**Design & Development of Semester Course Registration System**

*A Project Submitted in Partial Fulfillment of the Requirements for the*

*Degree of*

Bachelor of Science in Computer Science and Engineering

*by*

**Md. Kawsar Hossain**

CSE04606237

&

**Khaled Mohammad Faisal**

CSE04606247

Supervised by: Adnan Ferdous Ashrafi

Senior Lecture



Department of Computer Science and Engineering

STAMFORD UNIVERSITY BANGLADESH

December 2021

i

**Abstract**

Web-based services offer users convenient access to and the ability to manipulate information

that is of concern to such services. Due to the high requirements in functionality and performance, these systems are often very large in terms of the size of the underlying software.

The use of Component-Based Design (CBD) for web-based software comes into play for this

very reason. Not only does Component-Based Software Engineering (CBSE) address the manageability issue of web-based software, but it also ensures greater consistency and high reusability of web-based components. These advantages in turn lead to better productivity and hence better quality of the overall design of the system. In order to exemplify the effectiveness of CBD, the design and implementation of a component-based online course registration system is proposed for this project. The application will allow students, department members, faculty members and the registry members to view and make changes to course registration related issues for a specific semester. The system will be developed using a Service-Oriented Architecture (SOA), which involves grouping components into web services.

Keywords: Web-based, Component-Based Design, Component-Based Software Engineering,

online course registration, PHP; MySQL; jQuery; Apache; Database; Database Management System; Front-end; Back-end.

ii

**Approval**

The project report “Design & Development of Semester Course registration System” submitted by Md. Kawsar Hossain ID: CSE04606237 & Khaled Mohammad Faisal ID: CSE04606247, to the Department of Computer Science & Engineering, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Bachelor of Science (B.Sc.) in Computer Science & Engineering and as to its style and contents.

Board of Examiner’s Name, Signature and Date:

|  |  |  |
| --- | --- | --- |
| **……………………………...** | **……………………………..** | **……………………………..** |
| **(Board Member 1)** | **(Board Member 2)** | **(Board Member 3)** |
| Date: | Date: | Date: |

Supervisor’s Signature and Date:

**……………………………...**

**Supervisor Name**

Date:

iii

**Declaration**

We, hereby, declare that the work presented in this Project is the outcome of the investigation performed by us under the supervision of Adnan Ferdous Ashrafi, Lecturer, Department of Computer Science & Engineering, Stamford University Bangladesh. We also declare that no part of this Project and thereof has been or is being submitted elsewhere for the award of any degree or Diploma.

Signature and Date:

**……………………………...**

**Student Name: Md. Kawsar Hossain**

Date:

**……………………………...**

**Student Name: Khaled Mohammad Faisal**

Date:

iv

Dedicated to…

Beloved Parents and Teachers

v

**Acknowledgements**

First, we would like to express our highest gratitude to the almighty God for his kindness on us that made it possible for us to complete the study and preparation of this project. Starting from the initial idea to final execution, everyone from Stamford University supported us to build and create something around movie recommendation system. We would like to thank our supervisor, Adnan Ferdous Ashrafi for his guidance and having so many endless discussions. He helped us in many ways to build the project successfully.

vi

**Table of Contents**

|  |  |  |
| --- | --- | --- |
| **List of Figures ...........................................................................................................................** | | **1** |
| **List of Tables ............................................................................................................................** | | **2** |
| 1. **Introduction .................................................................................................................** | | **3** |
| 1.1 | Problem Statement ....................................................................................................... | 3 |
| 1.2 | Goals ............................................................................................................................ | 3 |
| 1.3 | Purpose of the work ..................................................................................................... | 3 |
| 1.4 | Objectives of the project .............................................................................................. | 4 |
| 1.5 | Scope of the project ..................................................................................................... | 4 |
| 1.6 | Use-cases of Recommendation systems ...................................................................... | 4 |
| 1.7 | Importance of Recommendation Systems ................................................................... | 4 |
| 1.8 | What can be recommended? ........................................................................................ | 5 |
| 1.9 | Benefits of a movie recommendation system .......................................................... | 5 |

|  |  |
| --- | --- |
| 1. **Previous Work ..............................................................................................................** | **6** |

