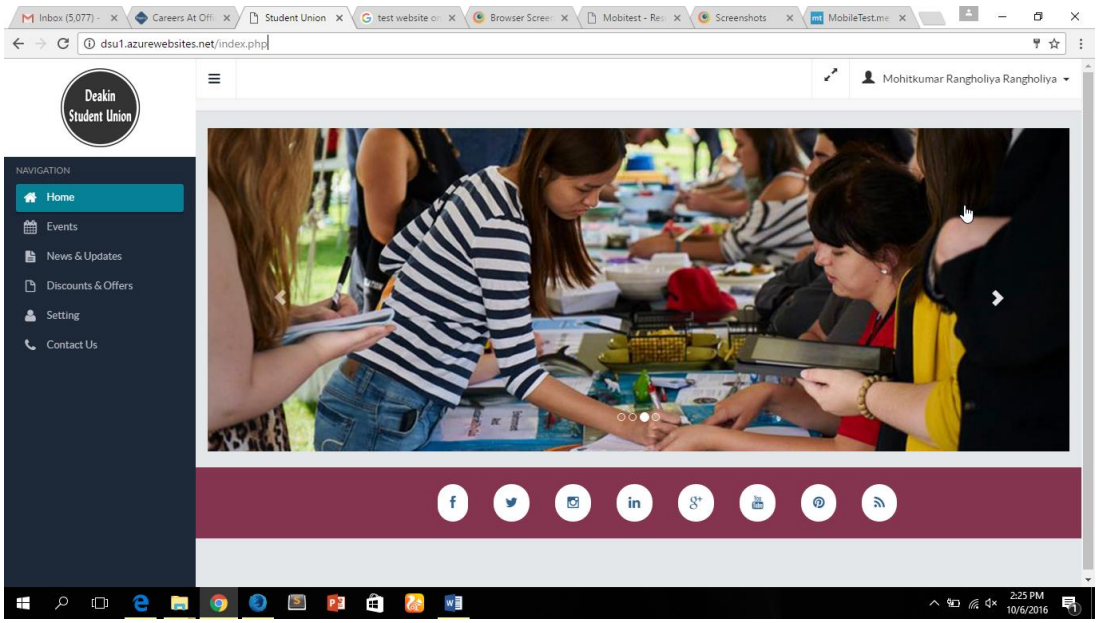
Browser compatibility

The application is compatible with several browsers such as Firefox, Chrome, Internet Explorer, Safari and much more. With the use of browser testing tools online, all browser compatibility bugs have been fixed and it runs smoothly. The figure below shows how the app is displayed on different browsers:

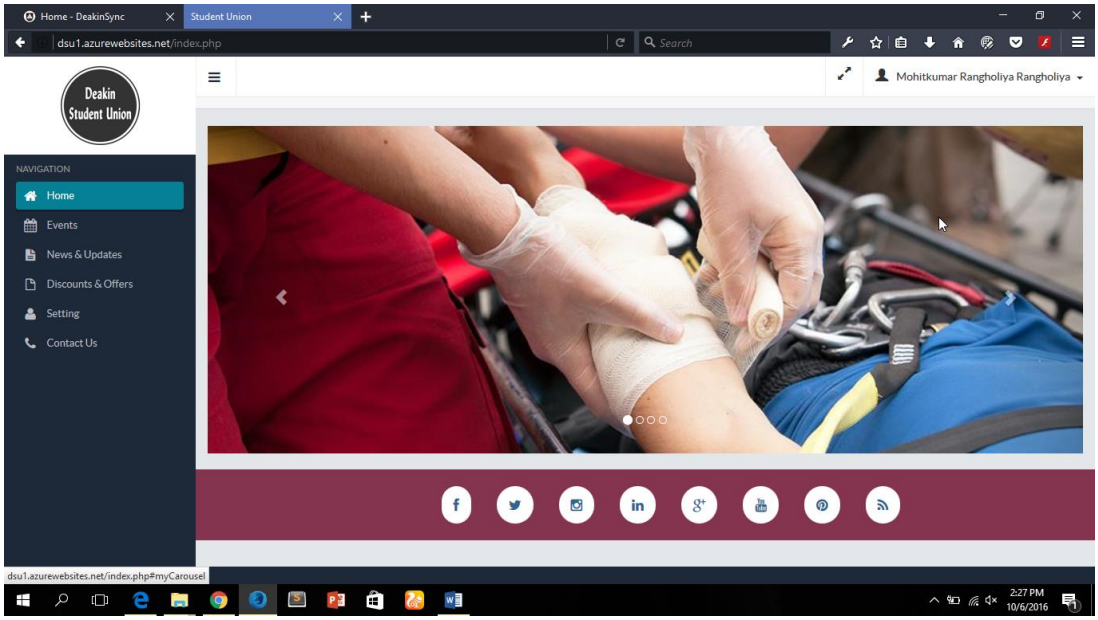
Cross browser compatibility check :

https://www.browserstack.com/screenshots/a3bb82c9b7172e1c133e5ad445e80b5e94442fdc

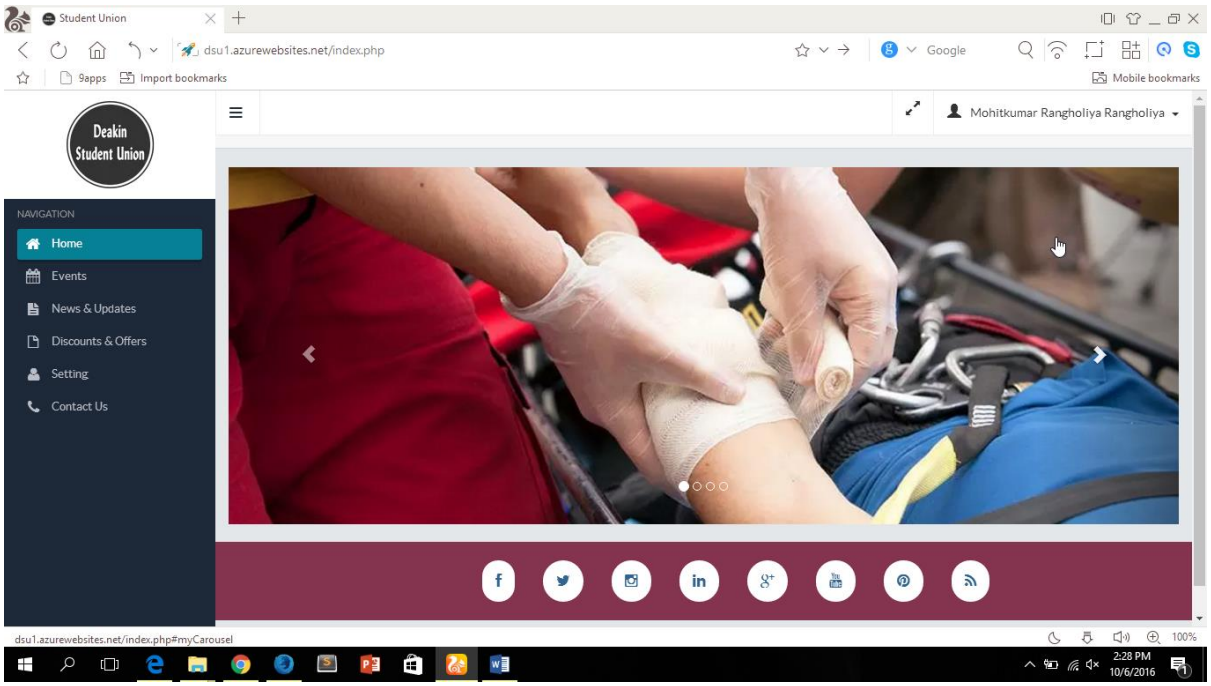
Browser : Google Chrome



Browser : Mozilla Firefox Developer Edition



Browser : UC Browser



Scalability, Privacy and Security

The scalability attribute of Microsoft Azure allows the student union application to run smoothly even on high traffics. A resource called **exponential back-off** allows for quick retries when the server returns an error code as a result of high traffic. The exponential back-off allows the load on the storage to decrease automatically. Thus, allowing the web application to run smoothly with minimal error latency.

The privacy policy adopted by Microsoft has enabled subscribers to Azure platform to be sure of complete protection and safety of their customers' data. All data stored into Azure database from the student union app is solely monitored by the admin thus allow higher degree of privacy in the data store in Azure.

