University of Dhaka

Department of Computer Science and Engineering

E-commerce and Web Engineering(CSE-4114)

Project Report

Title :

CSEDU Online Research Repository

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1 Description

For our CSE-4114(E-commerce and Web Engineering) project, we have made an online research repository which is titled CSEDU Online Research Repository. The primary users of our website will be the students and teachers of Computer Science and Engineering Department, University of Dhaka. Mamun-Or-Rashid sir gave us the idea of the repository. The main purpose was to gather all the researches done by the research groups of the department in one place. Each year, the final year students have to complete their thesis' under a certain supervisor who belongs to one of the research groups in the department. And so about 30+ thesis'/projects are done in groups consisting of maximum two students every year. If there was a repository for keeping track of all these thesis'/projects, it would be really helpful for the future batches to proceed with their thesis' when the time comes.
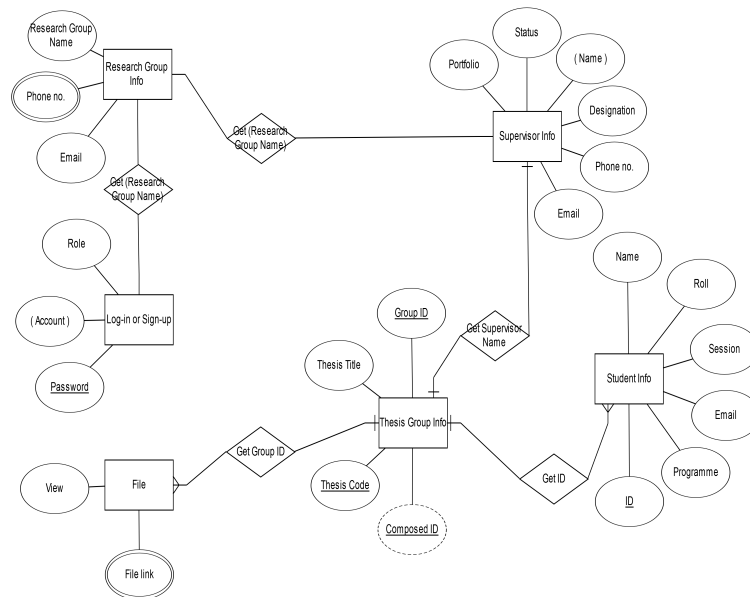
2 Objectives

This research repository will be a digital archive where the departmental community's intellectual work is made accessible and preserved for posterity. The building of such a repository will be helpful for both the faculty and the students, and so the department will be benefited altogether.

- Students will be able to deposit their thesis' into the repository that will stay in one place and maintain the same URL.
- The scholarly material produced will be available in one place, reflecting the intellectual achievements of the department.
- No charge will be applicable to access the materials in the repository.
- The repository will contain material that is best displayed in its original digital format.
- Users will be able to save a lot of time as the repository will be the place to look for.

Other objectives are:

- Wider distribution
- Showcase
- Safekeeping
- Lower technology barrier

3   Database Design

4   Platform

- We used XAMPP which is a free and open source cross-platform web server solution stack package. It consists mainly of the Apache HTTP Server, MariaDB database, and interpreters for scripts written in the PHP and Perl programming languages.

- We used PHPMyAdmin to create the database.

- Our frontend was developed in PHP(for controlling sessions), HTML, CSS and JavaScript.

- The backend was done in PHP and MySQL.

- The third party library that we used is Jquery Version 3.3.1.

- The framework that we used is bootstrap CSS framework Version 3.3.7.

5   Main Features

- Sessional Log-in and log-out. Also those who haven't logged in, can access the website minimally.

- Signing up is available for three kinds of accounts :
  - Admin : Admin can control the website. He/She is capable of creating new research groups and also in many cases, admin's approval will be needed by the other account holders. Admins are the developers of the website.

- Manager : Manager controls the thesis project works and also the research groups created by the admin. Managers are the supervisors of the research groups.
- Thesis Group : Each student and also thesis/project groups will have a unique account for their particular research work.

- One of the most efficient feature of our website is the varieties of search it can perform. Tag based, year based, research group based, supervisor based, student based and many more. According to the search type, there will be options available that will ask for further information and make the search easier and time saving.

- File uploading option is available for each thesis/project work and also each research group. Both the supervisor and the student/group are able to upload files and delete them as well.