|  |  |  |
| --- | --- | --- |
| 1. **System Methodology ...................................................................................................** | | **12** |
| 3.1 | Requirement .............................................................................................................. | 12 |
| 3.2 | Design ........................................................................................................................ | 12 |
| 3.3 | Implementation .......................................................................................................... | 12 |
| 3.4 | Requirement Analysis ............................................................................................... | 13 |
| 3.5 | Use Case Diagram ..................................................................................................... | 13 |
| 3.6 | Data flow Diagram .................................................................................................... | 16 |

vii

|  |  |  |  |
| --- | --- | --- | --- |
|  | 3.7 | All table with description: ......................................................................................... | 19 |
| **4** | **. Implementation ..............................................................................................................** | | **22** |
|  | 4.1 | Main Window Information ........................................................................................ | 22 |
|  | 4.2 | Admin login Information ........................................................................................... | 23 |
|  | 4.3 | Admin movie upload form ........................................................................................ | 24 |
| **5** | **. Conclusion: .....................................................................................................................** | | **25** |
|  | 5.1 | Future work: ................................................................................................................... | 25 |
|  | 5.2 | Limitations ..................................................................................................................... | 25 |
| **6** | **. References .......................................................................................................................** | | **26** |

Viii

**List of Figures**

|  |  |
| --- | --- |
| [Figure 1.10.1: Movie Rating ......................................................................................................](#page13) | [5](#page13) |
| [Figure 2.1.1: Content Based Filtering [1] ..................................................................................](#page14) | [6](#page14) |
| [Figure 2.2.1: Collaborative Based Filtering [1] .........................................................................](#page15) | [7](#page15) |
| [Figure 2.3.1: Hybrid Based Filtering [2] ...................................................................................](#page16) | [8](#page16) |
| [Figure 2.5.1: Youtube Recommendation System [4] ...............................................................](#page19) | [11](#page19) |
| [Figure 3.5.1: User Interaction ..................................................................................................](#page21) | [13](#page21) |
| [Figure 3.5.2: Admin Panel .......................................................................................................](#page21) | [13](#page21) |
| [Figure 3.5.3: User Registration Panel ......................................................................................](#page22) | [14](#page22) |
| [Figure 3.5.4: Admin Registration Panel ..................................................................................](#page22) | [14](#page22) |
| [Figure 3.5.5: User Watching Diagram .....................................................................................](#page23) | [15](#page23) |
| [Figure 3.5.6: Admin Movie Uploading Process ......................................................................](#page23) | [15](#page23) |
| [Figure 3.5.7: ER Diagram ........................................................................................................](#page24) | [16](#page24) |
| [Figure 3.6.1: Level 0 Data Flow Diagram ...............................................................................](#page24) | [16](#page24) |
| [Figure 3.6.2: Level One Data Flow Diagram ..........................................................................](#page25) | [17](#page25) |
| [Figure 3.6.3: Level Two Data Flow Diagram ..........................................................................](#page26) | [18](#page26) |
| [Figure 4.1.1: Main Window .....................................................................................................](#page30) | [22](#page30) |
| [Figure 4.2.1: Admin Login Page..............................................................................................](#page31) | [23](#page31) |
| [Figure 4.2.2: Admin Password Changing Page .......................................................................](#page31) | [23](#page31) |
| [Figure 4.3.1: Admin Movie Upload From ...............................................................................](#page32) | [24](#page32) |
|  |  |

**List of Tables**

[Table 3.7.1: Categories Table](#page27) [19](#page27)

[Table 3.7.2: Table For Movies Profile](#page27) [19](#page27)

[Table 3.7.3: Table For Rating Profile](#page28) [20](#page28)

[Table 3.7.3: Table for User Profile](#page28) [20](#page28)

[Table 3.7.4: Table For User-Visit-Category Profile](#page28) [20](#page28)

[Table 3.7.5: Table For Watch-List Profile](#page29) [21](#page29)

[Table 3.7.6: Table for Wish-List Profile](#page29) [21](#page29)

**1 Introduction**

System may be defined as a layered structure that depicts how programs involved would interrelate and communicate. In computers, System may also include actual programs, programming interfaces and tools for managing the larger system. The term system may be used differently in different contexts, but more or less the concept remains the same. Online student course registration system combines multiple systems to construct a combined framework. This framework consists of multiple modules, which further contain different systems along with the implementation of their defined constraints.

