

# **WEB APPLICATION FOR OFFICE OF INTERNATIONAL PROGRAMS**

[\(http://oip.ksu.edu/\)](http://oip.ksu.edu/)

By  
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A REPORT

Submitted in partial fulfillment of the requirements for the degree  
MASTER OF SCIENCE

Department of Computing and Information Sciences  
College of Engineering  
KANSAS STATE UNIVERSITY  
Manhattan, Kansas  
2011

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## **ABSTRACT**

The mission of the Office of International Programs is to lead the internationalization of Kansas State University by supporting and collaborating with faculty, students, and scholars. The units within the Office of International Programs provide primary support for both in coming international students, faculty and researchers at K-State, faculty and researchers going abroad, etc.

It seldom happens that all the international activity of a particular university is organized under the same hood. There is no conventional source that handles all the information (International activity) in a single web application, it is usually scattered over the web. This makes it tough for prospective students or researchers to search for people or programs. Therefore, to overcome this issue, the current project has been implemented.

The main objective of the current project is to design a website for the Office of International Programs. This website hosts information about International Faculty, Study Abroad Programs, International Agreements, Alumni Groups and International Students on a single platform. This portal would offer the administrators with different modules where information about a particular program can be added, edited, deleted and viewed.

Primary focus of this application is to display information in an innovative format and to enable different users to navigate over the web site easily. This website makes the searching process easy for users. This site is significantly responsible for viewing of information and maintaining a database for various people and programs for Office of International Programs at Kansas State University.

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## **ACKNOWLEDGEMENT**

This acknowledgement transcends the reality of formality when I would express deep gratitude and respect to all those people behind the screen who guided and inspired me for the completion of my project work.

I would like to express my deep gratitude and wholehearted thanks to Dr. Mitchell L. Neilsen for his valuable guidance, precious suggestions and encouragement in completing the project successfully.

I wish to convey my sincere thanks to my committee members Dr. Daniel Andresen and Dr. Torben Amtoft for their support throughout the project. Furthermore, I would like to thank Mr. Gamage P Dissanayake, my Project Manager at Department of Communications for the great support he provided me in learning new technologies and for the successful completion of my project.

I am also grateful to all the administrative staff and the technical staff of Computing and Information Sciences Department who have been helpful throughout my Masters. Lastly, I would like to thank my friend, Praveen Kumar Lakkimsetti for his invaluable comments on my project and his endearing support.

## **DEDICATION**

I would like to dedicate this project to my father, Mr. Venkat Rao Jarugu, who has taught me how to be strong in dire situations and who has instilled great confidence in me.

I would like to dedicate this project to my mother, Mrs. Sandhya Jarugu, who has been my support and strength throughout my life.

I would also like to dedicate this project to my younger sister Sravya Jarugu who confides in me and believes that I can attain great heights.

I also dedicate this project to my dearest friends Neha Dhiman, Ishan Srivastava who have been instrumental in guiding me throughout my Master's program.

# **CHAPTER 1**

## **1.1. Introduction**

The current project involves the construction of a website for Office of International Programs. This website is used to represent the various International activity and data at Kansas State University on Google Maps. The main aim of the project is to maintain a database for the faculty and staff of Kansas State University. It also maintains information about the Alumni groups at K-State, the various Agreements K-State has with different universities and institutions across the world, the number of International Students at K-State and the various Study Abroad Programs offered by K-State.

## **1.2. Motivation**

One of the crucial tasks of every university is to maintain a database for all the international activity taking place in it. This might include information regarding the places visited by various professors, conferences attended by them at various places, the numerous agreements that the university has with other universities across the world, the different alumni groups present in the university and the international students in the university etc.

Also it is equally important that a database is maintained to store information about the faculty and their profiles. There are many instances where data about a staff member is not updated for ages even if it is updated in individual faculty profiles and it is very time consuming and tedious for a prospective student or a research student to look for individual faculty profiles in a website.

To overcome this difficulty, The Office of International Programs at Kansas State University has come up with an idea of implementing a website using Google Maps where a particular professor or a program is linked to a map. The application grabs all the required data from the database and places it on the map. A user checks in to the web site and can open the map and hover over the markers to see the list of people or programs in a particular place.

### **1.3. Project Description**

A unique web application has been designed to provide users with all the information in a single interactive interface. The main goal of the website is to enable an easy and efficient approach to the whole process of searching for various kinds of information available in the K-State web. Here, the data regarding a particular person or a program is updated regularly. The faculty is also given the privilege to add, edit and delete their information as and when required.

This website mainly consists of two essential modules: The Map View where users can view information regarding a person or program at K-State and a module available to edit the information in the database.

#### **INTENDED USERS:**

There are three main users of this website: The Administrator, the Faculty/Staff and Other users (which include current students, prospective students, various other organization members, etc.).

**Administrators:** The administrators are the people who have full control over the website. They can add, edit or delete any information from the database. The administrator is also given the authority to check who has updated profiles at what time. He has entire information about the changes made to the website as well.

**Faculty:** The faculty can login to the system and view their details. Apart from that they can also edit their respective details from the database. But they do not have the privilege to modify details about another faculty or staff member or any other program at K-State.

**Other Users:** All the other users can only view information. They cannot login to the website. They can browse through the website and view people and programs over Google Maps and learn about various international activities at K-State. They have access only to the Map pages.

Five areas have been mainly emphasized to represent the international activity at K-State: International Faculty/Staff, Alumni Groups, Agreements, International Students and Study Abroad Programs. Each of this has the two modules mentioned above (map view and the edit details view). This allows the future students to learn about distinct information about the university. Future students can learn about various professors in their department and the various places they have been to and the several conferences they have attended. In a way it helps



students to choose the professor they would want to work with easily by matching their area of interest and the area of expertise. Students and Researchers can learn about the various agreements K-State has with other universities or organizations around the world. This would help people know the amount of progress the university has made and to what extent the university has made a mark internationally. Students can also learn about the manifold of study abroad programs hosted by K-State. They can also view details regarding the several Alumni groups and the number of International students arriving from different countries.

Apart from this there is a special module, the search module. It is specifically designed to search for K-State Faculty/Staff. Two kinds of search are present: The Keyword Search and the Advanced Search. In Keyword Search a person can be searched for based on a particular criterion. In the Advanced Search a person can be searched for based on their Area of Expertise, Country of Expertise, College and Department they belong to.

While viewing the details of a particular faculty member or staff, his profile is linked to people who have similar areas of interest, skillset or countries of expertise. This makes the search process even more easy and efficient. A student can easily navigate to the profiles of different professors from a single professor's page.

The faculty members in addition to editing their details can also upload documents such as their Curriculum Vitae, their pictures etc. They can also link their profiles to their personal web pages or departmental web sites.

This website is also connected to the main K-State website ([www.ksu.edu](http://www.ksu.edu)). It is linked to K-State Academics, Admissions, Research, Campuses, Directories and People. It also has a connection to the main K-State search engine.

The modular design of the website enables the administrators to maintain, debug, upgrade and customize the web site in an effective way. Database maintenance is also made simple thereby allowing the administrators to add as many users and as much data possible to the database.

## **CHAPTER 2**

### **2.1. Requirements Gathering**

I have collected all the information required for the project from the Office of International Programs, Kansas State University. Regular meetings with the people from Office of International Program at every phase of the project helped in meeting the requirements of the project. Apart from this, this project required a lot of background research on building applications, integrating them to ASP.Net and Oracle 11g.

All the information regarding the K-State Faculty/Staff was provided in Microsoft Excel format. These Excel sheets had to be exported to Oracle 11g database. Apart from this some information has been gathered as and when the application was being built. Certain information such as Images and Curriculum Vitae of Faculty/Staff had to be downloaded from the main K-State website ([www.ksu.edu](http://www.ksu.edu)). The latitudinal and longitudinal values for different countries over the globe have been extracted from the web.

Expectations of the system such as the mission objectives, the environment, the constraints and measures to improve the efficiency of the application were discussed well in advance.

Requirements workshops have been conducted frequently to check if all the requirements are met. In these workshops, few faculty/staff members participated to check if anything else is required additionally. These issues are again discussed with the Program coordinator and then these additional requirements were taken into consideration if need be.

Initially a prototype was built and then a series of changes have been made over this prototype to meet the requirements specified by the Office of International Programs and finally the website was built.

## **2.2. Requirements Analysis**

### **2.2.1. SOFTWARE REQUIREMENTS:**

Below are the software requirements for the project:-

Operating System: Windows 2000 or higher

Platform: .Net 3.5 Framework & IIS (to deploy the application)

Database: Oracle 11g/10g

Technologies used: ASP.Net, C#, Javascript, HTML, CSS, Google Maps API

Browsers: Internet Explorer, Mozilla Firefox, Google Chrome, Safari

### **2.2.2. HARDWARE REQUIREMENTS:**

Processor: P IV or higher

RAM: 250MB

Space on disk: minimum 100MB

## **2.3. Feasibility Study**

### **2.3.1. ECONOMIC FEASIBILITY:**

The project is economically feasible as it requires a system with normal configuration and software such as Visual Studio, Oracle 11g installed on it. The users should be able to connect to the internet via the system and this would be the only cost incurred on the project.

### **2.3.2. TECHNICAL FEASIBILITY:**

To develop this website, a high speed internet connection, a web server, and software are required. The current project is technically feasible as the system is equipped with all the software required for its proper execution.

### **2.3.3. BEHAVIORAL FEASIBILITY:**

The project is behaviorally feasible since it requires no technical guidance, all the modules are user friendly and execute in a manner they were designed to do.

## **CHAPTER 3**

### **3.1. System Design**

Based on the above requirements, the different components, modules, interfaces and interactions of the system have been designed. The inputs and outputs of the application have been shown in an abstract manner using these diagrams. These are the prototypes that are built and are reviewed by the users. Various entities have been identified and the relation between these entities is described in the following diagrams. The various diagrams determined for this web application include:

- Use Case Diagram<sup>[5]</sup>
- Class Diagram<sup>[5]</sup>

These diagrams are discussed in detail in the following sections.

#### **3.1.1. USE CASE DIAGRAM:**

A Use Case diagram is used to represent the sequence of actions taking place in a system. It has roles and actions. Here for this particular application there are 3 different users that represent these roles:

- Administrator
- Faculty/Staff members
- Other Users

Each user/role has different privileges and each perform different actions.

