HSTU Hall of Questions

CSE 352: Web and Mobile Application Development Sessional

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HSTU Hall of Questions

1. Abstract

Nowadays, being the students of a university, our dependency on the use of technology has risen up to a significant mark where our study, preparation of exams and research are immensely affected by technology, especially by computer softwares. We try everyday to evolve our knowledge of technology to get better in our education. There are a lot of motivations for us, the computer science students, to learn about different computer technologies and create convenient applications to make our life easier. This project of ours is also such a try to pave a useful path for the students of HSTU.

The project "HSTU Hall of Questions" is a web based application. This application provides facility of the availability of final exam questions of different departments, faculties, level, semester, year and courses. The system allows students of HSTU to download question sets of their desired course, department, faculty of any year, level and semester. Students get the facility to search for any question on the website by using a wide range of filters for their desired questions. They also can request questions they can not find on the website. As well as a student can upload his/her questions on the website. The uploaded questions by students will be reviewed by the admins and they may appear in the central database and be readily available for all of the users. We have added an uploading system for admins, so that the uploading process gets super easy. We tried to provide a convenient system environment and interface for the students of HSTU so that they can be helped in their preparation of studies. We opt to keep the collection of question sets in the website database frequently updated.

2. Introduction

'HSTU Hall of Questions' is a web-based application that stores and shows academic questions that appeared previously in exams in Hajee Mohammad Danesh Science and Technology University. This project also provides a system where customized search can be performed to access the desired questions. One can request for his/her asking question if it is not present in the database. One can upload his/her exam questions through this project. Admin user is introduced in this project. Admin can manipulate databases of questions, requests and uploads. In a nutshell, 'HSTU Hall of Questions' is an archive of questions that appeared previously in exams in HSTU and it provides a request and upload system for better collaboration.

2.1 Motivation

We, the students of HSTU, very often need to look for the previously appeared question sets to get ideas about the question pattern, importance of different topics of the respective courses. But the process of collecting these question sets is quite complex and time consuming; sometimes unfound. Also now almost everyone has access to the internet and everyone can browse web browsers to visit any websites. This basically motivated us to create a web based

system where students of any department, faculty, level, semester, year can find their desired question sets conveniently and effectively.
The key motivations behind 'HSTU Hall of Questions' are:

- Easier Access: Currently the most common approach of accessing previous year questions is through The Central Library, HSTU. Which is very much less accessible. Because of limited copies of question papers, a large number of students and less man-power present in library administration.
- Availability: On vacations, weekends or for many other reasons the central library remains closed. Making the availability of question papers scarce.
- Preservation: Usually questions are stored as hard copies in papers, after a long period of time and use, question papers degrade significantly.
- Study Planning: Previously appeared questions help a student give a wide view of a course and plan for it how to get good grades, and thrive academically.
- Time Efficiency: Collecting questions is very time consuming, since one must go through the pile of questions to find-out the questions s/he wants.
- Shortage of Man-power: Since the central library has a shortage of man-power, getting the questions sometimes becomes hazardous.
- Digitalization: Digitalization of questions paper will help the students in the long run.
- Application of Web technologies: Applying various different web tools and technologies gives a broad-shape to the knowledge gained.

2.2 Related Works

Our idea of creating "HSTU Hall of Questions" is quite related to a number of other works. For example, some universities in Bangladesh have websites like www.library.ru.ac.bd , www.library.seu.edu.bd etc. where they assemble previously appeared question sets of different departments, faculties, level, semester, year of the respective universities in a digital format. These questions are readily available for students at any time. Almost every reputed International university has these facilities of collecting previously appeared question sets for their students as well in a digital library. For example, www.uwa.edu.au/library/home of University of Western Australia, www.lib.berkeley.edu of University of California, Berkeley and many more. Students can go to these websites and download their desired previously appeared question sets whenever they want. This helps the students to be efficient about their studies.

Few of the related works those inspired us :

- Digital library: Most of the universities (examples are given in the above paragraph) have digital libraries where a question archive section is present to store the previously appeared questions.
- Question requests: Many of the universities have a system where teachers/students can request for their desired questions.

2.3 Objective

'HSTU Hall of Questions' aims at making previously appeared questions available and accessible. For reaching this goal several approaches are introduced in our project. For

example- question searching, requesting questions and uploading questions. Admin-user is introduced for better administration.

Main objectives of this project are:

- Easier Access: Previously appeared questions are very much less accessible. Because of limited copies of question papers, a large number of students and less man-power present in library administration. Our project mainly aims at making questions easily accessible.
- Personalized Fast Searching: Searching through the pile of questions is less effective, sometimes completely failure. Personalized searching is very convenient.
  Personalized searching is nearly impossible with hardcopies.
- Question Archive: In the long run, a digitalized question archive is a must. Because of fear of data loss in the present library system, like- degradation of papers, stealing, losing etc.
- Accepting Request: So far we know, our university has no officials where a student or teacher can ask for previously appeared questions. We want to provide a solution for this graveous problem.
- Sharing: If the peers share their questions, a better system of question archives can be built. To realize this idea, we introduced question file uploading.
- Time Efficiency: Searching for desired questions in-person in the central library is very much time consuming. Searching and getting desired questions through our project is like the blink of an eye.
- User-friendly Interface: To provide a better user-experience, a great effort is put into building user-friendly interfaces.