Basically, systems are implemented for facilitating complex manual processes and that is exactly what we are trying to achieve. System is implemented as per user requirement such as a manufacturing concern may install a plant for easing out manual processes. We have sought help from computer programming for automation of manual registration system. With the introduction of computers, every aspect of our lives has been revolutionized. When used judiciously, computers can help us save time, secure our personal information, access the required information whenever and wherever required. Keeping all these positive points in mind, we have developed an Online Student Course Registration System for easily managing the semester registration process for the student in an institution. Ours is an advisory based system. In state agricultural universities the course allocation is advisory based and more complicated. The courses are assigned according to the skill set and industry requirements. Hence, in current scenario, automated system is required for course registration of students.

***1.1*** ***Problem Statement***

For building a recommender system from scratch, we face several different problems. Currently there are a lot of recommender systems based on the user information, so what should we do if the website has not gotten enough users. After that, we will solve the representation of a movie, which is how a system can understand a movie. That is the precondition for comparing similarity between two movies. Movie features such as genre, actor and director are a way that can categorize movies. we get these questions:

* How to recommend movies when there is no user information.
* What kind of movie features can be used for the recommender system?
* How to calculate the similarity between two movies.

***1.2*** ***Goals***

* To design and implement an online registration system.
* To analyze the impact of an online registration system at Stamford University.

***1.3*** ***Purpose of the work***

The need for structured storage, modification, and maintenance of huge amounts of data has resulted in the emergence of the Database Management System (DBMS) as one of the core fields in the Computer Science industry. DBMS is the system of computer software that is aimed to provide a managing tool for maintaining the data, through various data models.

The purpose of implementing this project is to understand the data modeling concepts that is used in a real time scenario and to implement a fully functional database system which interacts with a front-end interface.

***1.4*** ***Objectives of the project***

The current research aims at reducing the workload all the entities involved in the registration procedure for the students. The current manual system faces different challenges as to maintaining data of each student manually. Hard copy registers are maintained currently to verify student details. From students’ point of view, they must fill the forms manually and then get them verified from concerned officials, which is a very time-consuming process. The objectives of this proposed web application system are:

* To computerize student and faculty database.
* To maintain data consistency and integrity.
* Automate the registration process without any physical human interaction
* Making the registration process accessible anywhere to the student.
* Allowing faculty to acknowledge registration requests from anywhere.

***1.5*** ***Scope of the project***

With the requirement of registration process for every semester, it becomes all the more important to simplify a process which is highly repetitive. The achievement of the above objectives can help the institution in managing the resources efficiently. The automated process will lead to time saving and eradication of common errors.

***1.6 Use-cases of Recommendation systems***

Recommendations are not a new concept. Even when e-commerce was not that prominent, the sales staff in retail stores recommended items to the customers for the purpose of upselling and cross-selling, and ultimately maximize profit. The aim of recommendation systems is just the same. Another objective of the recommendation system is to achieve student loyalty by providing flexibility of course registration. This also helps in increasing student engagement.

***1.7*** ***Importance of Recommendation Systems***

Recommendation systems help the student course registration on new semester.

***1.8*** ***What can be recommended?***

Lots of thing can be recommended student to save their time and priority of their choice.

***1.9*** ***Benefits of a course registration system***

* User-friendly interface.
* Responsive Design
* 24/7 hours availability
* Basic computer knowledge required
* The effective searching system included with categories.
* Effective and easy Registration Process.
* Secure login system.
* No cost for online service.
* Saves time, and energy.
* Rich Documentations.

**2 Previous Work**

There are several online registration systems that have been made in different context and to suit the need arising. Gunawardena et al in December 2008, researched on the online course registration for the faculty of engineering in university of Peradeniya and in their research, they generated a solution named Online Registration. The project was divided into three namely, Online Registration which is the start-up project of their system and depending on Data Access and Web security. Data Access would actuate the data transaction between the client and the server and Web Security would configure the database and handle the authentication and authorization. The research described their experience in designing, developing, and deploying an online course registration system at the Faculty of Engineering in University of Peradeniya. The system has not only reduced the burden of all parties involved in the course registration process, but also improved the process by reducing errors. Though their system managed to reduce the errors significantly it lacked the continued interaction with the student in the updates of the student’s registration status updates. It also lacked accountability as some stakeholders in the registration process do not have access to the system.

**3 System Methodology**

This proposed system is the web application that student can easily enroll new course on new semester. Our web application is design to helping student and university to help course registration mechanism.

***3.1*** ***Requirement***

1. Server
2. Resource (Such as course list, faculty list, student list)
3. A programming language like php

***3.2*** ***Design***

In our website we have home button, logging/registration button, users, students etc.