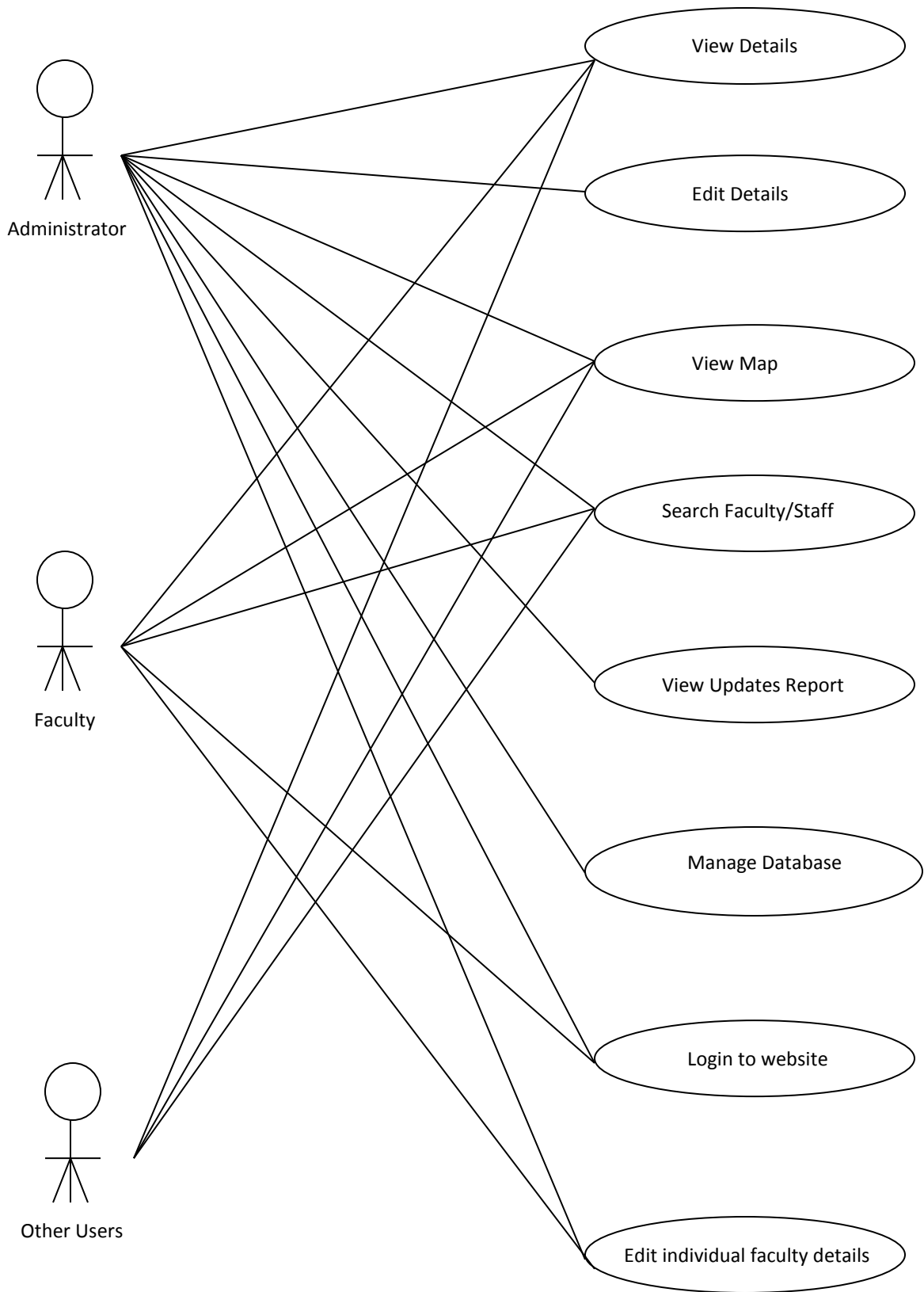


Figure 3.1 Use Case Diagram

### 3.1.2. CLASS DIAGRAM:

A class diagram showcases the basic types being built in the system. It forms a prototype for the application being developed. It encompasses the system's classes, attributes, operations and the relationship between these classes. The main structure of the web application developed during this project can be represented by the following class diagram.

Three class diagrams have been designed each for the different roles Administrators, Faculty/Staff and Other users.

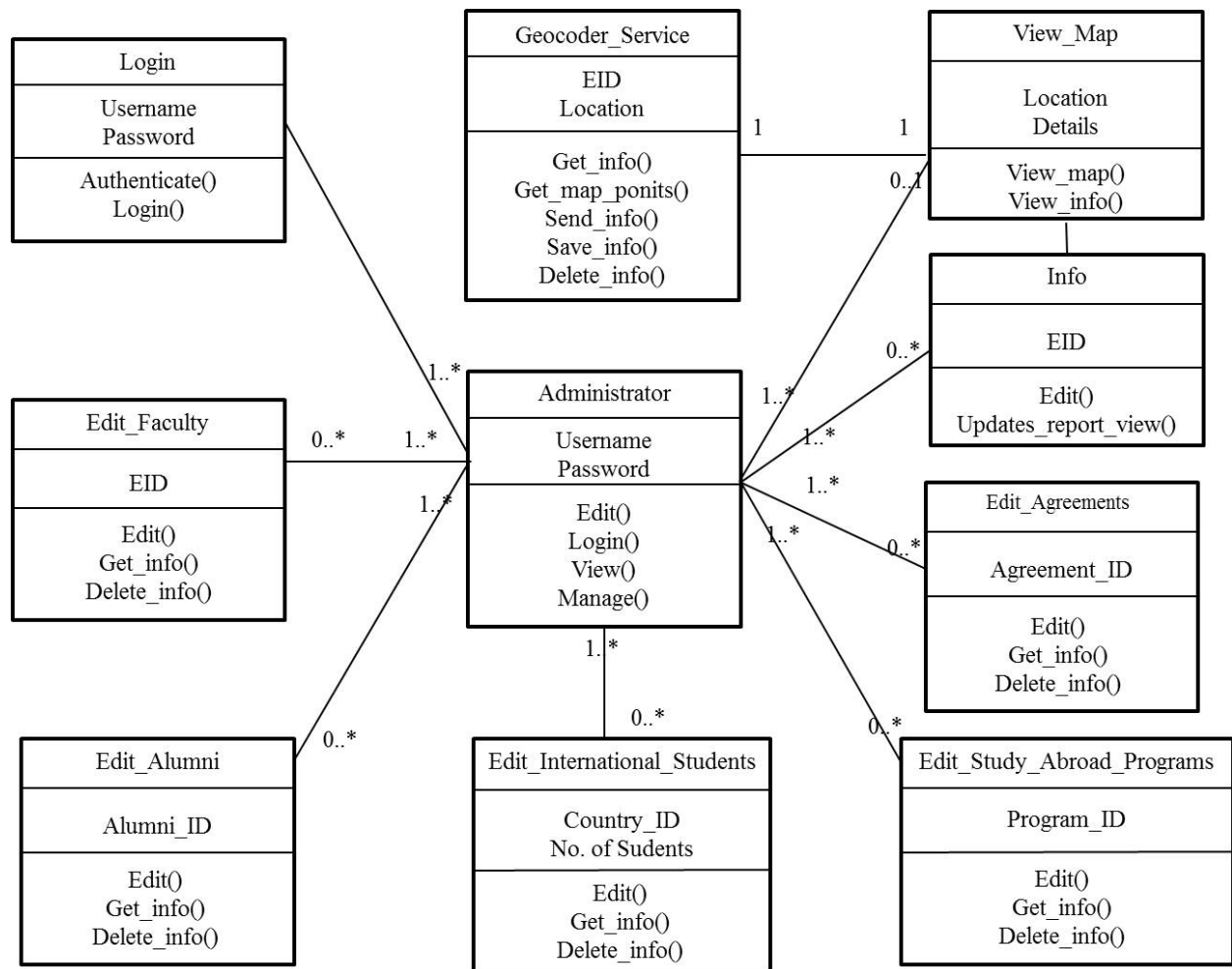


Figure 3.2 Class diagram from the Administrators point of view

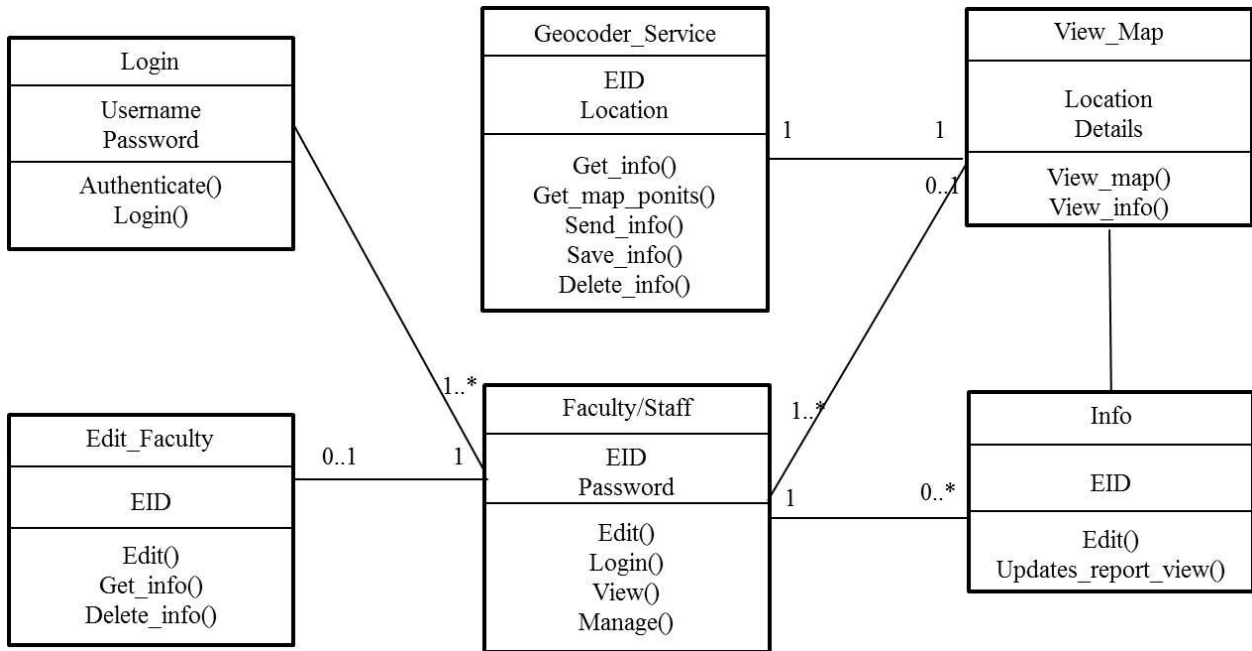


Figure 3.2 Class Diagram for the role Faculty/Staff

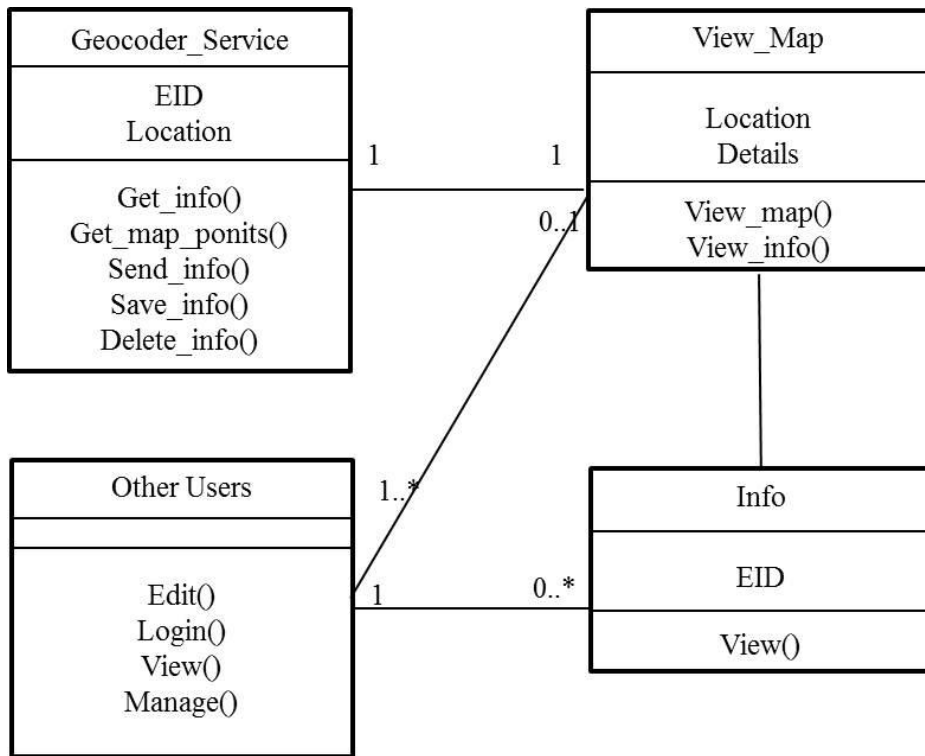


Figure 3.4 Class Diagram for the role Other Users

### 3.2. System Architecture

This web application followed the 3-tier architecture<sup>[1]</sup>.