- An option is available whether the account holders want to show and make their files available for download or not. If the account holders do not want their work to be shown or be available for download, then the files cannot be seen and downloaded by the users.

- Mailing system has been integrated so that the students can communicate with their supervisors or other members of the research group. Group mail can be sent to a group of particular members as well.

- Notice option is also available so that the admin can post a global notice and also the supervisors can post notices concerning their research groups and also a particular thesis group.

- Sharable link can be generated that will make the interaction easier.

- Connected with :

  - Google Drive
  - Dropbox
  - Github
  - Facebook

- Security has been ensured by preventing SQL injection.

- Flexible layout has been ensured. The contents of the website will change with the size of the screen that will help us to get a better view totally.

- We have maintained similarities with the department's official website as the repository is primarily developed for departmental use.

- OOD(Object Oriented Design) has been strongly maintained throughout the project. We have written the codes in an object oriented way from the very beginning which is why we had flexibility during this entire time.

- We followed some of the design patterns :

  - Factory
  - Composite
  - Model View Controller
  - Singleton

6   Working Procedure

- If not logged in, then the user will have a minimal view of the website. So firstly, one is required to sign-up to work properly. To sign up as a thesis group, user will have to request manager for an account. The manager will send the user an email containing a thesis group code. Then the user will be able to log-in to his account. There he can edit his information. All the research works can also uploaded there. This thesis group account can be accessed by the thesis group and also the supervisor/manager. Both can edit and update account information.

- Only the admin can create new research group, the managers will create thesis group accounts and control the research groups.

- There are 3 kinds of searches. Research group based, thesis group based and supervisor based.

- In the home page, notices can be seen and also there are links to recent researches.

- Admin and manager can edit notices.

- In the FAQ page, some QA can be seen and also constructive messages can be posted

- In the others page, options for mail, drive, dropbox, git, facebook are available. One can access these options if links are provided

- In the upload page, one can upload files by providing their thesis codes

Video link : `https://drive.google.com/drive/folders/11-lDUHDZpK3YpulpYzIt2YNuExuOgT3v?usp=sharing`

7   Conclusion

7.1   Summary

As it is stated previously that each year, the final year students have to complete their thesis'/projects as a compulsory 5-credit course in their last semester, this repository will work as a safe storage and a common ground of communication among the students and their supervisors. The supervisors will also be able to communicate with their groups through this repository. CSEDU Online Research Repository is more than just a repository. It makes research easier for both the students and their supervisors, more importantly makes communication easier. The users will know where to explore when they need any resources regarding research.

7.2   Problems Faced

- The one thing that we were worried about is the UI(User Interface), UX(User Experience) design. As this is mainly a repository, all we knew was that the UI, UX needs to be simple, but also lucrative and at the same time informative. We had to invest a great amount of time to come up with the template of the website.

- We had to face browser issues with the website. The paddings got distorted whenever we tried to run it using different browsers.

- Unsynchronized use of third party libraries were an issue throughout the project. We had to go through a great deal to use these third party libraries for the functionalities of the website.

- We faced problems with JSON(JavaScript Object Notation) encoding. We know that, JSON encoding is a format to to transmit data objects consisting of attribute–value pairs and array data types. Encoding must be done following some strict rules and also there are some syntactical bindings. So we had to face a great deal of problems if objects were not encoded right primarily.

- Caching. Whenever we made any changes to any of the files, we had to replace the previous one with the recent one. And also we had to test it on a private window. In that way, the caching problem was controlled.

7.3   Future Plan

This repository is confined within our department. We have a plan to expand it and upgrade it into a institutional repository(IR). An Institutional Repository is a digital archive where a university community's intellectual work is made accessible and preserved for future use. So we have a plan to make this website reachable for the entire university community.

7.4   Discussion

We were able to come a long way with the original idea of the repository. We were able to link mail, drive, git, dropbox and others facilities as well. Users can access files using varieties of search options. They can express their thoughtful comments and also ask necessary questions. It is a platform where supervisors and thesis/project groups can have a common ground of communication. Our course teacher helped us to plan further and provide suggestions and feedbacks. This was a project that we worked hard for and got to learn a lot about web development. We hope that both the student and the faculty will be able to use this repository and get their work done in a faster and easier way.