***3.3*** ***Implementation***

We have completed this project in many small parts. Our main goal is given to student a better system for registration. We have design our website part by part. Here some main topic how we complete the project.

1. Design: At first, we create a basic website using html, css and bootstrap.
2. Server Design: Then we create registration system server in MySQL. There are many tables under the server recommendation. Like students, courses, users etc.
3. Connection: Then we connect the recommendation server via php.

The proposed recommendation web application is design to manage

**Admin**

* + Admin login
* Add user
* Manage User

**Chairmen/Advisor**

* Login
* Offer Course

12

* Offer List
* Expired Offer List
* Student List
* Pending/Approved Registration List

***3.4*** ***Requirement Analysis***

The requirement analysis process includes two types of diagram

* Use case diagram
* E-R diagram

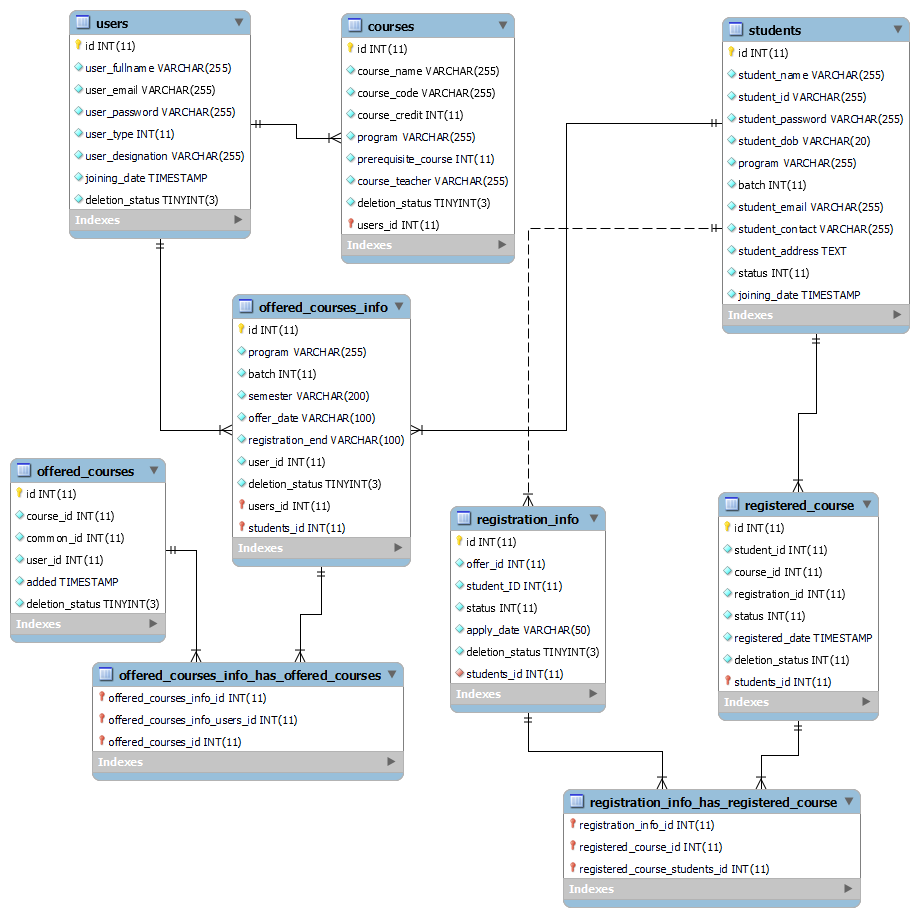
***3.5*** ***Use Case Diagram***

Use case diagram that connect between user and application

Diagram

Description automatically generated

Figure: Use case diagram

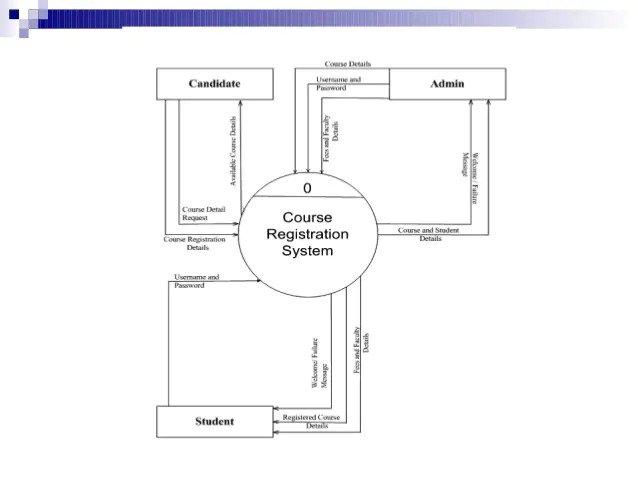


**Figure 3.5.7:** ER Diagram

***3.6*** ***Data flow Diagram***

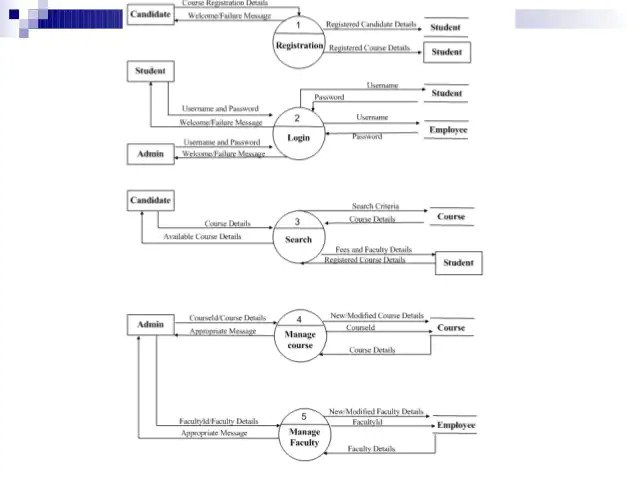
We have three data flow diagram that describe how data passes.

Here its level 0 data flow diagram.