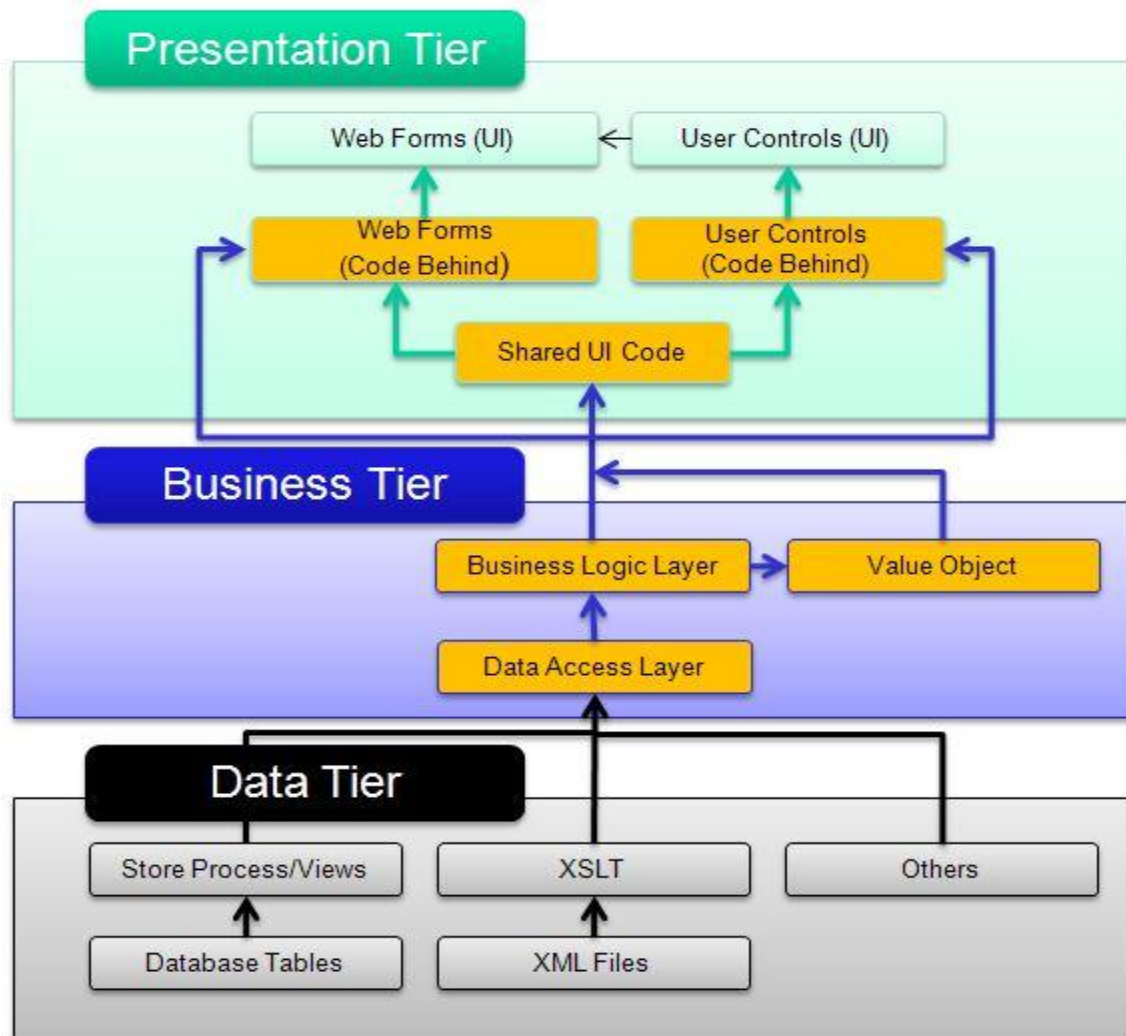


Figure 3.5 System Architecture<sup>[9]</sup>

The 3-tier architecture<sup>[6]</sup> follows the Divide and Rule policy and is divided into basically 3 logical layers:

- Presentation Layer
- Business Logic Layer
- Data Access Layer

Ideally, each layer specializes in one or a handful of functionalities that service the upper layer. Each of the three layers is designed such that the layer above it does not need to understand nor



know the implementation details of any of the layers below it. This has been accomplished by providing well defined layers of abstraction that are not visible to the layers above it. The advantage of this approach is that even if the implementation details have been changed in one layer, it does not affect the other layers. With the right approach the 3-tier architecture saves hours of development time. Here we code each bit only once with powerful re-usage. In the Divide and Conquer strategy, each tier is rather easy to develop. It is better to have 3 simple parts instead of a complex single one.

**PRESENTATION LAYER/TIER:** Here the application is a web application. The presentation layer here refers to the Graphical User Interface of the website that has been designed. It is responsible for retrieving the data that has been rendered by the other layers. Here the data is manipulated and presented to the user in an easy to consume format. It is also responsible for rudimentary data validation such as missing fields, regular expression matching for emails and other content, numeric validation, range validations, etc.

The application uses controls such as DataList, DataGrid, Labels, Textboxes, Panels etc. It also makes use of Web services<sup>[16]</sup>, ASPX pages, user controls (.ascx pages) and server controls. It communicates with other tiers by outputting results to the browser/client tier and all other tiers in the network.

**BUSINESS LOGIC LAYER/TIER:** This is the kernel of the application. It forms all the business logic for the application. It is responsible for accessing the data logic layer to retrieve, modify and delete data to and from the data tier and send the results to the presentation tier. It is also responsible for processing the data retrieved and sent to the presentation layer. It consists of the main Application Logic. It uses OleDb<sup>[15]</sup> to update, delete and access data from Oracle 11g<sup>[11]</sup> database and also passing the data retrieved to the presentation layer in a DataReader<sup>[14]</sup> or DataSet<sup>[14]</sup> object, or a custom collection object.

**DATA LOGIC LAYER/TIER:** This tier consists of database servers. It is responsible for accessing and manipulating data from the data source<sup>[7]</sup> (Oracle database). This layer only interacts with the database. We write the database queries or use stored procedures to access the data from the database or to perform any operation on the database.

## CHAPTER 4

### 4.1. Implementation

The application has been developed using Visual Studio 2008. The website is designed using ASP.Net<sup>[3]</sup> with C#<sup>[4]</sup> as the back end. Web Services have been used to bring the information regarding various people onto the Maps. HTML and CSS have been used to format the web pages. Oracle 11g database management system has been used to store all the information for Kansas State University. Google Maps API<sup>[2]</sup> is used in this project to represent the countries every person in the database has visited on Google Maps. This website is compatible with browsers such as Internet Explorer, Mozilla Firefox, Google Chrome, Safari etc.

Controls such as DataGrids, DataLists, DropDownLists etc. have been extensively used to display information in an organized format.

GOOGLE MAPS API<sup>[10]</sup> and JAVASCRIPT<sup>[8]</sup>: The Google Maps Javascript API lets us embed Google Maps in web pages. Version 3 of this API is used for this application and it is especially designed to be faster and more applicable to mobile devices, as well as traditional desktop browser applications. The API provides a number of utilities for manipulating maps and adding content to the map through a variety of services, allowing us to create robust maps applications on our website.

For the Google Maps API to work for the ASP.Net application, we require the API key. This key would be unique for the application and can be acquired by registering with Google and requesting for a key.

In this application, markers are created on the Google Maps. Each marker points to a country over the map. When we hover over these markers, a list of faculty/staff, programs, etc. are displayed for that particular country depending on the search criteria. We can also navigate to

the profile information of a particular person or a program by clicking on the link in the list displayed by the markers.

Javascript is a scripting language and is implemented as part of a web browser in order to provide enhanced user interfaces and dynamic websites. This enables programmatic access to computational objects within a host environment. In this application, javascript is used in conjunction with Google Maps API to position the maps, create markers over the map, to locate various places over the map using “GeoCoder Services”, to operate the InfoWindows (the panels in which the list of faculty or programs are displayed when hovered over the markers), to enable layers and overlays, etc.

WEB SERVICES (SOAP)<sup>[6]</sup>: A Web Service is programmable application logic accessible via standard Web protocols. A web service consists of three components: a listener to receive the message, a proxy to take that message and translate it into an action to be carried out (such as invoking a method on a Javascript/Google Maps API object in this case), and the application code to implement that action. The listener and proxy components are completely transparent to the application code here.

I have followed the SOAP protocol to implement web services. SOAP provides the proxy component, which parses and interprets the SOAP message to invoke application code. The proxy deals with things like encoding styles, translation of native types of data in to XML and vice versa. Here the client application is a Web backend aggregating data to display custom content. On the server side the .Net framework handler through ASP.NET and the .ASMX Web Service extension picks up this SOAP request and passes it off to the respective class for processing.

HTML, CSS: I have used HTML and CSS to style the web pages. Separate HTML and CSS files have been created and accessed in the .aspx pages. “Div” tags have been extensively used instead of tables to display content in an organized format.

FCKEDITOR<sup>[16]</sup>: FCKEditor has been used in this application to enable HTML editing. If a Faculty/Staff member or an administrator wishes to modify the information present on the website, they can use FCKEditor for HTML formatting. This HTML text editor brings many of the powerful WYSIWYG editing functions of known desktop editors like Word to the current

web application. It's relatively lightweight and doesn't require any kind of installation on the client computer.

USERCONTROLS<sup>[13]</sup>: ASP.Net has the privilege to create custom user controls apart from the built in Web server controls. These user controls help in avoiding redundant data. User controls are containers into which we can put markup and Web server controls. They can be treated as a unit and we can define properties and methods for it. They are easier to create and we can reuse the existing controls as and when required. All HTML, CSS is embedded in the .aspx page and the user controls are used within these ASPX pages.

In this application all the queries for database connectivity, information retrieval etc. have been written in separate “.cs” files. Various ASP.Net web controls such as DataGrid, DataList, repeater etc. have been used to display data. The code also follows the modular approach. The whole application has been divided into different modules making it easier for the user to get acquainted with the website. AJAX Update Panels, AJAX Script Manager, Post back Triggers have been used to handle post backs. Below are the Figures of the built application:

## 4.2. Figures:

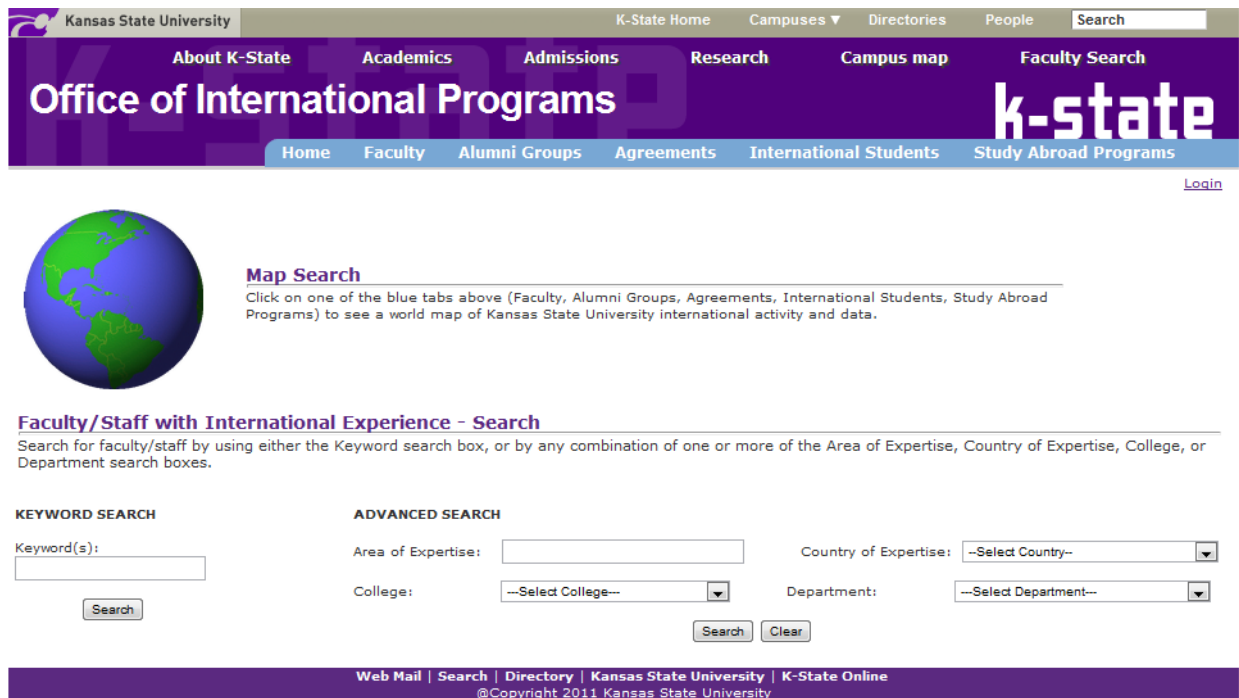


Figure 4.1 Search Page



### Map Search

Click on one of the blue tabs above (Faculty, Alumni Groups, Agreements, International Students, Study Abroad Programs) to see a world map of Kansas State University international activity and data.

### Faculty/Staff with International Experience - Search

Search for faculty/staff by using either the Keyword search box, or by any combination of one or more of the Area of Expertise, Country of Expertise, College, or Department search boxes.

#### KEYWORD SEARCH

Keyword(s):

#### ADVANCED SEARCH

Area of Expertise:

Country of Expertise:

College:

Department:

Faculty	Department	College/Division	Countries of Experience
<a href="#">Michie, Barry</a>	International Programs	Administration	India, Pakistan
<a href="#">Michie, Barry</a>	International Programs	Administration	India, Pakistan
<a href="#">Redington, S. Rose</a>	International Programs	Administration	
<a href="#">Rice, Thomas</a>	International Programs	Administration	Asia
<a href="#">Witcher, Kathleen</a>	International Programs	Administration	Germany, Italy, France, Mexico, Abaco Islands (Bahamas)
<a href="#">Young, Kristine</a>	International Programs	Administration	Hong Kong, Singapore, Malaysia, Thailand, India, Turkey, Rwanda, Japan

Figure 4.2 Faculty/Staff search


Figure 4.3 Faculty/Staff Map page (the college can be selected from the dropdownlist to narrow down the search).