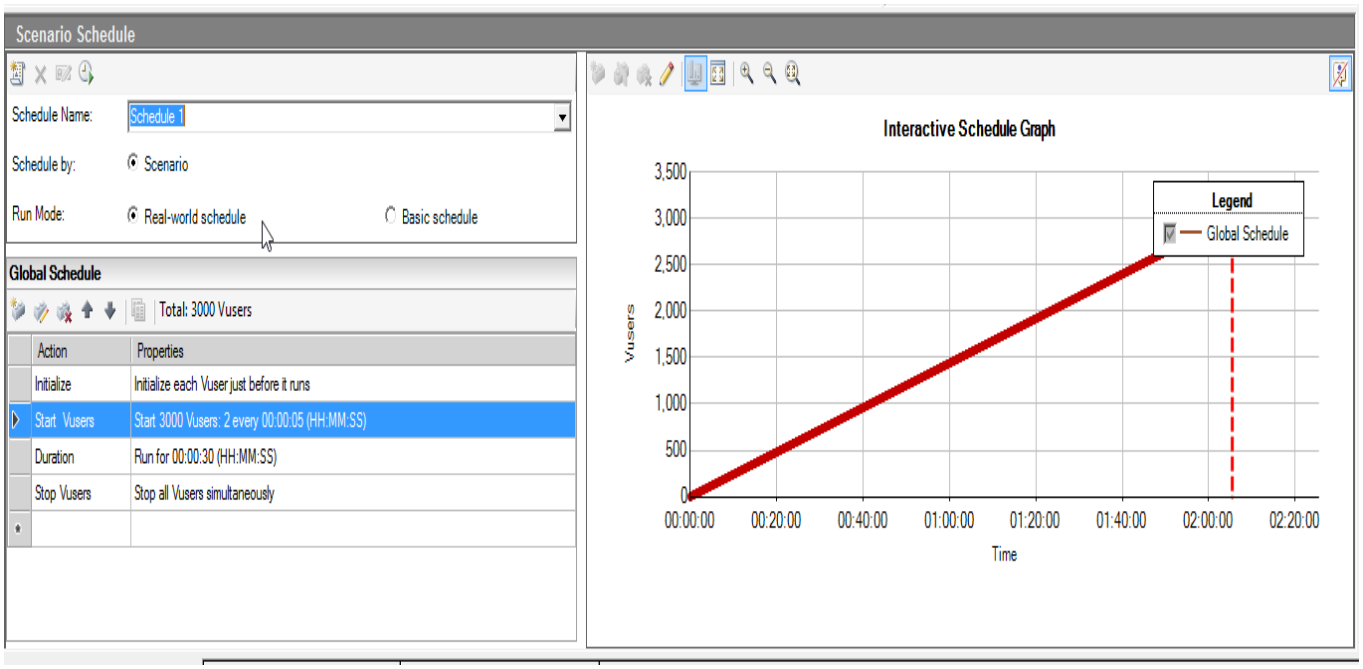
The security feature implemented by Microsoft on Azure are up to date security techniques that ensures that data is secured. This includes using industry standard transport protocols for data in transit and AES-256 encryption for data at rest. The advanced encryption standard allows all vital details about students stored in the database are encrypted during storage.

HP LoadRunner

The introduction of HP LoadRunner Performance testing tool was based on its relative scalability testing feature it provides. So, based on this, it was used to test and investigate the scalability rate for Microsoft Azure based application.

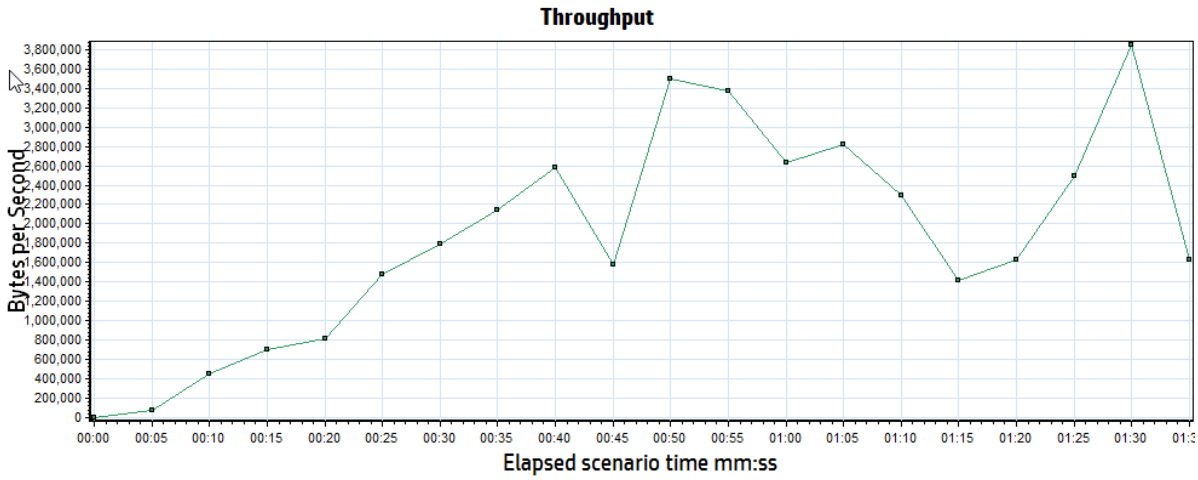
HP LoadRunner is a performance testing tool that determines how a system performs in regards to responsiveness and stability under a certain workload. Its purpose is to investigate, measure, validate, and or verify attributes of the system, such as scalability, reliability and resource usage. The screenshots below show the outputs of the performance test performed on the student union application when hosted on Microsoft Azure. The screenshot shows a certain number of virtual users, the throughput and the total number of transactions performed.

- The screenshot shows when the HP LoadRunner is tested with 3000 virtual users under a real-world scenario on the student union application.

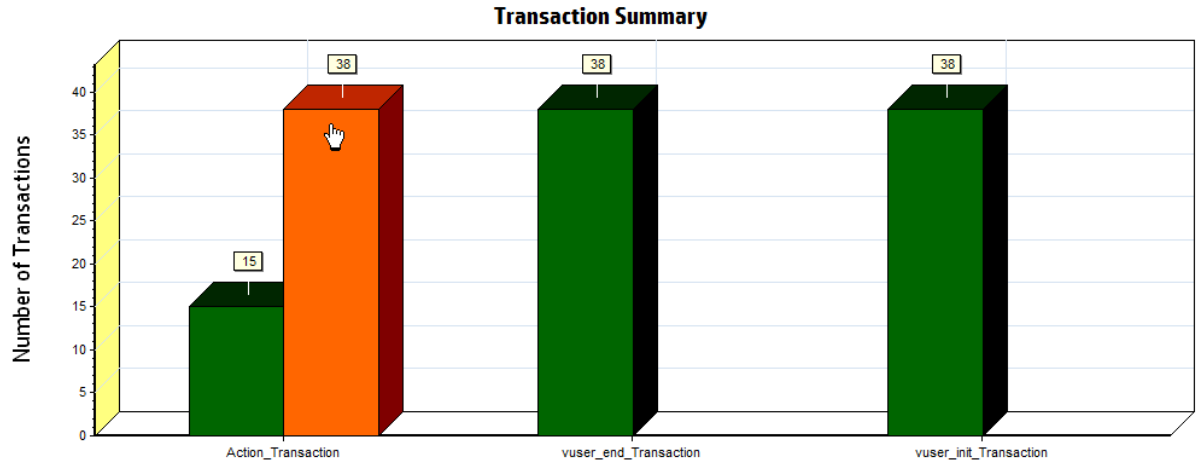


- The screenshot below shows the throughput as a result of the input provided in the above. The graph shows the throughput (i.e. the amount of load the web application under test can take at any given time) of the web application.

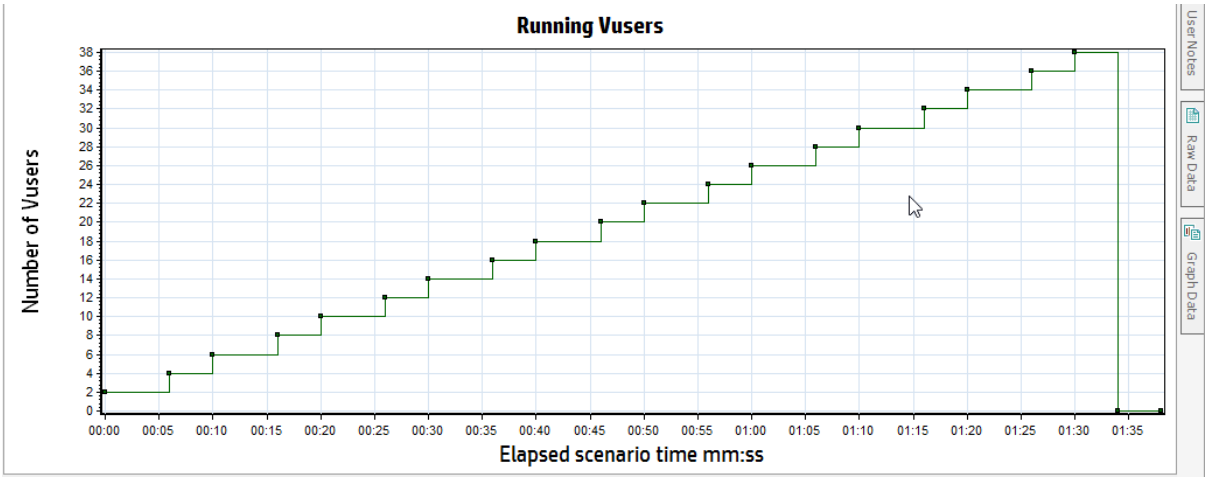
  From the graph, we can deduce that the web app can take a traffic worth 1MB of load in 5 seconds. This capacity continuously increases as the load increases as well and only plummeting at 45secs where there was server failure.



- The screenshot below shows number of transactions (actions) carried out by the virtual users. The chart shows the total number of successful transactions, number of stops and gives an overview of the summary of the test performed.



- The screenshot below shows the graph representing the number of virtual user, the time taken to complete transactions before increasing the load.



Testing

This reflects every aspect of the testing phase during and after the implementation phase of the application development. The testing technique that was used is **regression testing.** This allowed for a progressive testing all through the software development lifecycle. The screenshots below show some of the test cases written and the final test summary.

Test cases

The excel sheet screenshots below represents the test cases written for different modules of the web application. The screenshot shows the project name, test description, module name, test scenario etc.