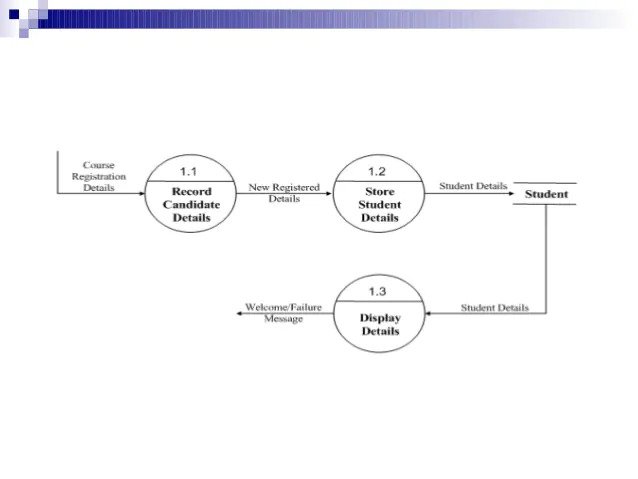
**Figure 3.6.1:** Level 0 Data Flow Diagram

Here is level 1 data flow diagram:



**Figure 3.6.2:** Level 1 Data Flow Diagram

Here is level 2 data flow diagram:



**Figure 3.6.3:** Level 2 Data Flow Diagram

***3.7*** ***All table with description:***

**Name of the table**

: Users

**Number of fields**

**:** 8

**Primary Key**

**:** id

**Table 3.7.1: Users Table**

|  |  |  |
| --- | --- | --- |
| Field | Type | Length |
| **id** | Integer | 11 |
|  |  |  |
| **course\_name** | Varchar | 255 |
| **course\_code** | Varchar | 100 |
| **course\_credit** | Integer | 11 |
| **program** | Varchar | 255 |
| **prerequisite\_course** | Integer | 11 |
| **course\_teacher** | Varchar | 255 |
| **deletion\_status** | Integer | 11 |

**Name of the table: Students**

**Name of fields: 12**

**Primary key: id**

**Table 3.7.1: Student Table**

|  |  |  |
| --- | --- | --- |
| Field | Type | Length |
| **id** | Integer | 11 |
|  |  |  |
| **student\_name** | Varchar | 255 |
| **student\_id** | Varchar | 100 |
| **student\_password** | Varchar | 11 |
| **student\_dob** | Varchar | 100 |
| **program** | Integer | 11 |
| **batch** | Integer | 255 |
| **student\_email** | Varchar | 255 |
| **student\_contact** | Varchar | 255 |
| **student\_address** | Varchar | 255 |
| **status** | Integer | 11 |
| **joining\_date** | Timestamp |  |