**Melvin C. Hunt**  
 Associate Professor  
 College of Agriculture

Department:  
[Animal Science and Industry](#)

Phone: 785-532-1232  
 Email: [hhunt@k-state.edu](mailto:hhunt@k-state.edu)

[View my curriculum vitae](#) [View my Faculty Profile](#)



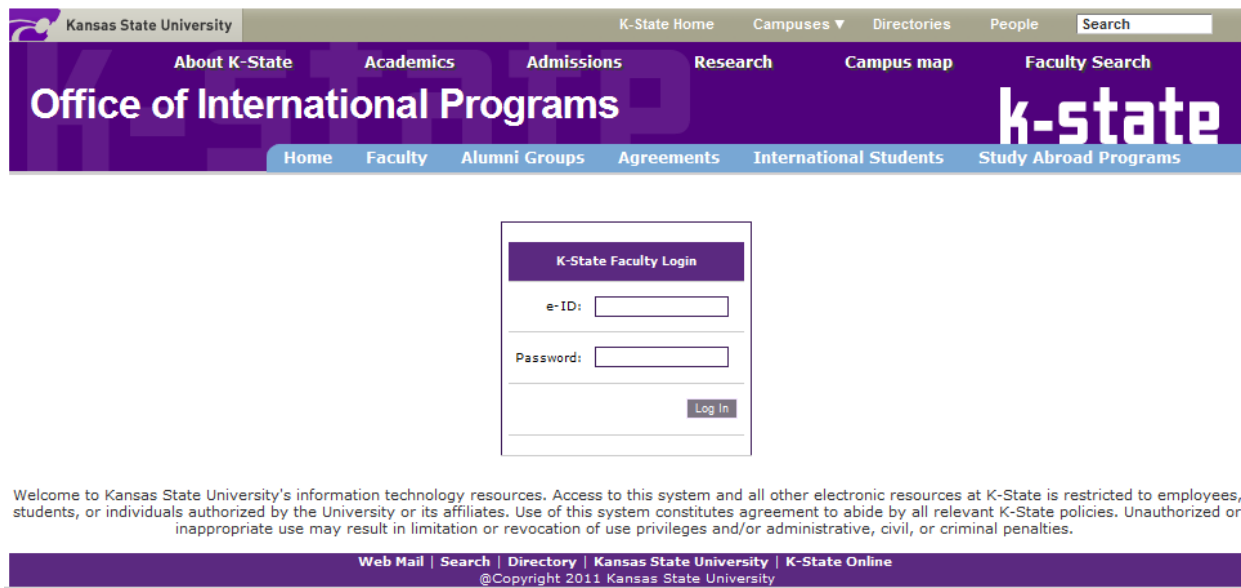
Last updated: 2/3/2010 10:00 AM

World Areas of Interest	Global
Countries of Expertise	Norway, Brazil, Italy
Areas of Expertise	Myoglobin Chemistry, Postmortem Meat Quality, Meat Color & Packaging
International Experience	International Lecturer, Meat Science Short Course, Brazil
International Affiliations	Sabbatical leave, Visiting Scientist, Norwegian Food Research Institute (1992)
Study Abroad Trips Organized	Food Industry Study Tour, Italy (Marh 2008, March 2010)

My Institutional Links:

Institution	City, Country	Institution Contact	Nature of Contact
University of Campinas	Campinas, Brazil		
Instituto de Tecnologia de Alimentos	Brazil		
University of Copenhagen, The Faculty of Life Sciences	Copenhagen, Denmark		
Royal Veterinary College	London, England		

Figure 4.4 Info Display Page (The current Figure shows the information of a professor at K-State. This page can be reached through either by clicking on the links in the InfoWindow on the map or by choosing a person from the Edit Pages).



Welcome to Kansas State University's information technology resources. Access to this system and all other electronic resources at K-State is restricted to employees, students, or individuals authorized by the University or its affiliates. Use of this system constitutes agreement to abide by all relevant K-State policies. Unauthorized or inappropriate use may result in limitation or revocation of use privileges and/or administrative, civil, or criminal penalties.

Web Mail | Search | Directory | Kansas State University | K-State Online  
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Figure 4.5 Login Page:

Faculty	Department	College/Division	Countries of Experience
<a href="#">Aakeroy, Christer</a>	Chemistry	College of Arts and Sciences	
<a href="#">Abdou, Ali</a>	Mechanical and Nuclear	College of Engineering	
<a href="#">Abel, Lynn</a>	Anatomy and Physiology	College of Veterinary Medicine	
<a href="#">Abernathy, Deborah</a>	Secondary Education	College of Education	
<a href="#">Ackerman, Trenton</a>	International Programs	Administration	
<a href="#">Ackleson, J.</a>	Diagnostic Medicine and Pathology	College of Veterinary Medicine	
<a href="#">Adamchak, Susan</a>	Sociology	College of Arts and Sciences	
<a href="#">Adamchak, Susan</a>	Sociology	College of Arts and Sciences	
<a href="#">Adams, David</a>	Human Nutrition	College of Human Ecology	
<a href="#">Adams, Christine</a>	English Language Program	Administration	
<a href="#">Adams, Bill</a>	Journalism MC	College of Arts and Sciences	
<a href="#">Adhikari, Koushik</a>	Human Nutrition	College of Human Ecology	
<a href="#">Aikens, Christine</a>	Chemistry	College of Arts and Sciences	
<a href="#">Aistrup, Joe</a>	Political Science	College of Arts and Sciences	
<a href="#">Akard, Pat</a>	Sociology	College of Arts and Sciences	
<a href="#">Akers, Jennifer</a>	Clinical Sciences	College of Veterinary Medicine	
<a href="#">Akkina, Krishna</a>	Economics	College of Arts and Sciences	India
<a href="#">Al-Hamdi, Mohamed</a>	Economics	College of Arts and Sciences	Kuwait, Iraq
<a href="#">Al-Khatib, Kassam</a>	Agronomy	College of Agriculture	Africa
<a href="#">Al-Salim, Farid</a>	History	College of Arts and Sciences	Palestine, Isreal, Syria, Lebanon, Jordan, Egypt
<a href="#">Alam, Mahbub</a>	Biological and Agricultural	College of Engineering	Bangladesh, Lebanon, China, Pakistan, India
<a href="#">Alavi, Saïid</a>	Grain Science and Industry	College of Agriculture	India, Mozambique
<a href="#">Alexander, Raylene</a>	Aviation Technology	College of Technology and Aviation	
<a href="#">Allbaugh, Rachel</a>	Clinical Sciences	College of Veterinary Medicine	

Figure 4.6 This image depicts the list of faculty profiles that are visible when logged in as an administrator.

Pierzynski, Gary	gmp	swathij	7/1/2011 6:58:54 PM
Witcher, Kathleen	kwitcher	kwitcher	6/6/2011 3:54:46 PM
Adhikari, Koushik	koushik	swathij	5/9/2011 12:23:21 PM
Adams, Bill	wadams	swathij	5/9/2011 12:21:55 PM
Ackleson, J.	jackleso	swathij	5/9/2011 12:20:32 PM
Abdou, Ali	aeabdou	swathij	5/9/2011 12:15:41 PM
Aakeroy, Christer	aakeroy	swathij	5/9/2011 12:14:41 PM
Subramanyam, Bhadriraju	sbhadrir	swathij	5/9/2011 11:17:54 AM
Alam, Mahbub	malam	swathij	5/9/2011 11:12:09 AM
Leslie, John	jfl	swathij	5/9/2011 9:03:28 AM
Dissanayake, Sunanda	sunanda	swathij	5/6/2011 11:15:28 AM
Schmidt, David	das	swathij	5/6/2011 11:13:46 AM
Muturi, Nancy	nmuturi	nmuturi	5/5/2011 11:25:27 AM
Graham, Steven	sgraham	sgraham	4/12/2011 11:04:18 AM
Benson, Janet	janet	swathij	4/4/2011 2:17:47 PM
Prasad, P.V. Vara	vara	vara	4/2/2011 10:20:40 PM
Gable, John	jgrable	jgrable	3/17/2011 10:07:27 AM
Britt, Sonya	sbritt	sbritt	3/10/2011 11:04:21 AM
Thurston-González, Sara	saratg	saratg	3/8/2011 1:53:40 PM
Thurston-González, Sara	saratg	saratg	3/8/2011 1:53:40 PM
Chakrabarti, Leena	leena	leena	3/4/2011 2:16:59 PM
Niehoff, Brian	niehoff	niehoff	3/2/2011 11:22:32 AM

Figure 4.7 Updates Report (Visible only to the administrator)

Kansas State University | K-State Home | Campuses | Directories | People | Search


About K-State | Academics | Admissions | Research | Campus map | Faculty Search

# Office of International Programs

k-state

Home | Faculty | Alumni Groups | Agreements | International Students | Study Abroad Programs

Edit Faculty | Edit Alumni Groups | Edit Agreements | Edit Students | Edit Study Abroad | Updates Report | Logout



### Map Search

Click on one of the blue tabs above (Faculty, Alumni Groups, Agreements, International Students, Study Abroad Programs) to see a world map of Kansas State University international activity and data.

List All Faculty Profiles

### Faculty/Staff with International Experience - Search

Search for faculty/staff by using either the Keyword search box, or by any combination of one or more of the Area of Expertise, Country of Expertise, College, or Department search boxes.

**KEYWORD SEARCH**

Keyword(s):

**ADVANCED SEARCH**

Area of Expertise:  Country of Expertise:

College:  Department:

Web Mail | Search | Directory | Kansas State University | K-State Online  
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Visible only to admins

Figure 4.8 Search Page from the view of the Administrator

Select from the list to edit Faculty from International DB:

## EDIT/ ADD FACULTY INFORMATION -- KAMBHAMPATI, SRINI

Last updated by :nliija at 3/2/2009 12:45 PM

Enter the fields below and click submit to save entered data. Use delete button to delete the whole information from your record.

First Name:

Last Name:

College:

Department:

Title:


Web:

Phone:

eID:

Email:

CV Link:  No file chosen

Image: 



1) World Areas of Interest [TEXT]

South and Southeast Asia, South America

2) Countries of Expertise [TEXT]

Canada, Brazil, China, India, Philippines, Brunei, Malaysia, Thailand, Sri Lanka

3) Areas of Expertise [TEXT]

4) International Experience [HTML]

5) International Affiliations [HTML]

Sabbatical Leave, Laboratory for Development and Evolution, Department of Zoology, University of Cambridge, Cambridge, UK (1999)

11) Affiliated International Institutions

Institution Name: Select from here...