	A	B	C	D	E	G	I	J	K	O
1										
2		Test Cases								
3		Project Name:	Student Union App		Sub Module Name:	Fuctionality of Hamburger Menu				
4		Project Version:	1		Description:	Testing for Proper functioning of every object in the Homepage				
5		Test Conditions/Scenario			CreatedOn:	September 30 2016				
6		Module Name:	Studentent App Homepage		CreatedBy:	Mohit and Job				
7	TEST CONDITION No.	TEST CASE No.	TEST CASE DESCRIPTION	ASSUMPTIONS	Instruction(Steps)	Expected Result	ACTUAL RESULT	Priority	Pass/Fail	
8	TCD001	TCSU005	Test for the presence of a 'home' link		1. View the top right corner of the home page.	There should be a 'home' link at the top right corner of the home page.				
9	TCD002	TCSU006	Test that clicking the 'home' link opens the home page		1. Click on the Home link on the home page. 2. View the page that opens	A click on the home link should open the home page.				
10	TCD003	TCSU007	Test that there is a 'Logged in as User' label on the top right corner of the home page.	The user is already logged into the system	1. On the top right corner of the home page, view to confirm that there is a 'logged in as user' label	The 'Logged in as User' label should be present.				
11	TCD04	TCSU008	Test that the 'Logged in as User' label indicates the user as the username of the user that is logged in.	The user is already logged into the system	1. View the vaue of user in the 'Logged in as User' label	The link should indicate the username of the user that is currently logged in.				
			Test for the presence of a		1. View the top right corner of the home	The logout link should be present on				

A	B	C	D	E	G	I	J	K	O
TCD005	TCSU021	Test that the link 'Contact Us' is available		On the login page, view to check that the link contact us is available	The link 'Contact Us' should be available.				
TCD006	TCSU022	Test that the contact Us link opens the contact us page	The user is already logged into the system	1. Click on the Contact us icon. 2. View the page that it opens	The link should open the contact us page.				
TCD005	TCSU023	Test that the twitter icon is present		On the login page, on the right corner of the page, view to confirm that the twitter icon is present	The twitter icon should be present.				
TCD006	TCSU024	Test that the twitter link opens a twitter page		1. Click on the twitter icon. 2. View the page that it opens	The link should open a twitter page				
TCD005	TCSU025	Test that the 'facebook' icon is present		On the login page, on the right corner of the page, view to confirm that the 'facebook' icon is present	The facebook icon should be present				
TCD006	TCSU026	Test that the 'facebook' link opens a facebook page		1. Click on the facebook icon. 2. View the page that it opens	The link should open a facebook page.				
TCD001	TCSU027	Test the presence of the message 'Application creation successful'		1. View the success page and confirm that a message 'Application creation successful' is present	The message 'Application creation successful' should be present.				
TCD001	TCSU028	Test the presence os an instruction label 'Use my applications menu to manage your Application'		1. View the success page and confirm that a message 'Use my applications menu to manage your Application' is present	The label 'Use my applications menu to manage your Application' should be present.				
TCD005	TCSU029	Test that a link 'Check how to use your application here' is present		1. View the success page and confirm that a link 'Check how to use your application here" is present	The link 'Check how to use your application here' should be present				

Test Summary

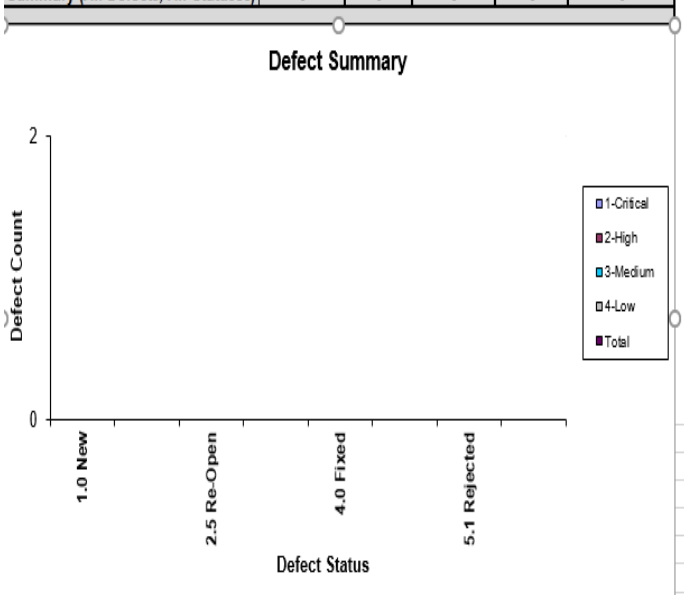
The test summary gives an overview of the execution and defect summary in the form of a bar chart. The bar chart shows the number of passes, fails as well as new defects, rejected defects and fixed defects. The is done until no bugs is found as seen below.

Project Name:	STUDENT UNION APPLICATION
Testing Cycle:	3
Current Date:	October 7, 2016

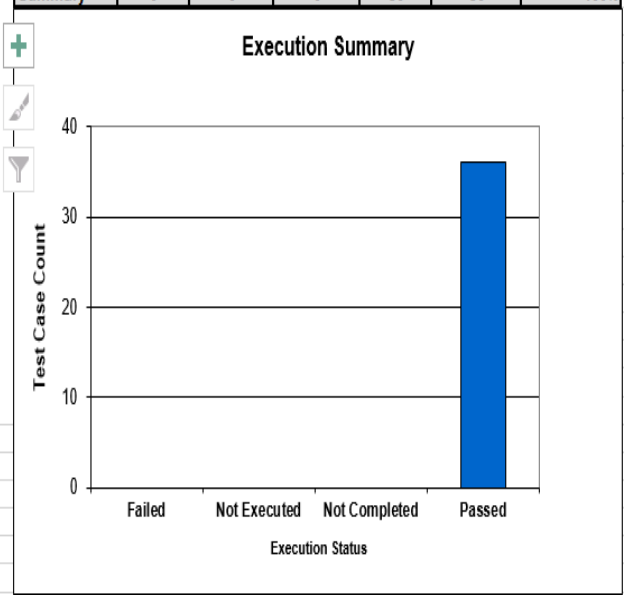
Revision History

Version Number	Date Updated	Revision Author	Brief Description of Changes
1	30/09/2016	Job, Mohit	Fixing the bugs in Hamburger Menu
1.1	03/10/2016	Job, Mohit	Final Fixing of compatibility issues

Status	1-Critical	2-High	3-Medium	4-Low	Total
Summary (All Defects, All Statuses)	0	0	0	0	0



Test Case	Failed	Not Executed	Not Completed	Passed	Planned for Execution	Percentage Complete
Summary	0	0	0	36	36	100%

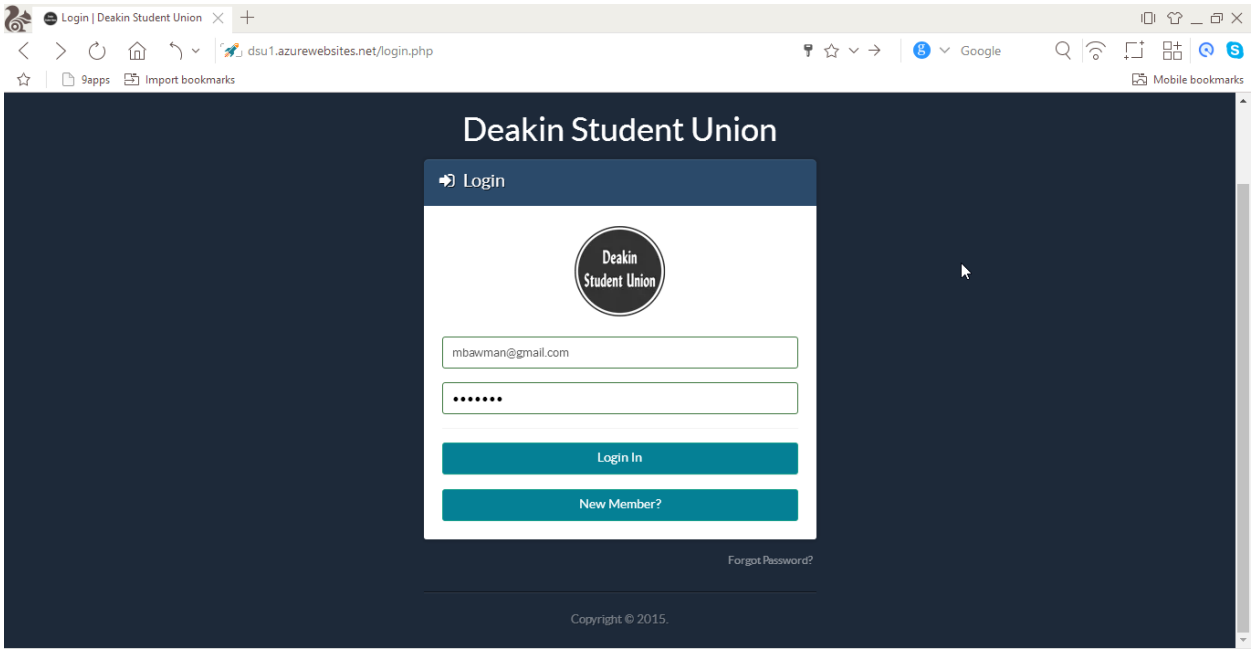


The test execution summary shows that after all test cases were executed, no bug was found and all test cases were executed successfully.