**Name of the table: Courses**

**Name of fields: 8**

**Primary key: id**

|  |  |  |
| --- | --- | --- |
| Field | Type | Length |
| **id** | Integer | 11 |
|  |  |  |
| **course\_name** | Varchar | 255 |
| **course\_code** | Varchar | 100 |
| **course\_credit** | Integer | 11 |
| **program** | Varchar | 100 |
| **prerequisite\_course** | Integer | 11 |
| **course\_teacher** | Varchar | 255 |
| **deletion\_status** | Integer | 11 |

**4 Implementation**

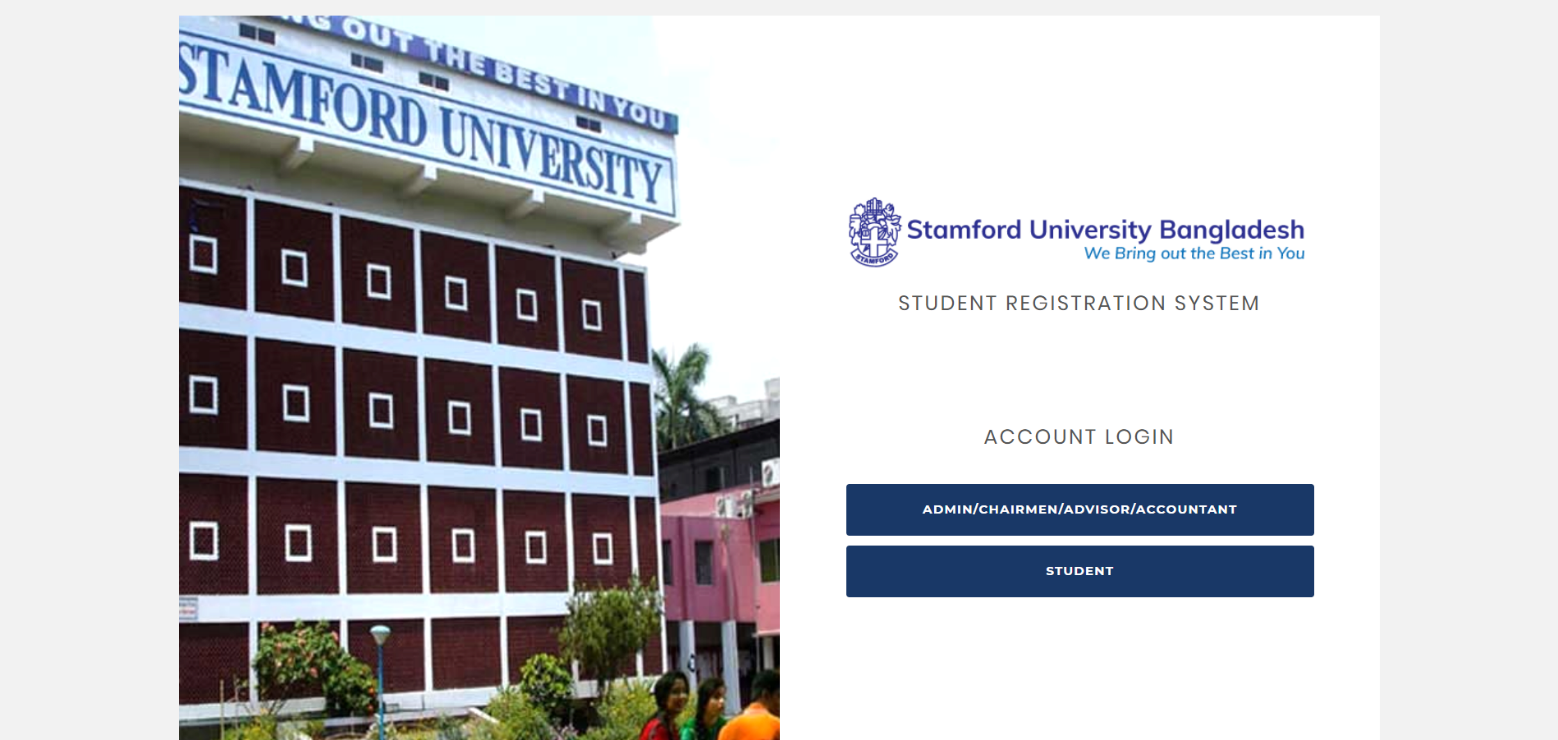
User interface (UI) design is the process designers use to build interfaces in software /web application or computerized devices, focusing on looks. Designers aim to create interfaces which users find easy to use and pleasurable. UI design refers to graphical user interfaces and other forms. Here we explain User interface and Backend process.