--Select Institution---

or type here

City  
Country  
Contact  
Nature of Contact

Add to my list of institutions

	INSTITUTION NAME	city	country	contact	nature of contact	Delete
76	University of Campinas	Campinas	Brazil			X
71	Instituto de Tecnologia de Alimentos		Brazil			X
75	University of Copenhagen, The Faculty of Life Sciences	Copenhagen	Denmark			X
72	Royal Veterinary College	London	England			X
77	University College of Dublin	Dublin	Ireland			X
70	Instituto Tecnológico y de Estudios Superiores de Monterrey		Mexico			X
69	Agricultural University of Norway	Aas	Norway			X
74	University of Bergen	Bergen	Norway			X
79	University of Stellenbosch	Stellenbosch	South Africa			X
78	Swedish University of Agricultural Sciences	Uppsala	Sweden			X

Save Changes

View

Cancel

Delete Profile

Figure 4.9 Edit Faculty/Staff Page

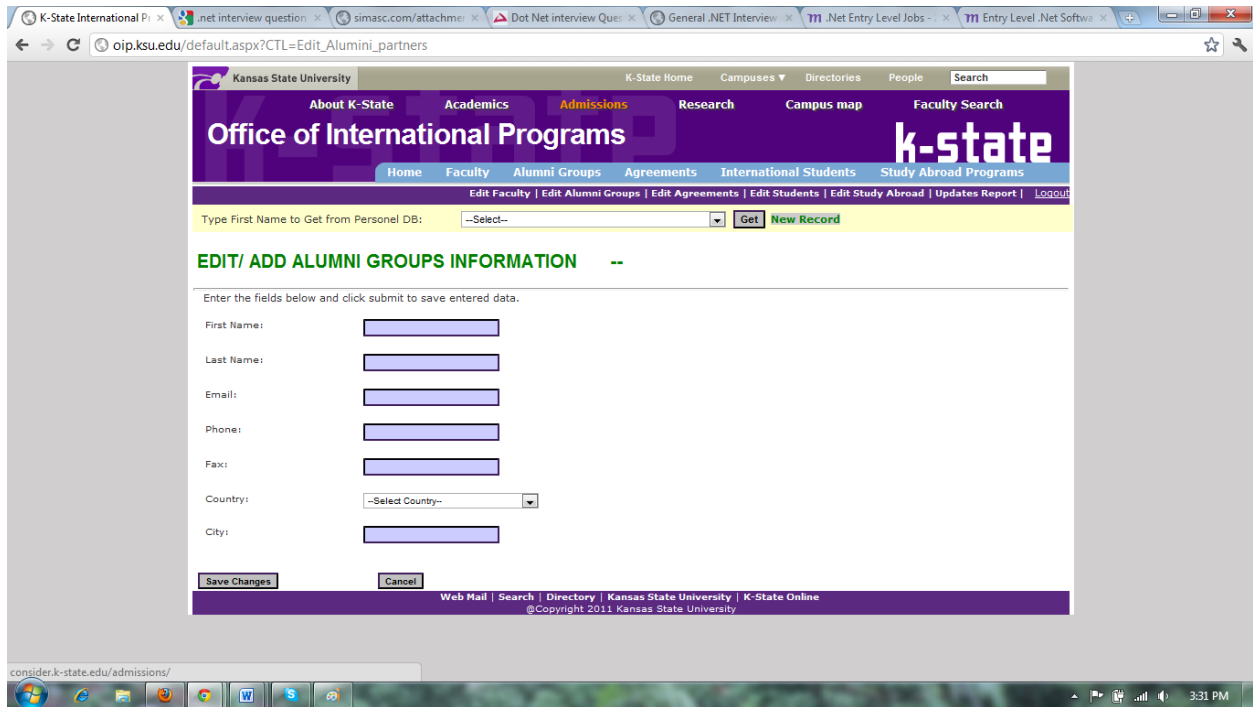


Figure 4.10 Edit Alumni Page

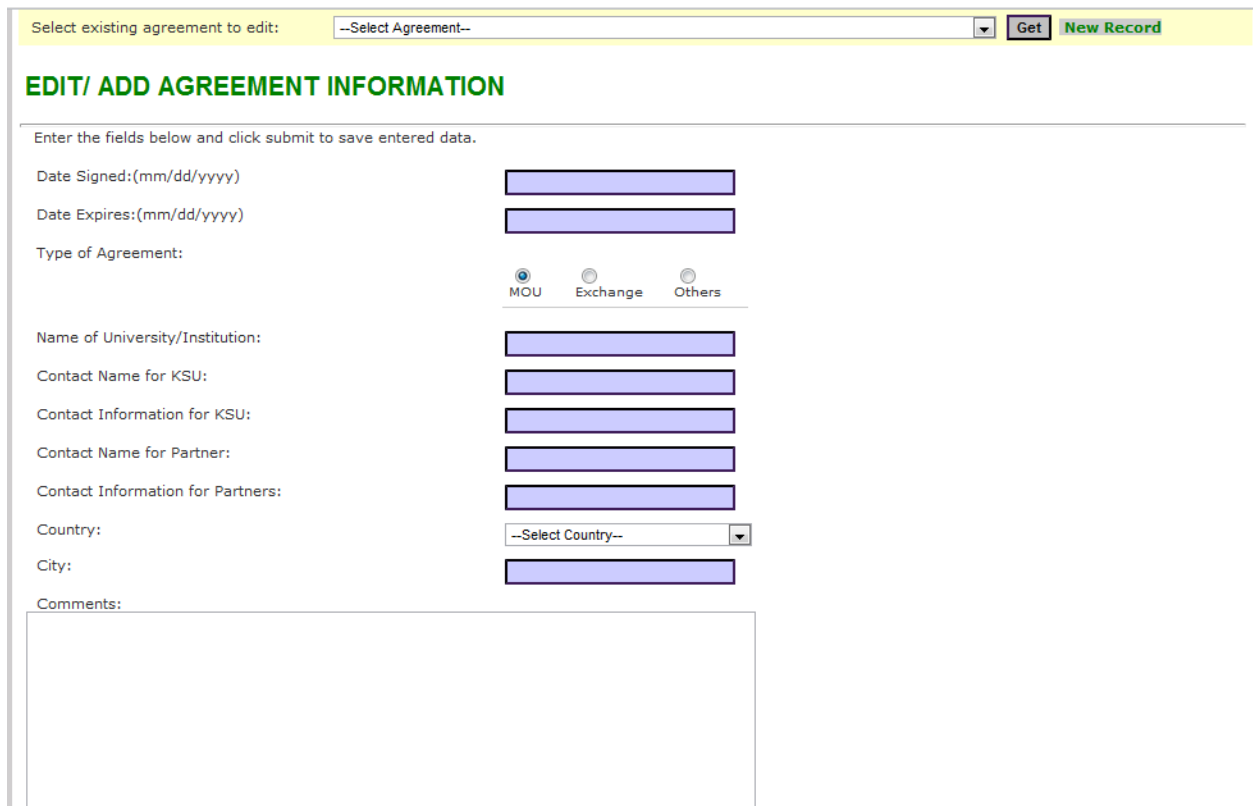


Figure 4.11 Edit Agreements Page

Country	Undergraduate Students	Graduate Students	Others	Total
Afghanistan	0	21	0	21
Albania	0	0	0	0
Algeria	1	0	0	1
Andorra	0	0	0	0
Angola	0	0	1	1
Antigua and Barbuda	0	0	0	0
Argentina	0	2	0	2
Armenia	0	0	1	1
Australia	1	1	4	6
Austria	1	0	1	2
Azerbaijan	0	1	0	1
Bahamas	0	0	0	0
Bahrain	1	0	0	1
Bangladesh	0	5	0	5
Barbados	0	0	0	0
Belarus	0	2	0	2
Belgium	0	0	2	2
Belize	0	0	0	0
Benin	0	0	0	0

Figure 4.12 Edit International Students Page

[Edit Faculty](#) | [Edit Alumni Groups](#) | [Edit Agreements](#) | [Edit Students](#) | [Edit Study Abroad](#) | [Updates Report](#) | [Logout](#)

Enter ID to Get from Personnel DB:

### EDIT/ ADD STUDY ABROAD INFORMATION

Enter the fields below and click submit to save entered data.

Name of the Institution:   
 City:   
 Country:   
 Program:  Faculty-led-Program  Exchange-Program  Direct-enroll

Description:

Figure 4.13 Edit Study Abroad Programs Page

## **CHAPTER 5**

### **5.1. Software Testing**

Software testing is performed to verify that the completed software package functions according to the expectations defined by the requirements/specifications. The overall objective is not to find every software bug that exists, but to uncover situations that could negatively impact the customer, usability and/or maintainability. Testing allows developers to deliver software that meet expectations, prevents unexpected results, and improves the long term maintenance of the application. Depending upon the purpose of testing and the software requirements, the appropriate methodologies have been applied.

### **5.2. Performance Testing**

In software engineering, performance testing is the testing that is performed to determine how fast some aspect of a system performs under a particular workload. Performance Testing is used to verify performance behaviors for business functions under the normal and heavy work conditions. The success criteria of this test are completion of all the test cases without any failures and within acceptable time allocation. Performance Testing is aimed at assessing the speed at which the product addresses different events under different conditions. In this application I have used Apache JMeter<sup>[11]</sup> as a tool to enable performance testing. I have run performance testing in JMeter for 3 cases: 500 users, 1000 users and 2000 users.

Below are the Figures of sample JMeter test-cases and analysis of their results:

**BOTTLE NECK (for Main Search Page):** The main bottle for this page includes the retrieval information from the database when all the Faculty/Staff information has to be listed depending on the search criteria.

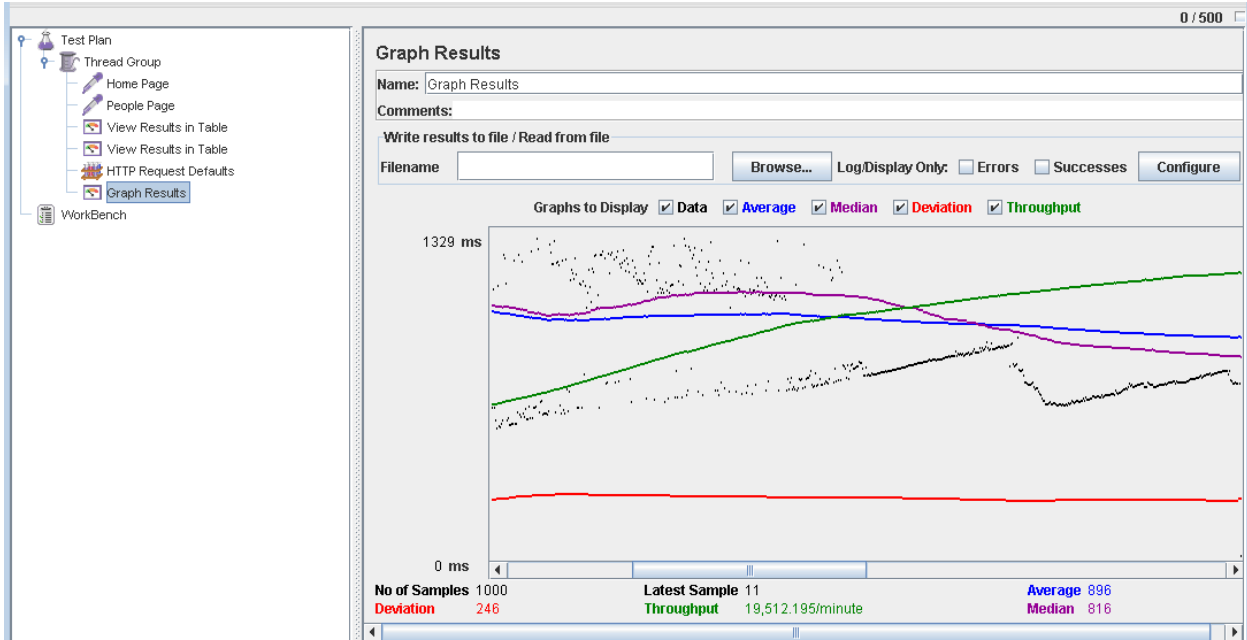


Figure 5.1 Main Search Page (500 users)

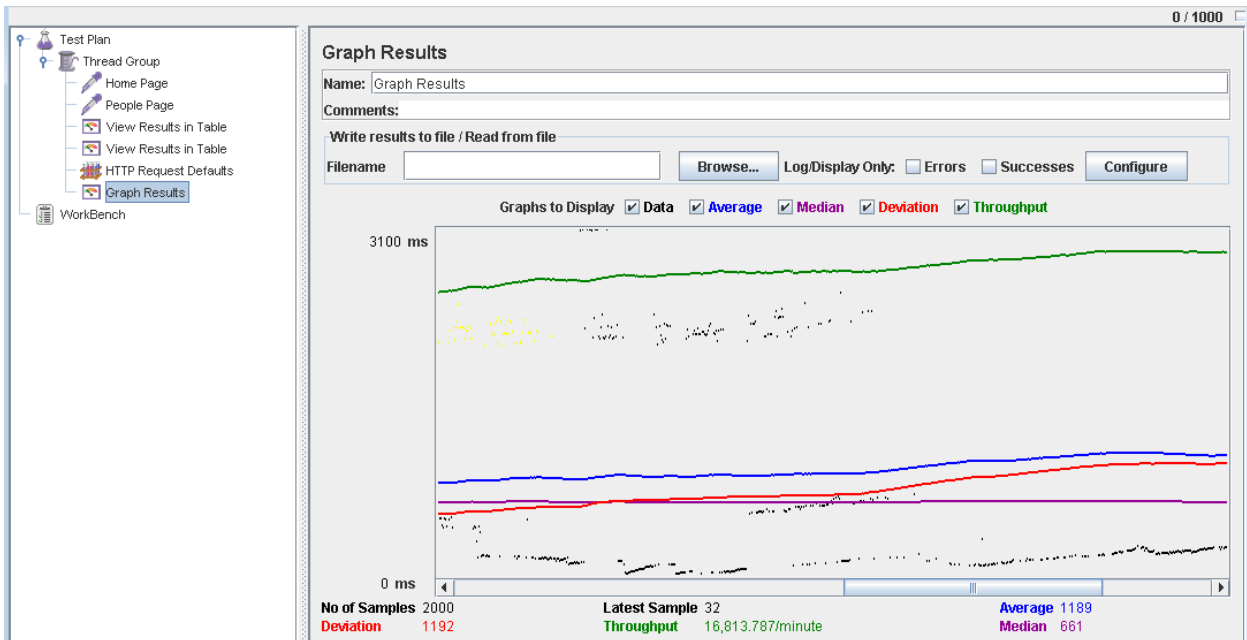


Figure 5.2 Main Search Page (1000 Users)