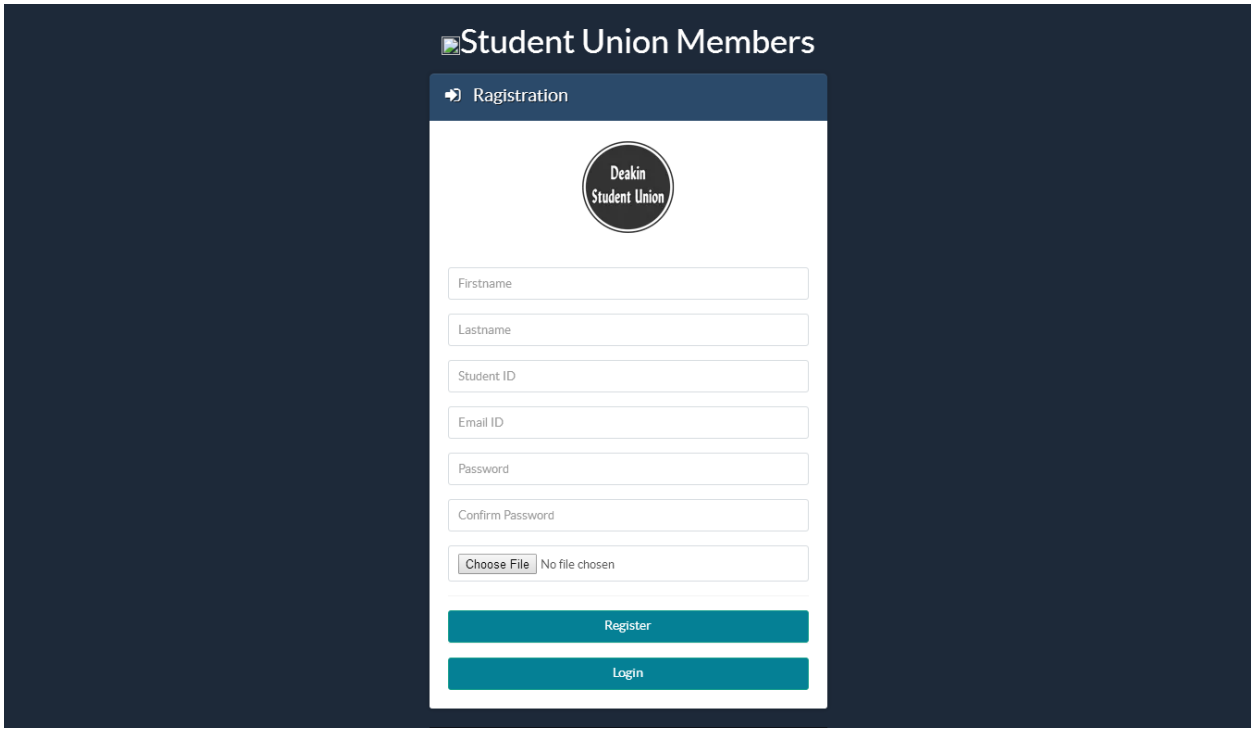
User Manual

This Document helps users to have overall idea of all the functionalities that students can access. It is explained step by step through one by one functionalities. User can explore the particular functionality by clicking different clickable options.

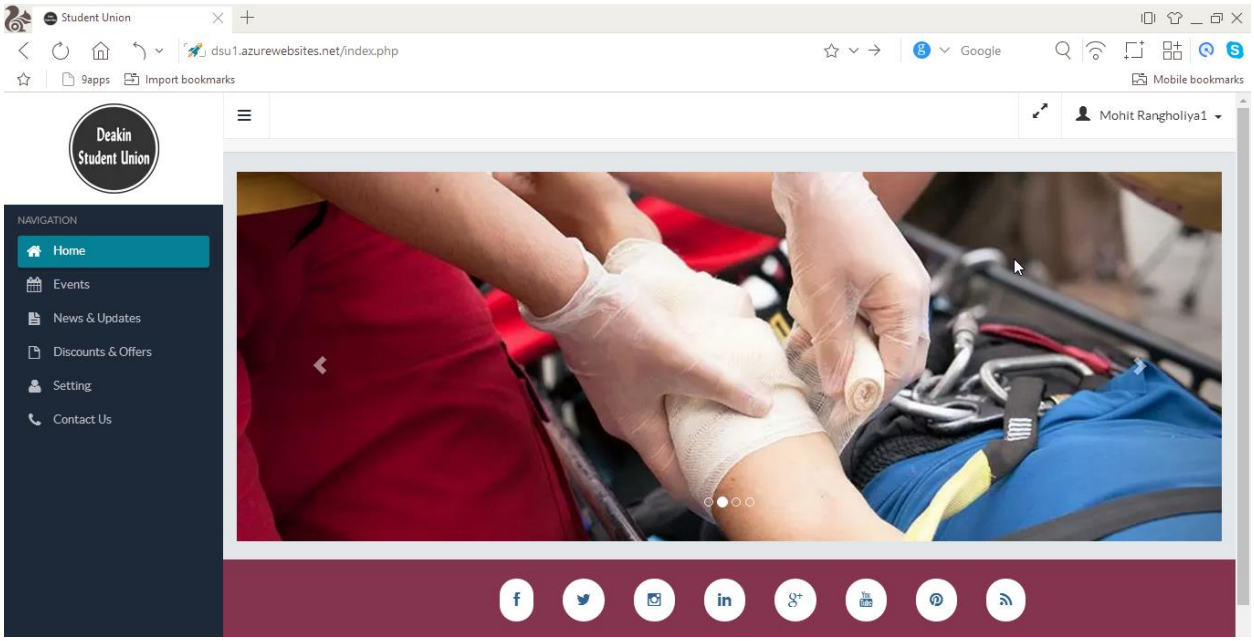
Step-1 : Member Students can Login here. If you are not a member of this Student Union then you can register by clicking New Member below.



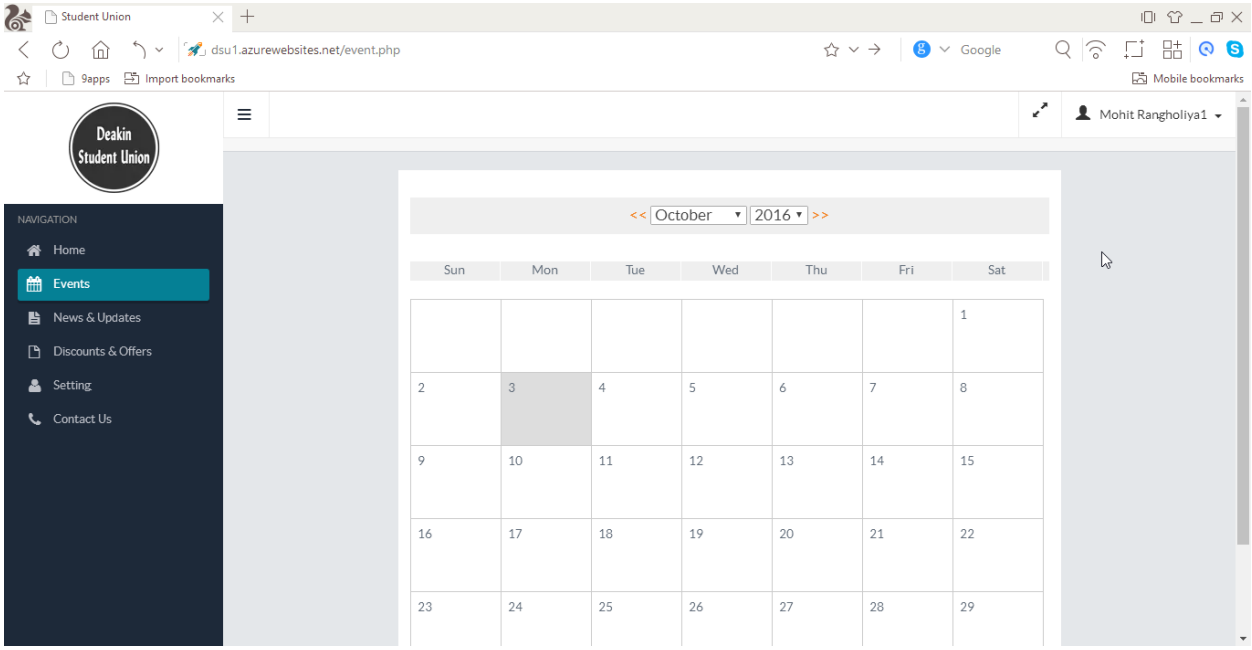
Step-2 : Registration – enter student details here to be a member of the union.



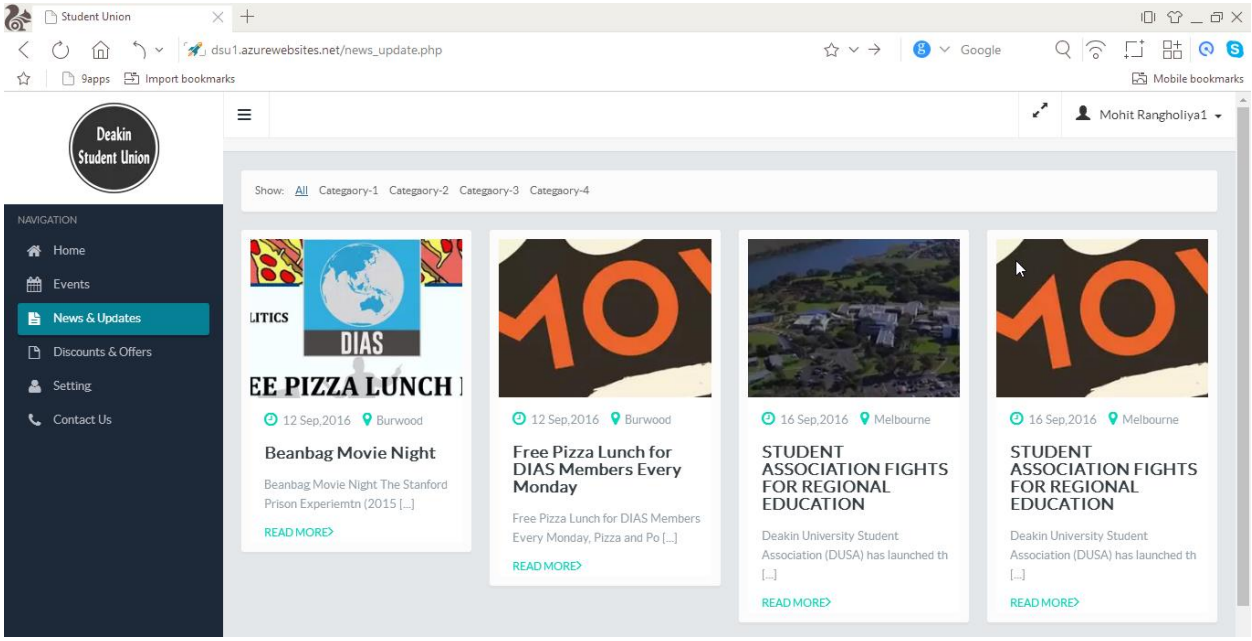
Step-3 : After successfully Login, you will be redirected to Home Screen as shown in below.