**User interface:**

***4.1*** ***Main Window Information***

*Propose:*

This page is used mainly user choose administrative user or student.

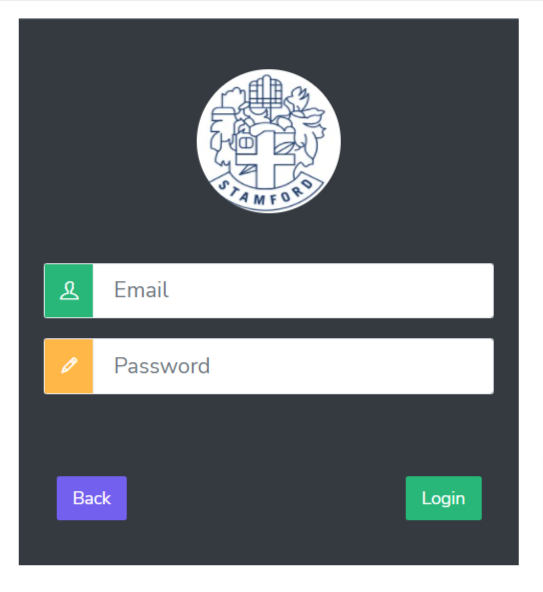


**Figure 4.1.1:** Main Window

***4.2*** ***Administrative login Information***

*Propose:*

This page is used for administrative login.



**Figure 4.2.1:** Admin Login Page

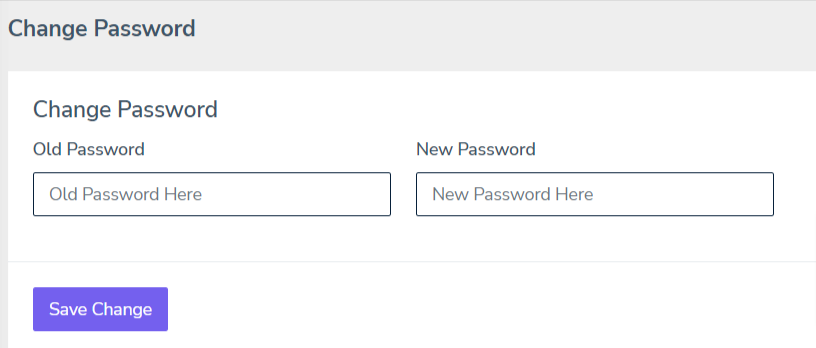
**User operation:**

By using this form, administrative account which is protected with password. If the username field is empty, it will return a message “Field can’t be empty”. When we give input to the username, password field and click on the “Login” button it will match the details with previous data. If data is matched, then user sign in to the dashboard.

**Admin change Password**

*Propose:*

This page is used for changing password if needed.