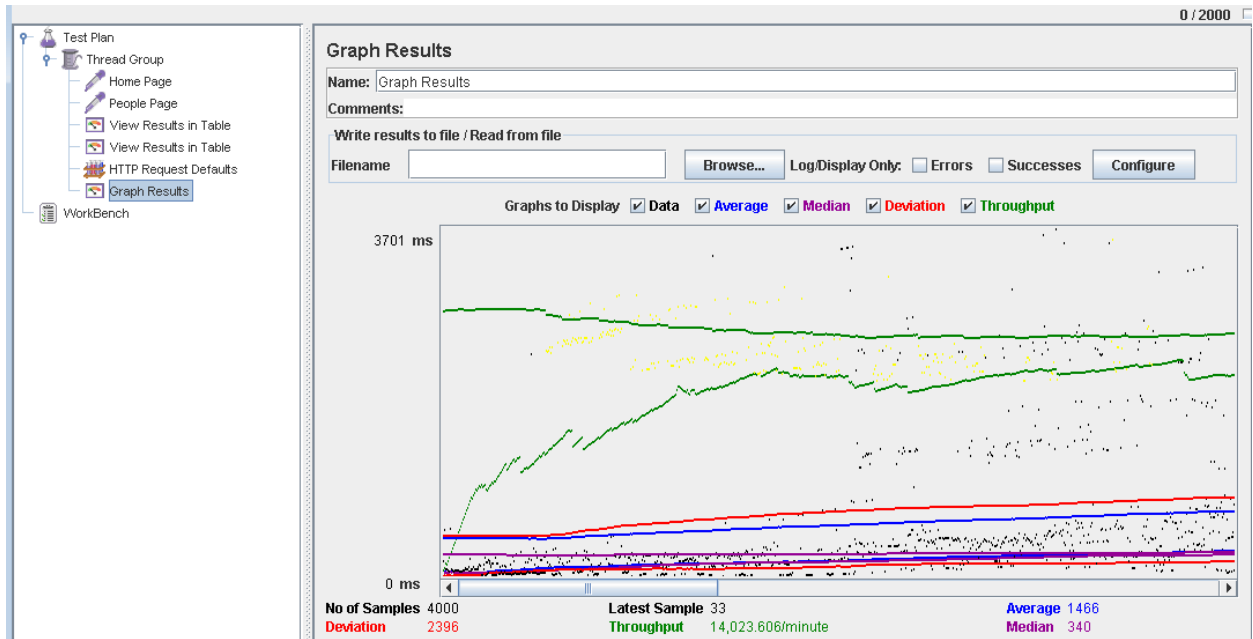
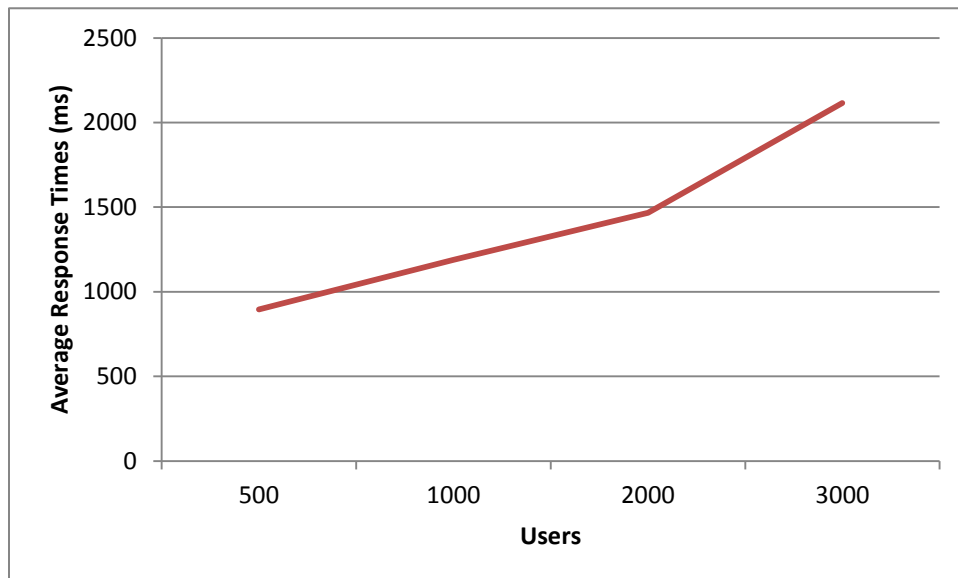


Figure 5.3 Main Search Page (2000 users)



A graph is plotted against the number of users on X-axis and the average response time on Y-axis for the main search page. The website seems to be stable until the number of users exceeds 2000. After this point, the average response time increases at a drastic rate. The throughput decreases as the total number of users for the website increases.

BOTTLE NECK (for Faculty Map Page): The main bottle neck for this page is loading the Google Map on the page. Also all the faculty/staff information has to be gathered over the map which might be a bottle neck as the number of hits in the database increases. There are currently 1500 entries in the database and the throughput decreases as this number exceeds 2000 entries.

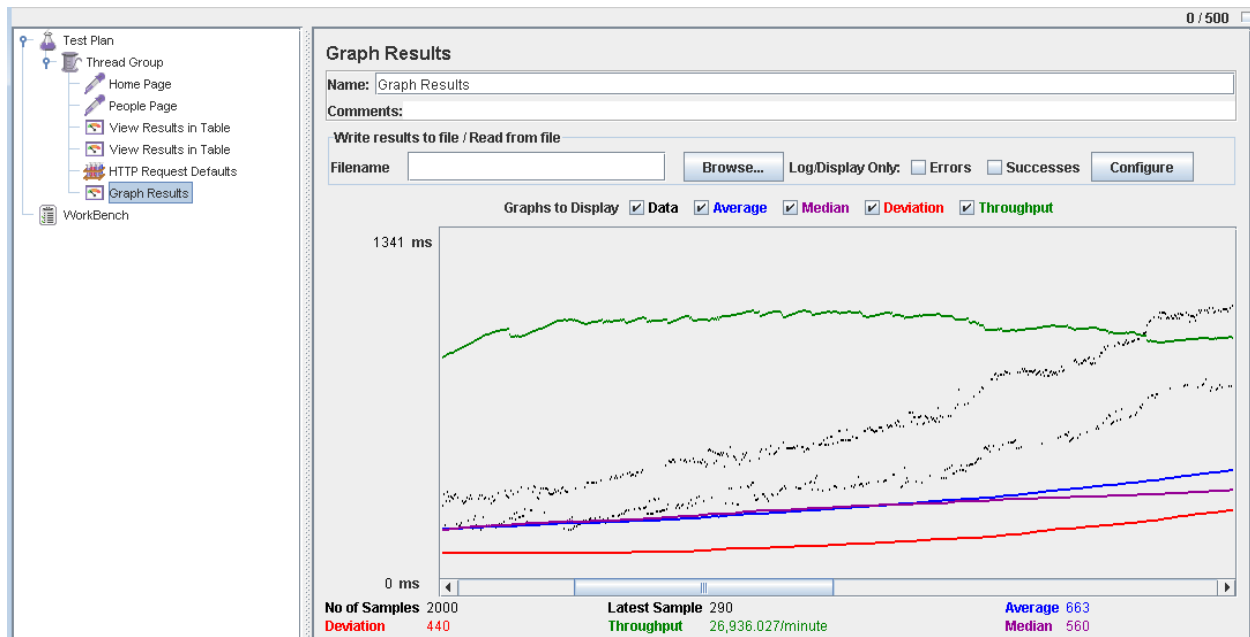


Figure 5.4 Faculty Map Page (500 Users)

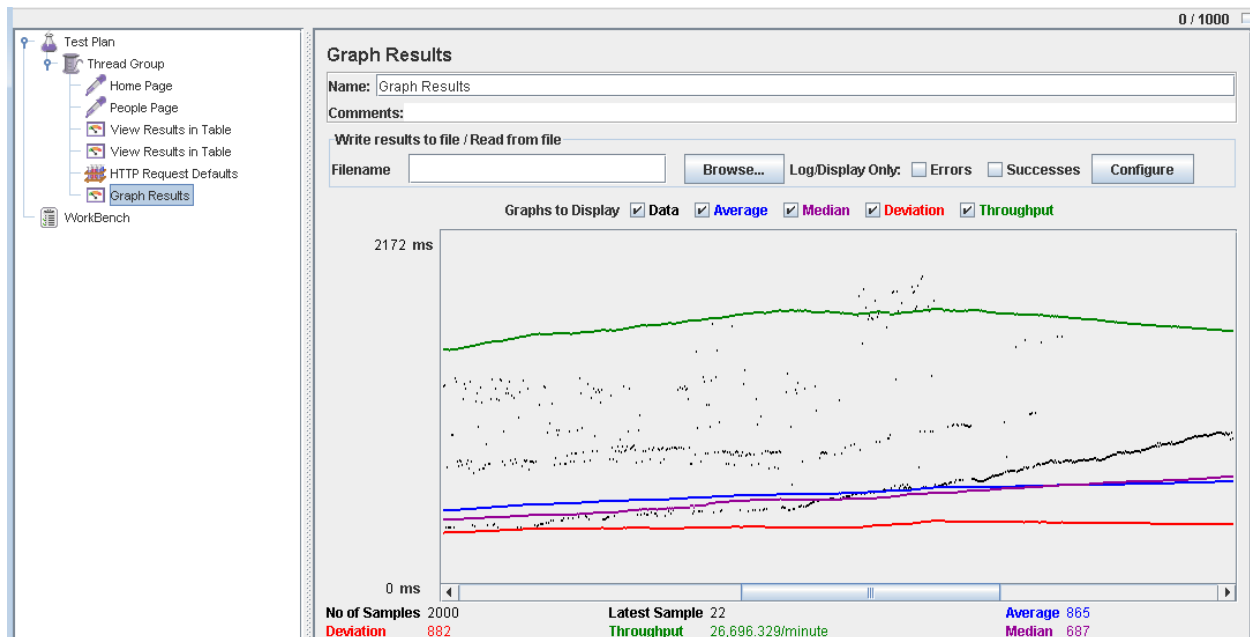


Figure 5.5 Faculty Map Page (1000 Users)