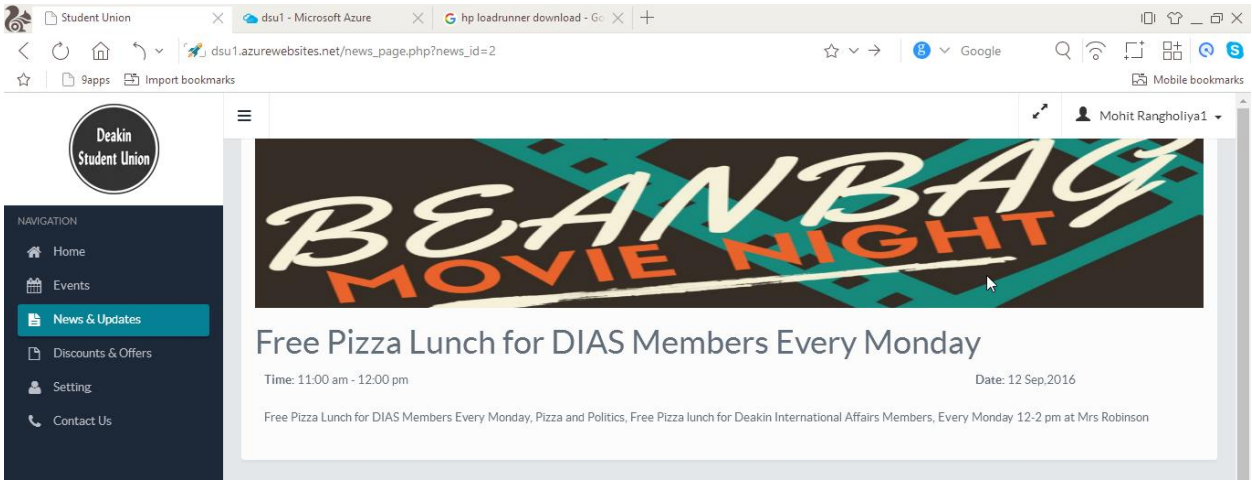
Step-4 : Events – All the events organized by union are listed here in below calendar. You can click on the particular date to see the event details.



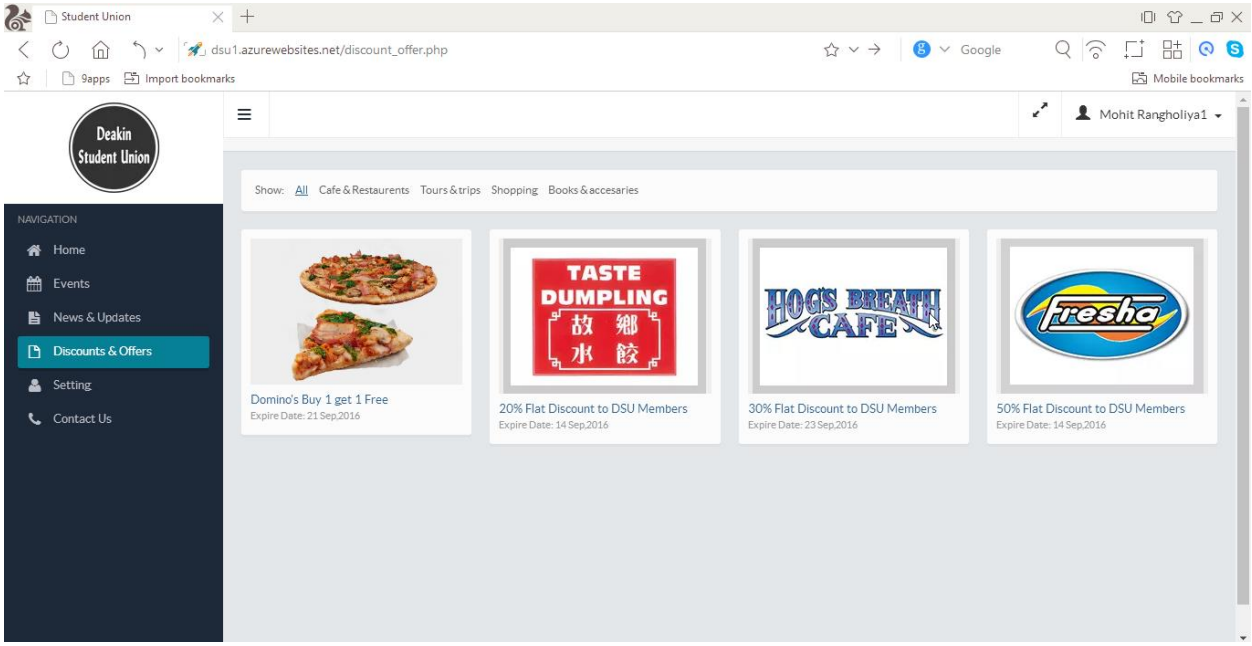
Step-5 : News & updates – It shows all the news and any other updates for the members of union. You can read full news by clicking Read More option.



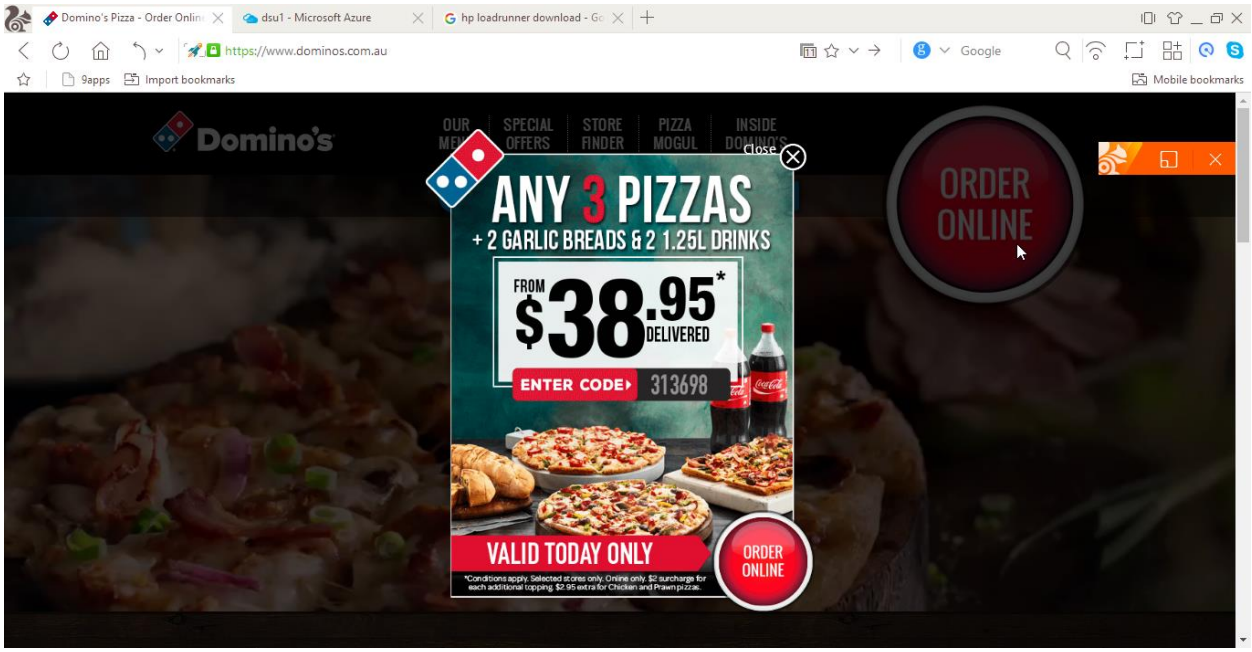
Step-6 : Read particular news with full description.



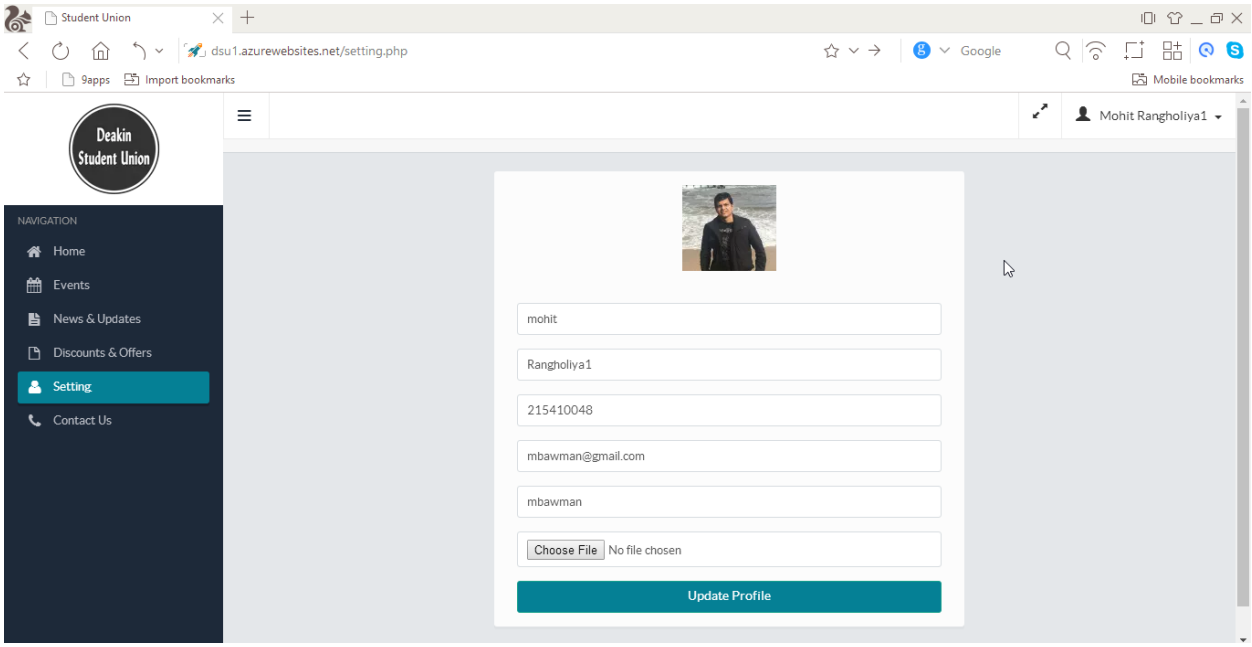
Step-7 : Discount & Offers – It shows all the offers and campaigns going on for Union members.