**Figure 4.2.2:** User Password Changing Page

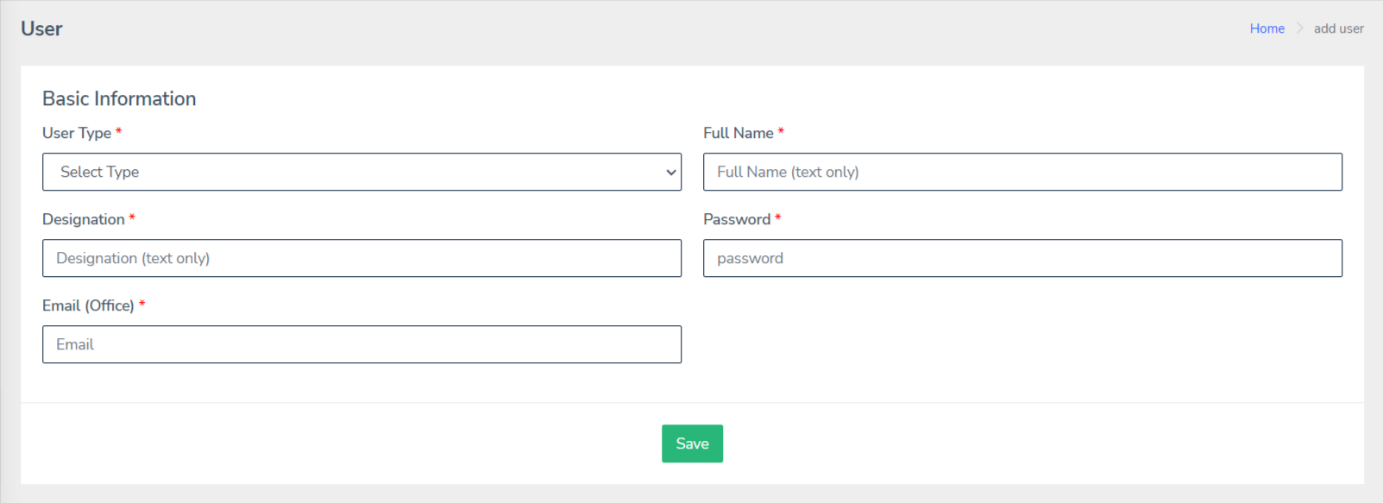
**User operation:**

1. Input the old password of an admin which is before use
2. Input the new password of an admin which is now use
3. Input again the confirm password of an admin which is before use in new password box.

***4.3 Add user***

*Propose:*

This form is mainly use for add new user.



**Figure 4.3.1:** Add new user

***Graphical user interface, application

Description automatically generated4.4 Add course***

**Figure 4.4.1:** Add new course

***4.5 offer course***

Graphical user interface

Description automatically generated with medium confidence

**Figure 4.5.1:** Offer new course

***4.6 Advisor Dashboard***

Graphical user interface, website

Description automatically generated

**Figure 4.6.1:** Advisor dashboard

***4.7 Pending registration***

***Calendar

Description automatically generated with medium confidence***

**Figure 4.7.1:** Pending registration

***4.8 Offer details***

Graphical user interface, application, Teams

Description automatically generated

**Figure 4.8.1:** Offer details

***4.9 Student registration details***

***Graphical user interface, application, Teams

Description automatically generated***

**Figure 4.9.1:** Student registration details

***4.10 Student Login***

***Graphical user interface, application, Teams

Description automatically generated***

**Figure 4.10.1:** Student login

***4.11 Student Registration***

***Graphical user interface, text

Description automatically generated***

**Figure 4.11.1:** Student registration

**5 Conclusion:**

Implementing the Online Student Course Registration System, the registration procedure has been simplified. Previously student had to go door to door in order to get the documents acknowledged from the concerned officials whereas the currently developed system offers an efficient way to perform these operations. The students can access the registration portal online either from a computer or a smart phone and fill the necessary information and submit it for further approval. This web application provides us with ease of access, user friendliness and transparency. On the other hand, from organizations viewpoint, it helps in maintaining transparency, data consistency, data accessibility and easy maintenance.

***5.1 Future work:***

In future we would like to recommend certain valuable additions to the project. The most important is allowing students to submit the fees online. This can be achieved using the services of an online payment system portal. This addition would further reduce the student requiring, visiting the college premises physically. It would completely automate the given system. Also, a system to digitally sign the documents can also be implemented in future. This would enable the faculty and registrar to acknowledge the documents more securely and reduce the security risk to valuable personal information. Entering student grades at semester end is also recommended to be implemented in the future. Finally, we can say that the Online Student Course Registration System for Student is ready for implementation and will surely provide the students and every entity associated with it a better experience. Although the project is complete and ready for implementation there is always room for improvement. As this system depends upon computer hardware, and with more and more student entries into the database there will be constant need to update server storage. To make the system more secure, in future digital acknowledgement signatures and SSL encryption can be implemented.

***5.2 Limitations***

There are some limitations on this project.

* This system is suitable for only one department.
* SMS/email notification not implemented.
* Result management not implemented.

**6 References**

1. Williams, Hugh E., and David Lane. “Web database applications with PHP and MySQL”. O’Reilly Media, Inc., 2004.
2. Kaur, Harpreet, & Grover, Dinesh. “Design and Development of Online Hospital Management Information System” International Journal of Computer Science Engineering and Information Technology Research 3.2 79-88(2013).
3. Glass, M. K., Le Scouarnec, Y., Naramore, E., Mailer, G., Stolz, J., & Gerner, J. “Beginning PHP, Apache, MySQL Web Development”. John Wiley & Sons (2004).
4. Ullman, Larry. “PHP advanced for the World Wide Web”. Peachpit Press, 2002.

[5] “PHP 5 Tutorials”w3schools.com. Retrieved on April 9, 2016, from http://www.w3schools. com/php/

1. “Systems development Life Cycle”techtarget. com. Retrieved on April 15, 2016, from http://searchsoftwarequality.techtarget.com/ definition/systems-development-life cycle.

26