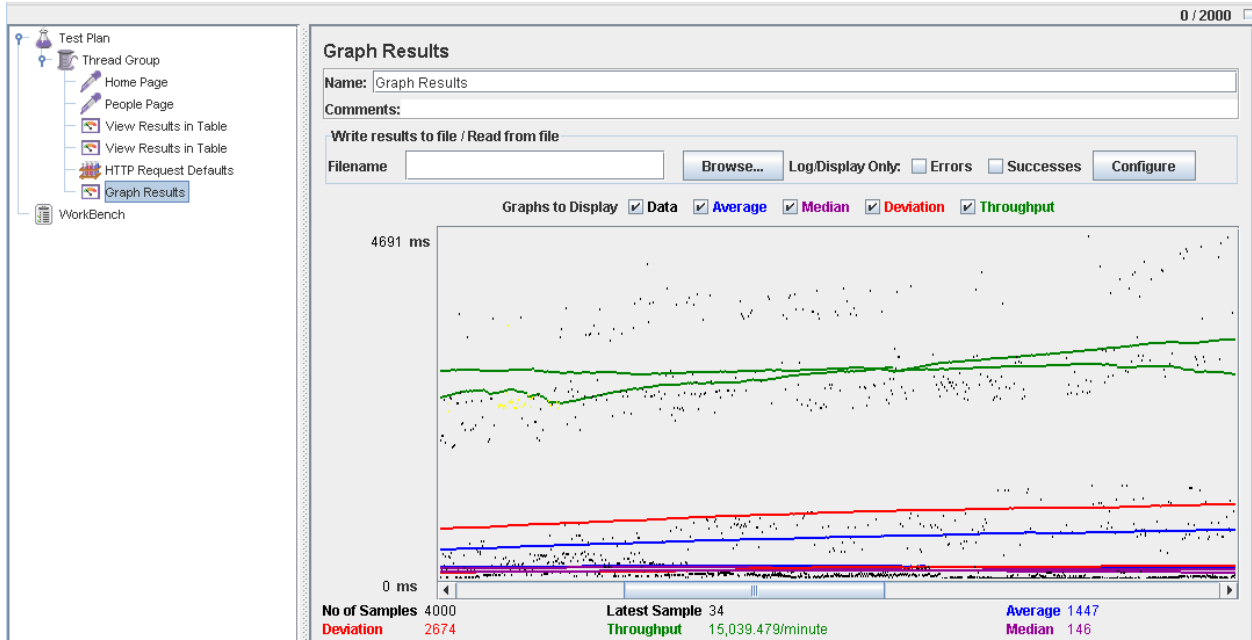
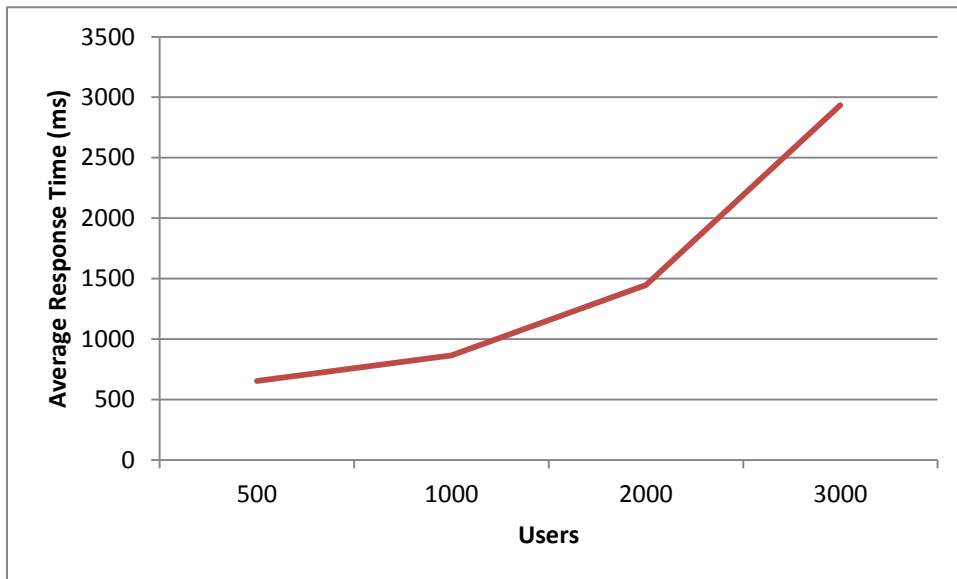


Figure 5.6 Faculty Map Page (2000 users)



A graph is plotted against the number of users on X-axis and the average response time on Y-axis for the Faculty Map page. The average response time increase gradually until a total of 2000 users is reached, later it increases at a drastic rate. As we can see from the figures, the throughput seems to be constant for 500 and 1000 users. But as the number increased to 2000 users, there is a huge decrease in the throughput.



BOTTLE NECK (for Edit Faculty Page): The bottle neck for this page is that all the data for the faculty/staff has to be accumulated for different database tables and it includes the execution of several queries and stored procedures.

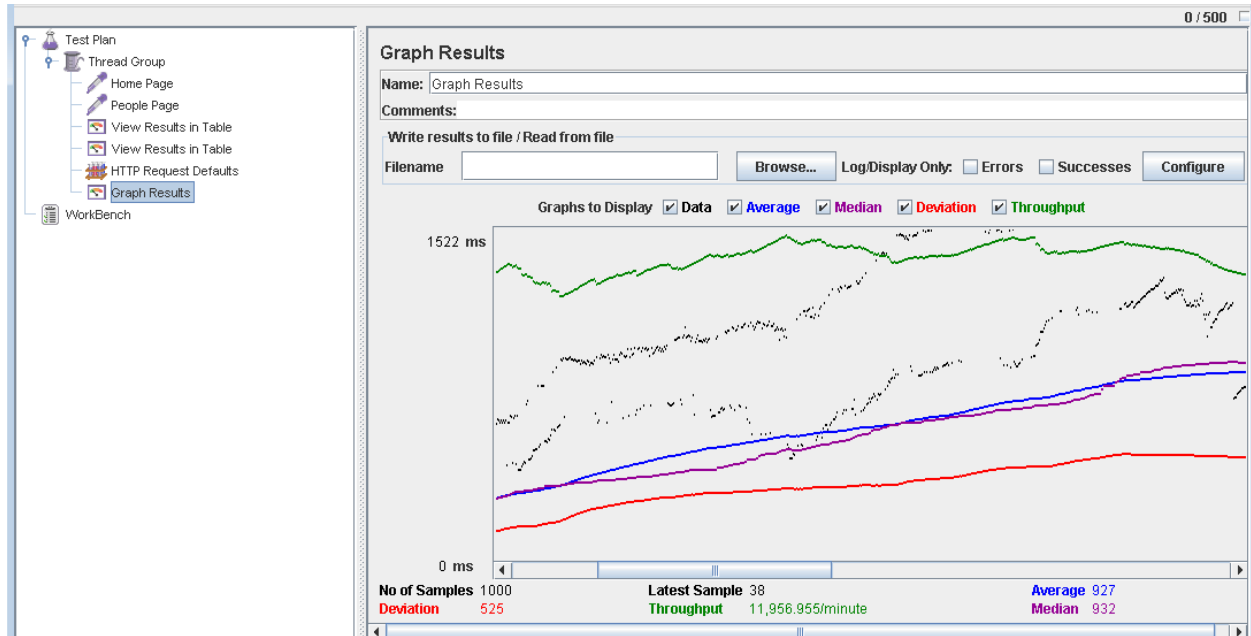


Figure 5.7 Edit Faculty Page (500 Users)

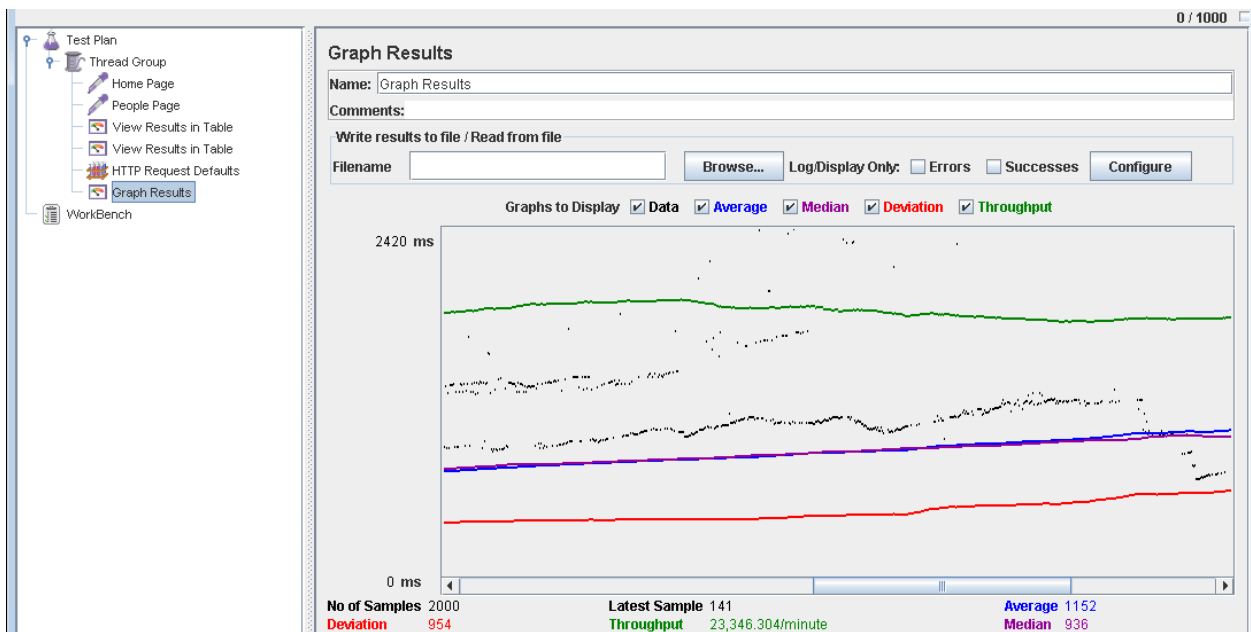


Figure 5.8 Edit Faculty Page (1000 Users)

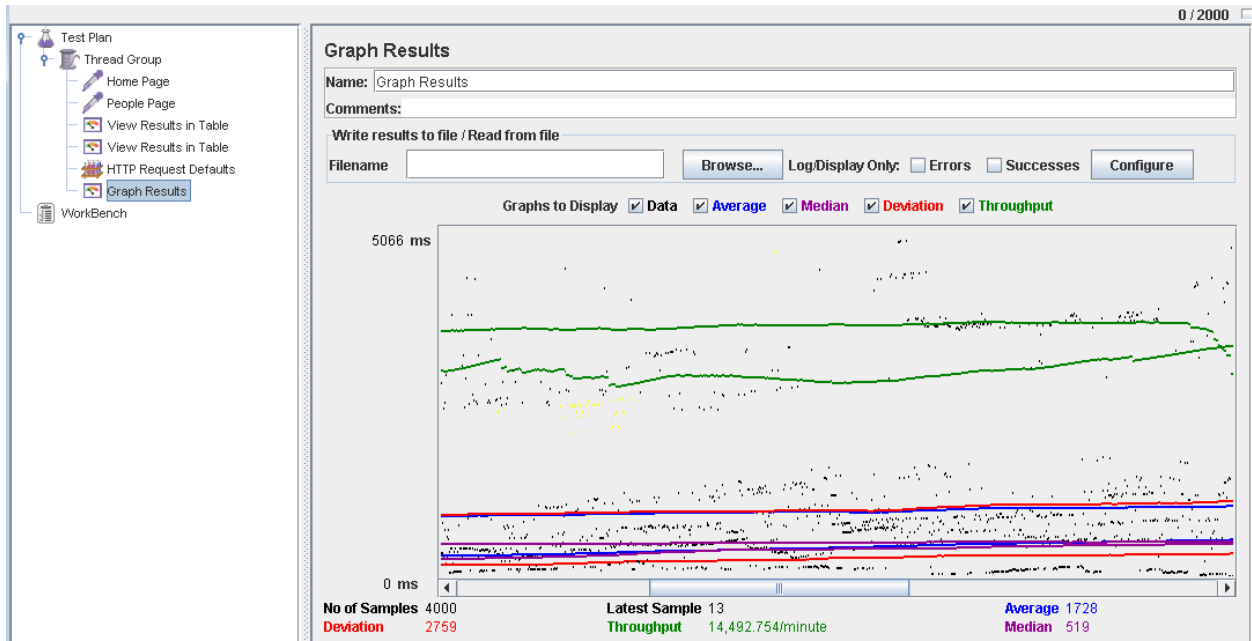
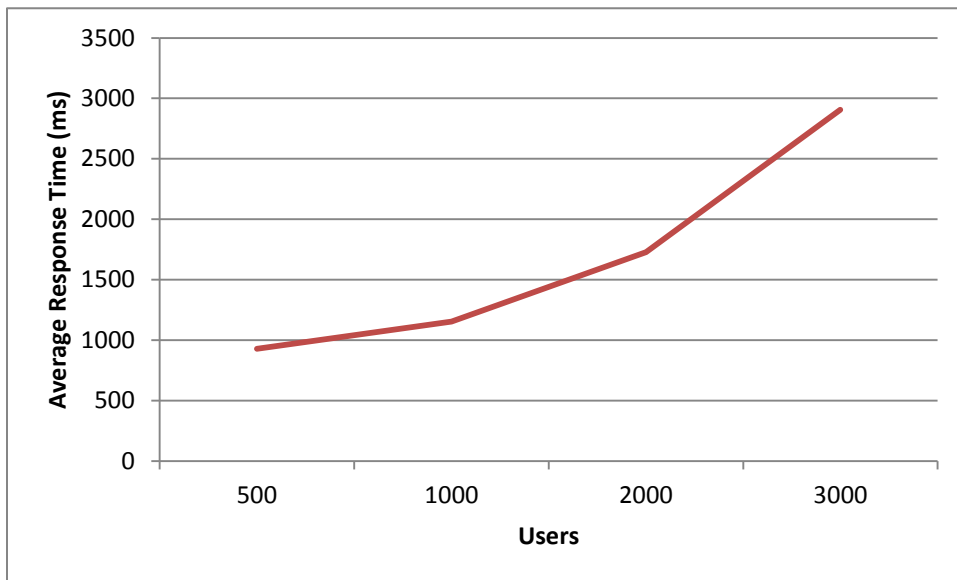


Figure 5.9 Faculty/Staff Edit Page (2000 users)



A graph is plotted against the number of users on X-axis and the average response time on Y-axis for the main search page. The website seems to be stable until the number users exceed 2000. There is a drastic increase in the average response time for loading the page after the number of users exceeds 2000.