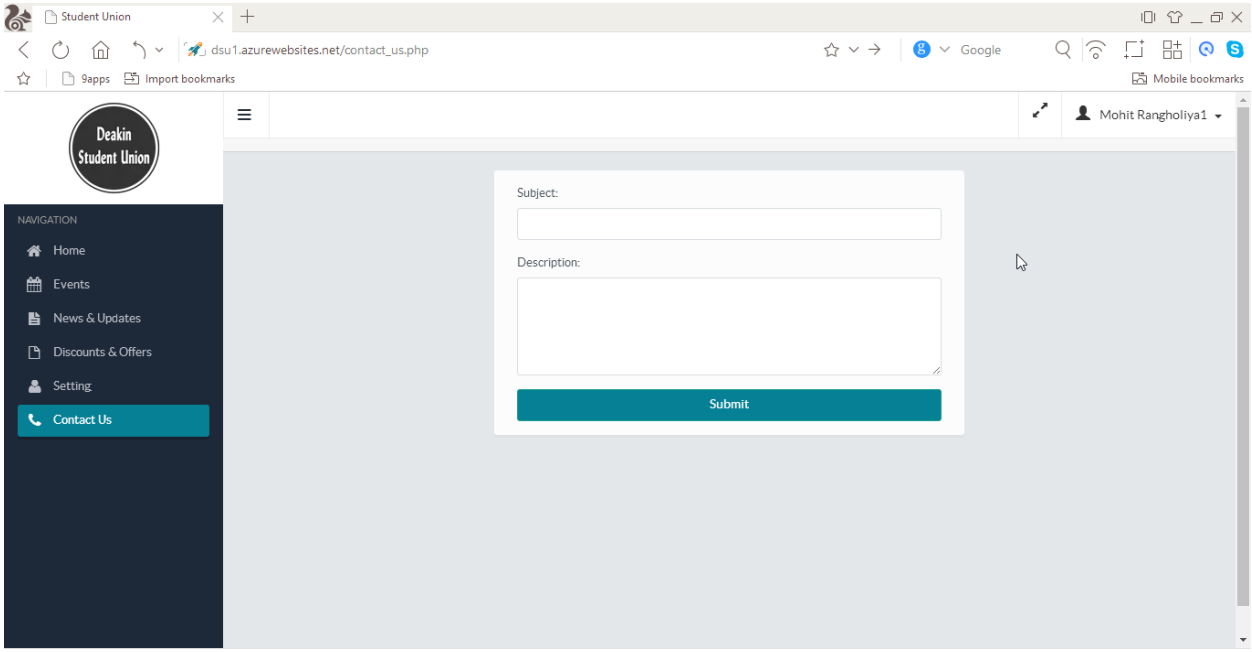
Step-8 : Click on particular offer will redirect to the offer page.



Step-9 : Settings – Using this option you can change your basic details and profile picture.



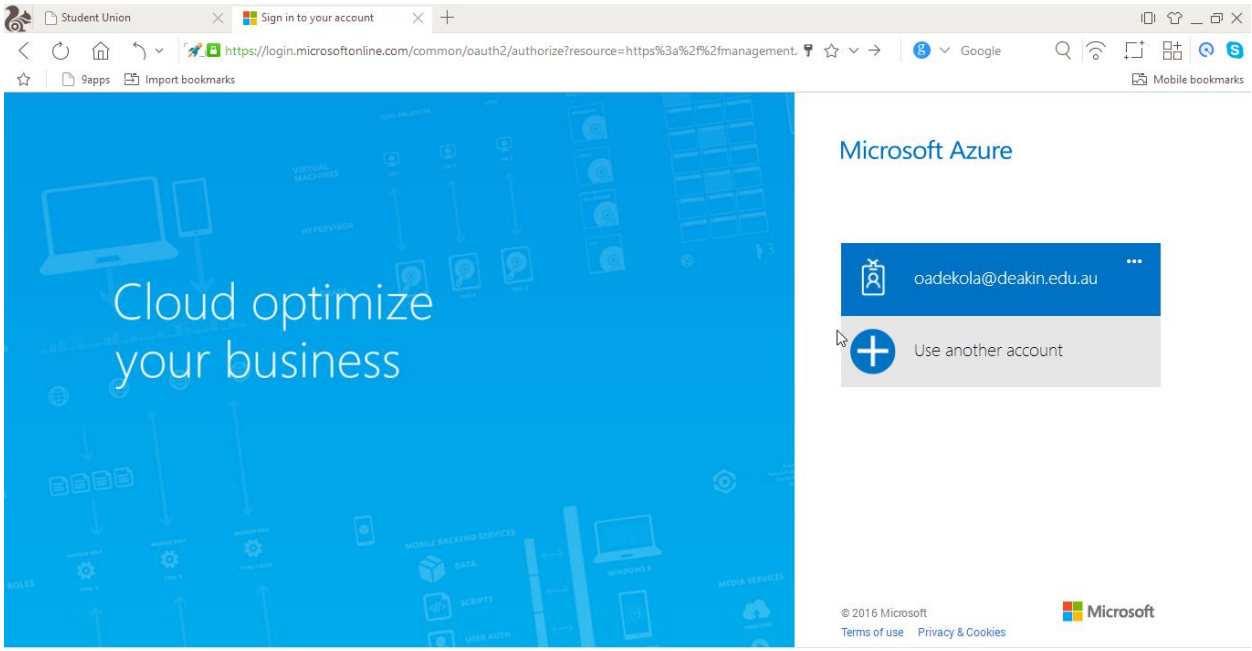
Step-10 : Contact Us – You can send your queries to the union management by submitting your queries below. You will be responded by the mail from management.



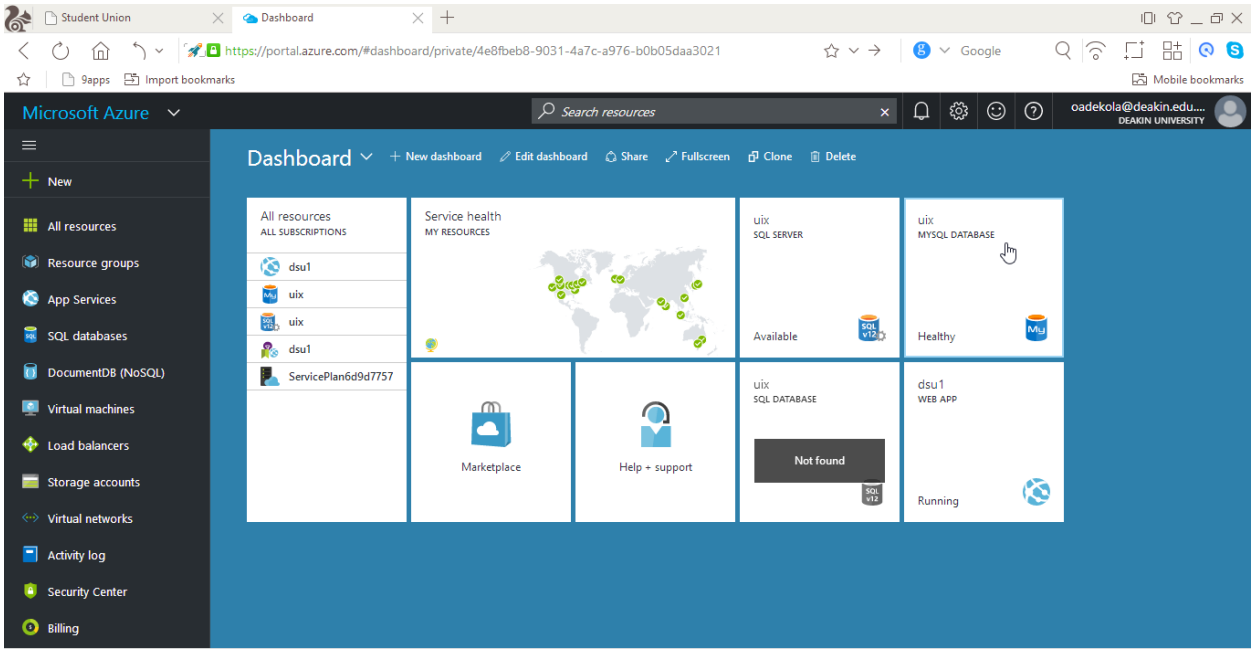
Hope, this proved useful for you to access the web application developed for you. We will be happy to here back from you in regards of any suggestions you want to give us. We will highly consider your feedback for the improvements. You can write to us directly on mranghol@deakin.edu.au .