BOTTLE NECK (for Faculty Profile Page): The main bottle neck of this page is to load images of faculty/staff with similar areas of expertise or countries of expertise. As the number of faculty/staff increases, chances for similar faculty/staff increases and the throughput decreases in effect.

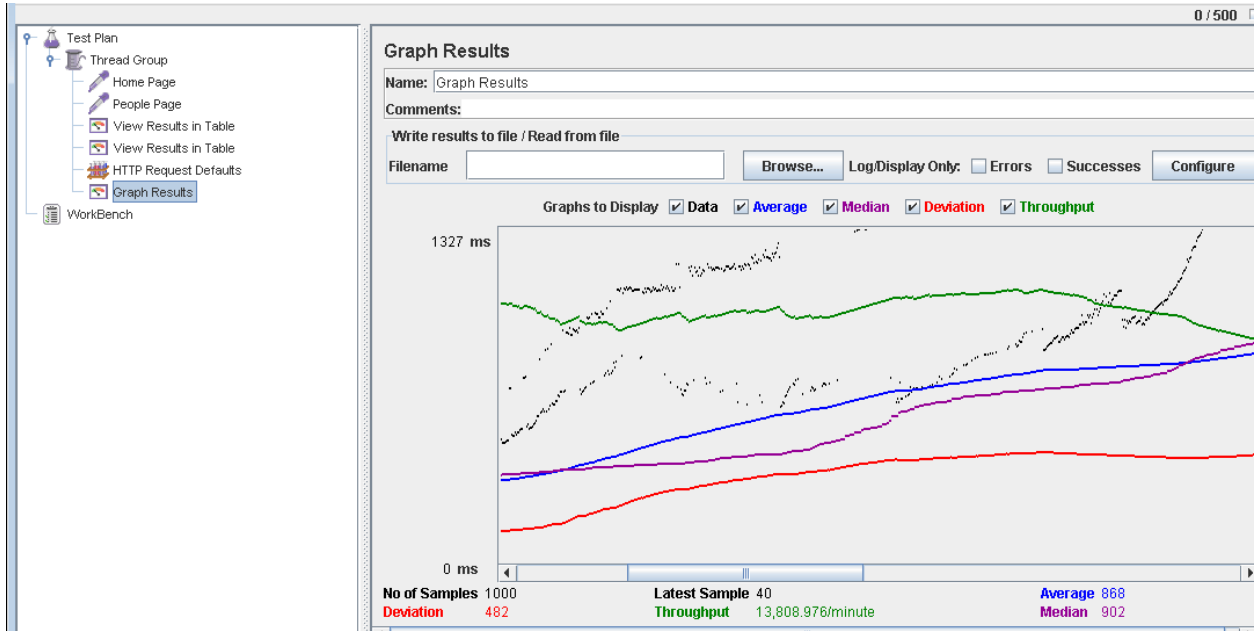


Figure 5.10 Individual Faculty Information Display Page (500 Users)

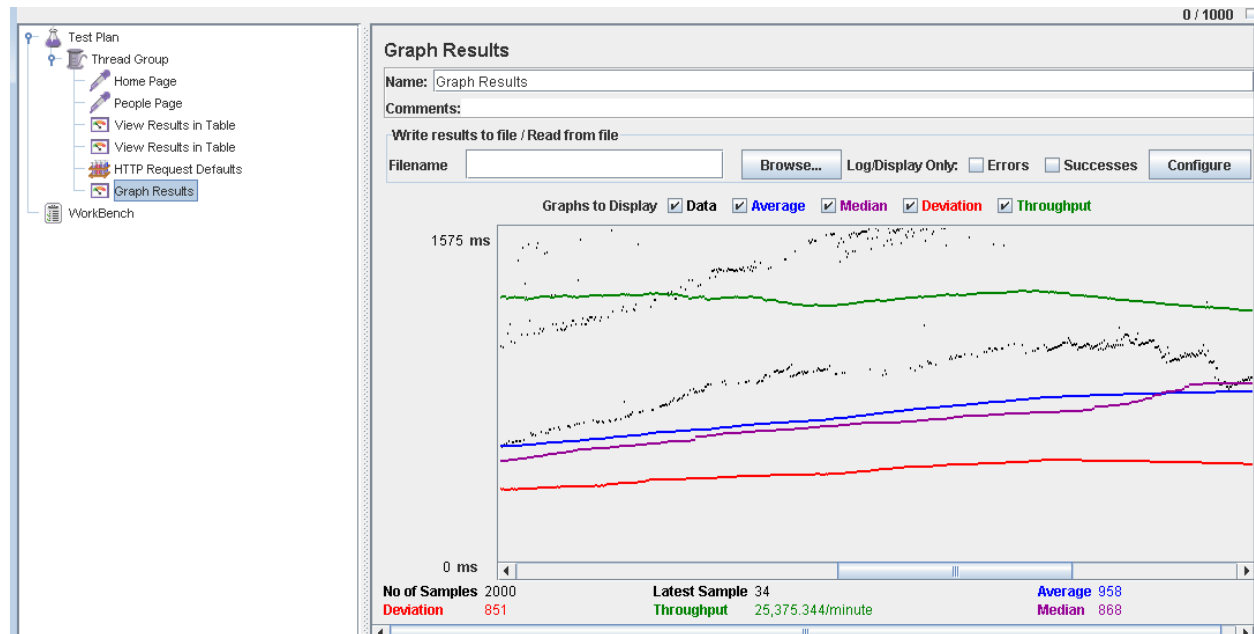


Figure 5.12 Individual Faculty Profile View Page (1000 users)

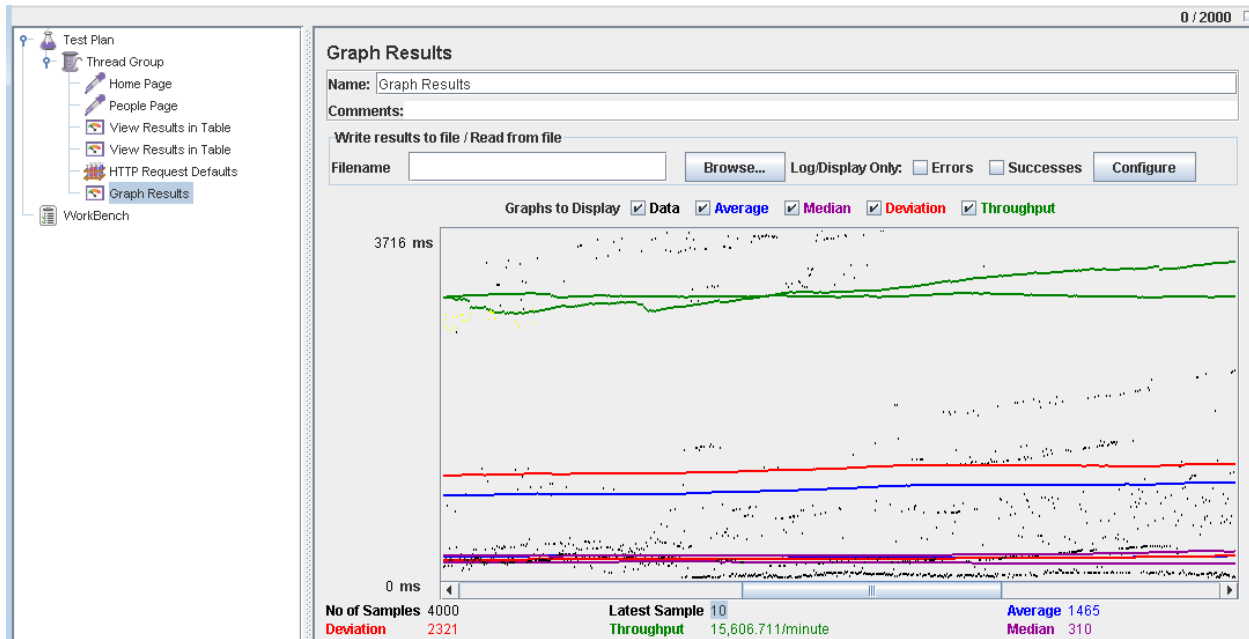
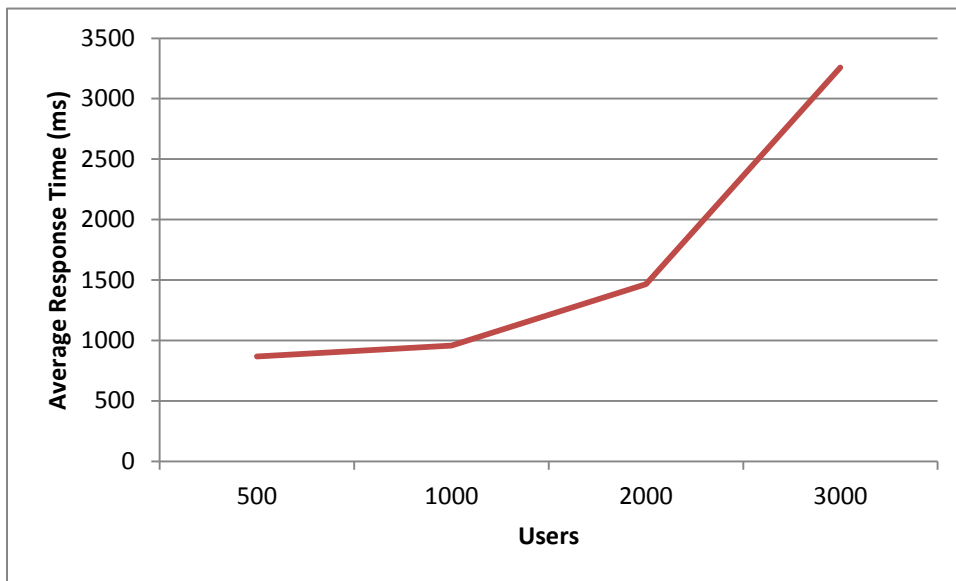


Figure 5.13 Individual Faculty Profile View Page (2000 users)



A graph is plotted against the number of users on X-axis and the average response time on Y-axis for the main search page. As in the other cases, here also the website seems to be stable until the number users exceed 2000 and later witnesses a drastic increase. From this we can conclude that the maximum threshold of the website is 2000. This shows that the website is in a stable condition to handle considerable amount of load and provide the user with the output in comparatively lesser response time. The application works fine even in stressed situations.

## **CHAPTER 6**

### **6.1. Results and Challenges**

The current application is hosted by the Office of International Programs and is being used by all the Faculty/Staff at Kansas State University. It can be used by everyone who wants to about the International Activity Kansas State University is involved in.

#### **CHALLENGES:**

- Understanding the client requirements was one of the crucial tasks of the whole project
- Creating the database for the user requirements was another big challenge that I had to face. With all the data given in a single Excel sheet, exporting it to Oracle database and filtering out the unnecessary data was a big challenge
- Implementing geo coder services of Google Maps API in .Net framework was a challenging task
- Learning different technologies and frameworks with little/no guidance

## **CHAPTER 7**

### **7.1. Conclusions**

The application has been designed successfully to meet all the user requirements. All the Faculty/Staff are given the privilege to change their profile information as and when required. Various students, researchers from the university and outside the university can grab the data regarding International Activity at Kansas State University easily.

### **7.2. Future Enhancements**

The application can further be modified in the following ways:

- At present the application only hosts information about the International activity at K-State in general. It can be enlarged further to host information about individual departments at K-State
- Other users such as Students/Researchers should also be given the privilege to login, to contact a Professor/Staff via webmail from this application itself
- Students should also be able to enroll in Study Abroad programs directly via this application, that is, instead of just portraying information over maps, it would be a nice feature to add a module where students can login and enroll directly from this application.

## CHAPTER 8

### 8.1. References

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[16] <http://codeproject.com/>