Deployment Steps

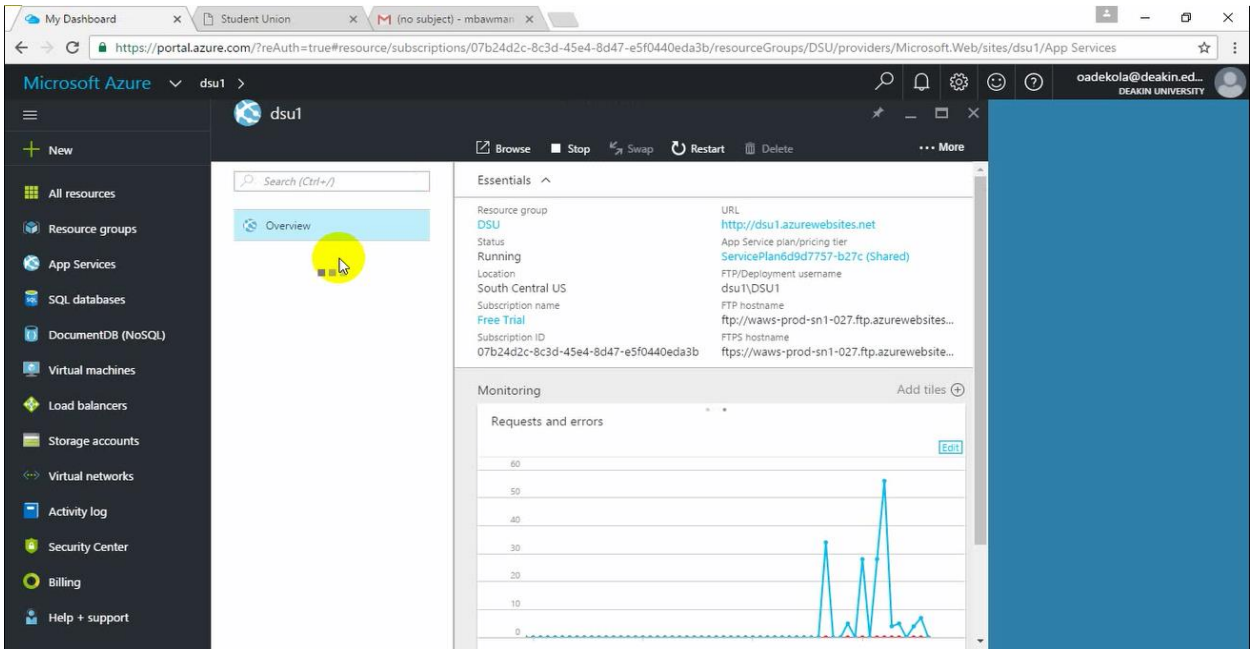
Step-1 : Getting start with Azure firstly sign in the Azure portal. You can use your University Student Credentials for signing up with Azure which is 1 month free only for students.



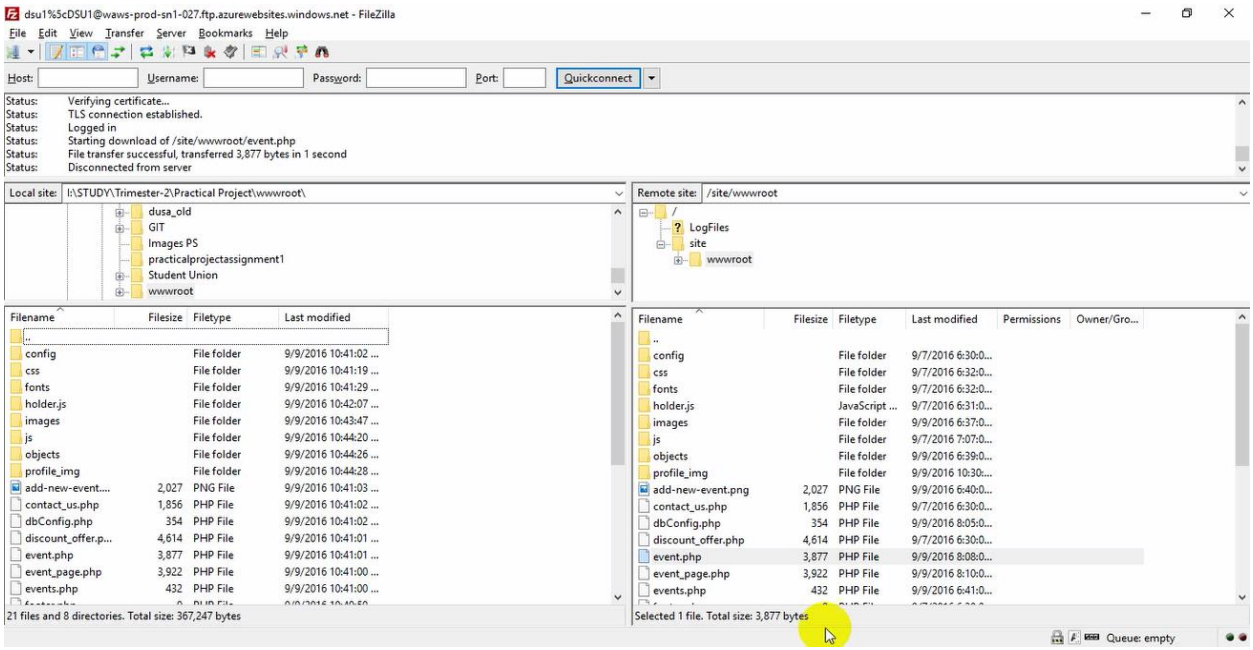
Step-2 : Create a New Dashboard and create new Web Application. To create any new element you can use search option available on top of the Azure Portal.



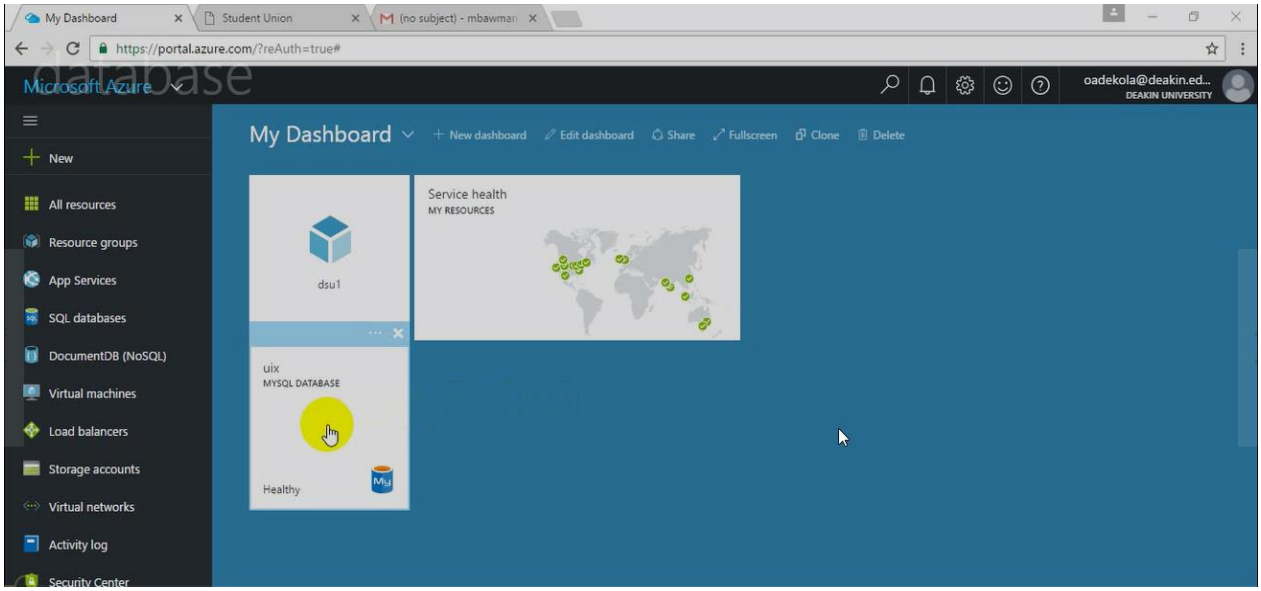
Step-3 : Clicking on Application overview show the Connection attributes for connection with FileZilla.



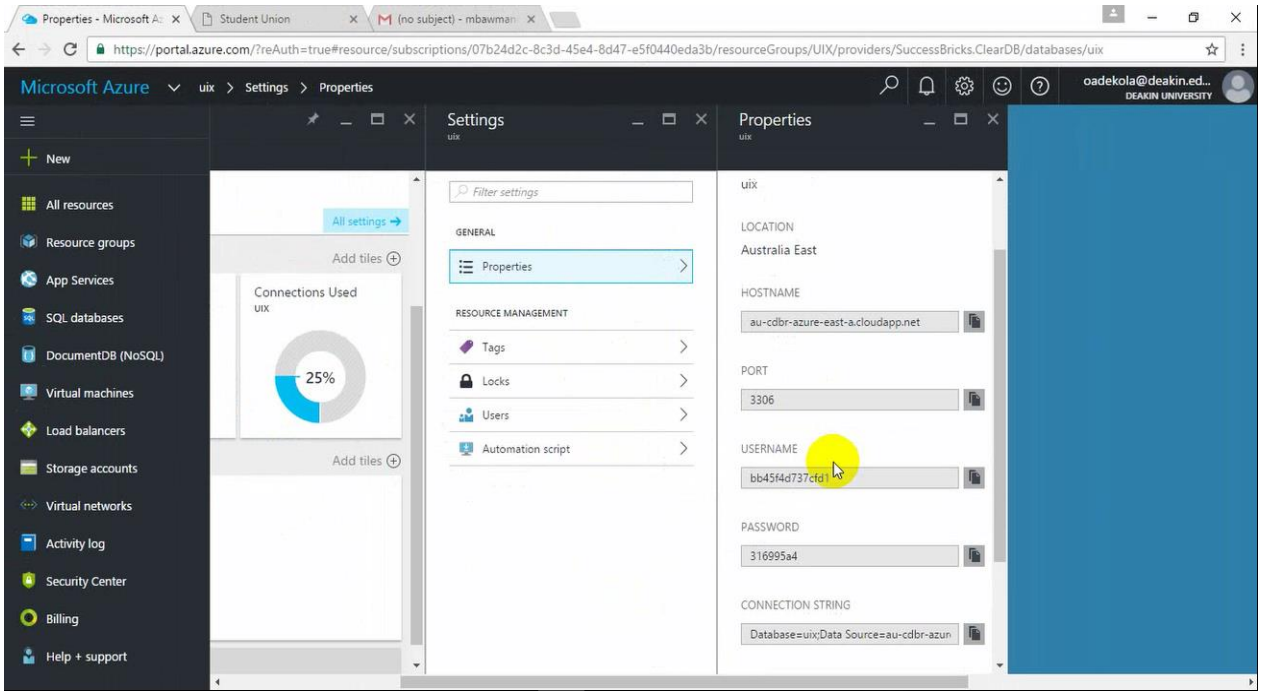
Step-4 : Enter Hostname, Username, Password and Port from the Azure from above process and connect with FileZilla. Here “wwwroot” is the root folder where all the source files are placed. You can upload all your source file from the left window to the right window.



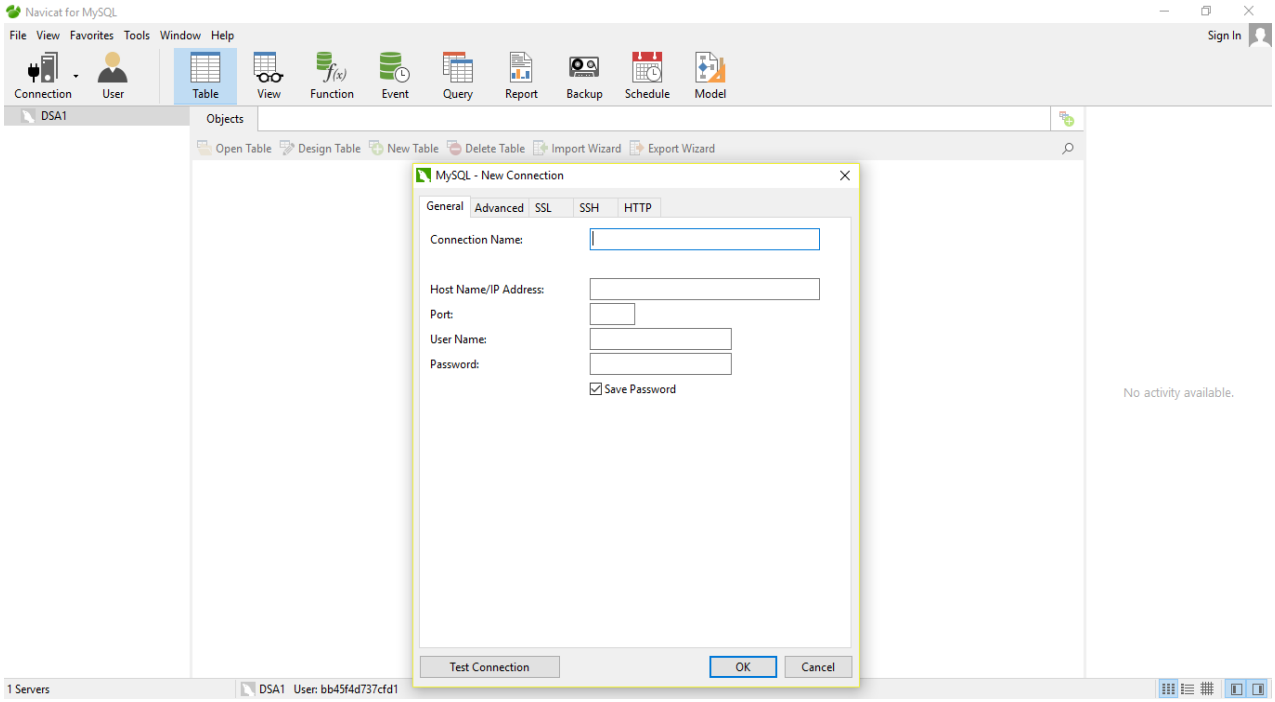
Step-5 : Search and create MySQL Database with name “uix”.



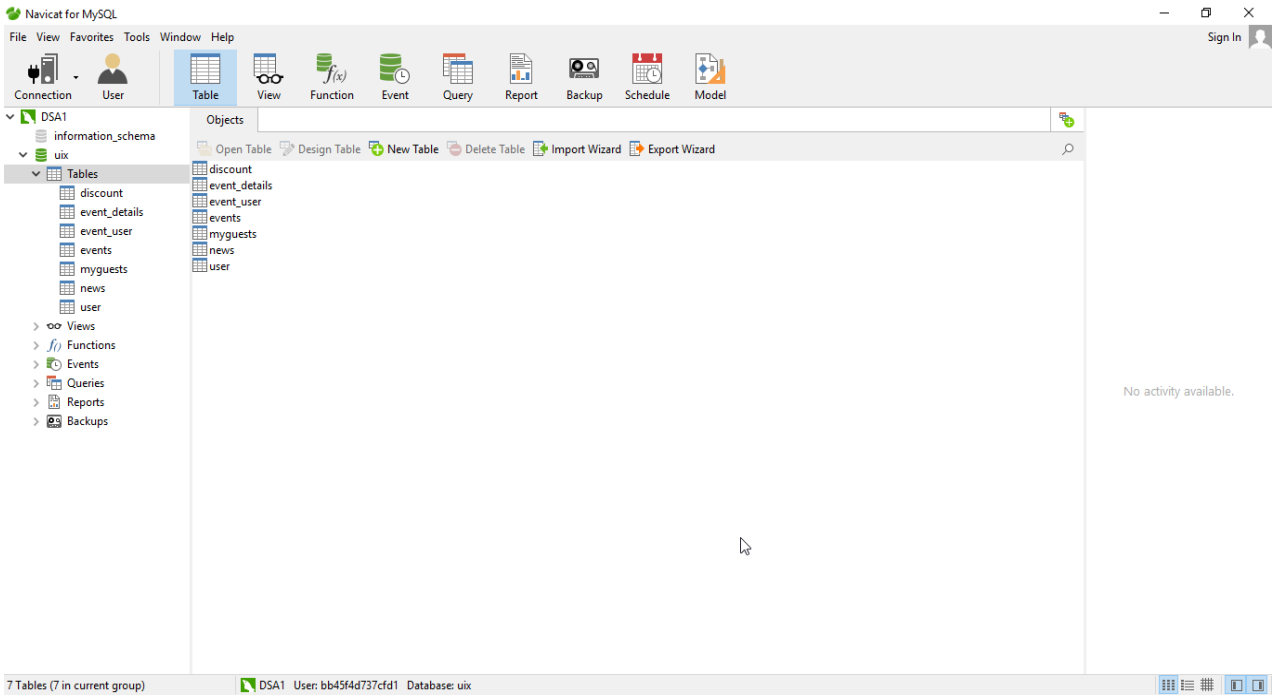
Step-6 : Click on MySQL Database we created and go to Properties where MySQL Connection attributes are shown.



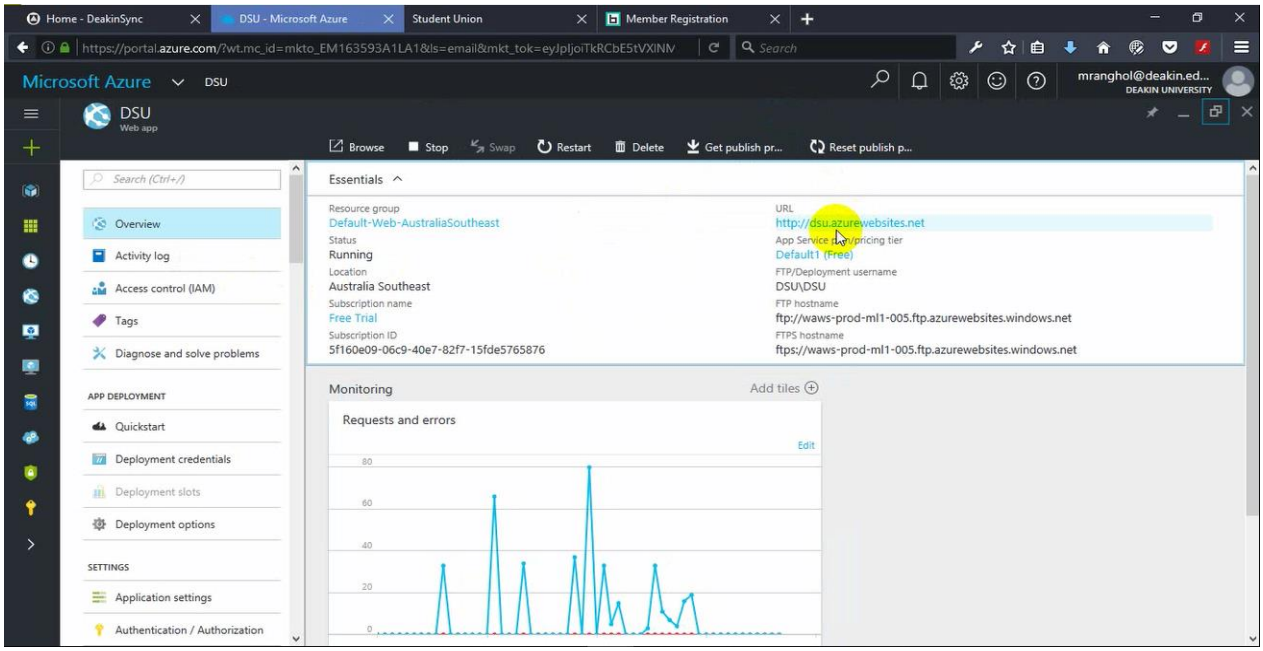
Step-7 : Connection with Navicat using connection attributes from Azure portal. Enter all the values from the above properties. After inserting all the details you can test connection as well.



Step-8 : Click on the connected database where you can insert, delete, update, modify tables into the database. Using import wizard, you can import your .sql tables directly into Navicat.



Step-9 : Finally, the source package is uploaded and Database is also connected so now by clicking on the web application link shown in Azure application overview, you can use and explore the developed web application. (http://dsu1.azurewebsites.net/)



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