3. Proposed Methodology

To implement 'HSTU Hall of Questions' we used various approaches and methodologies. Few of them are described below-

3.1 Technologies Used

Highlighted technologies used in this project:

- HTML: Used for user-interfaces or front-end.
- CSS: Used for sharpening the user-interfaces or front-end.
- Javascript: To reach different kinds of constraints e.g. file size.
- AJAX: To provide interactive transition of pages.
- MySQL: For database.
- PHP: For back-end.

3.2 Entity-Relationship Diagram

Entity-Relationship diagrams are used to show the relation between the entities used. We used several entities to build our project. Those are-

- Question Entity for storing the information of questions.
- Request Entity: Used for storing the request for questions from the users. ● Upload Entity: Used for storing uploads from the users for future review.
- Admin Entity: Used for storing admin credentials.

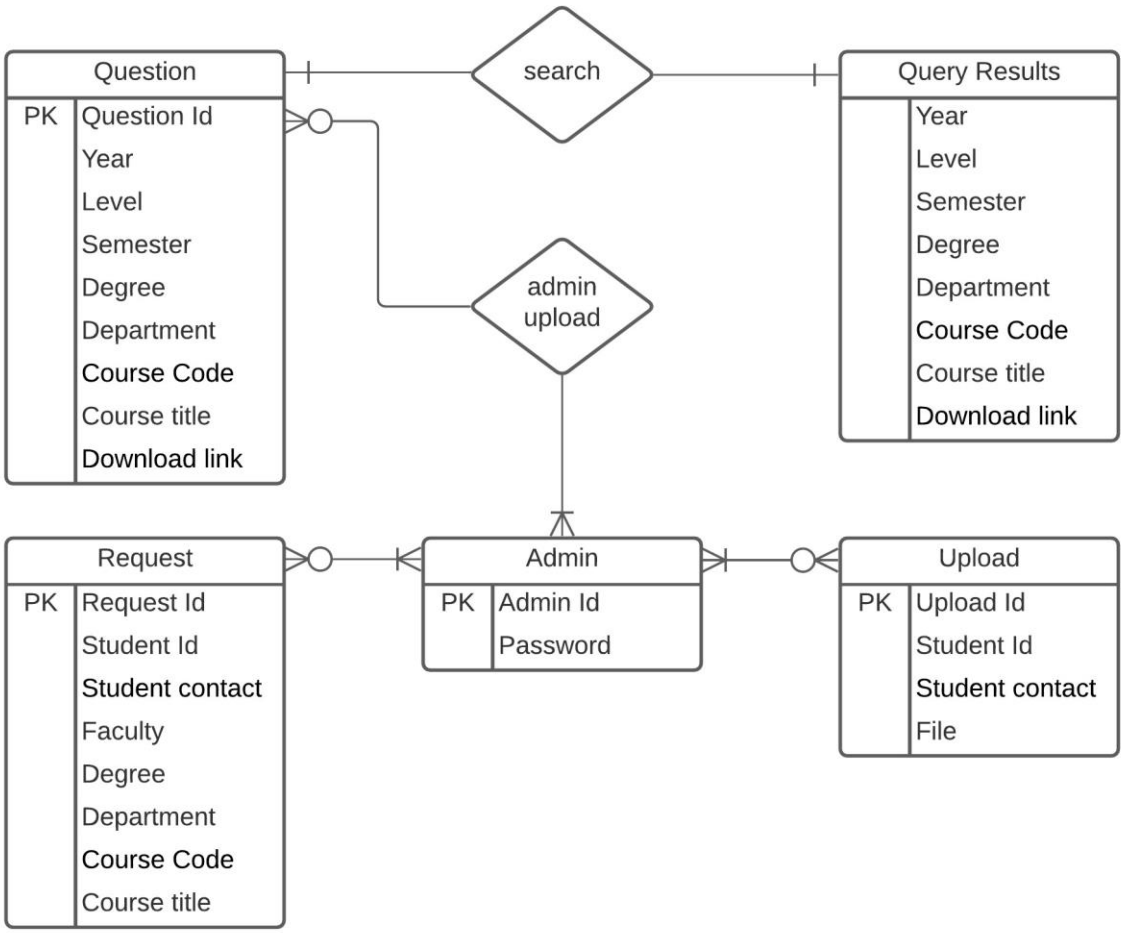


Figure 1: Entity-Relationship (ER) Diagram of HSTU Hall of Questions

This ER diagram reflects the relationship between the entities mentioned above to realize our project and its goal.

3.3 Use-Case Diagram

Use-Case Diagram is used to show the different aspects of actions of different users used in a system. In our project we used two types of users, namely-

- User: Users can view, search, request and upload questions.
- Admin: Admin can upload questions directly into the central database, update database, handle requests and upload databases. As well as view and search questions just like a user can.

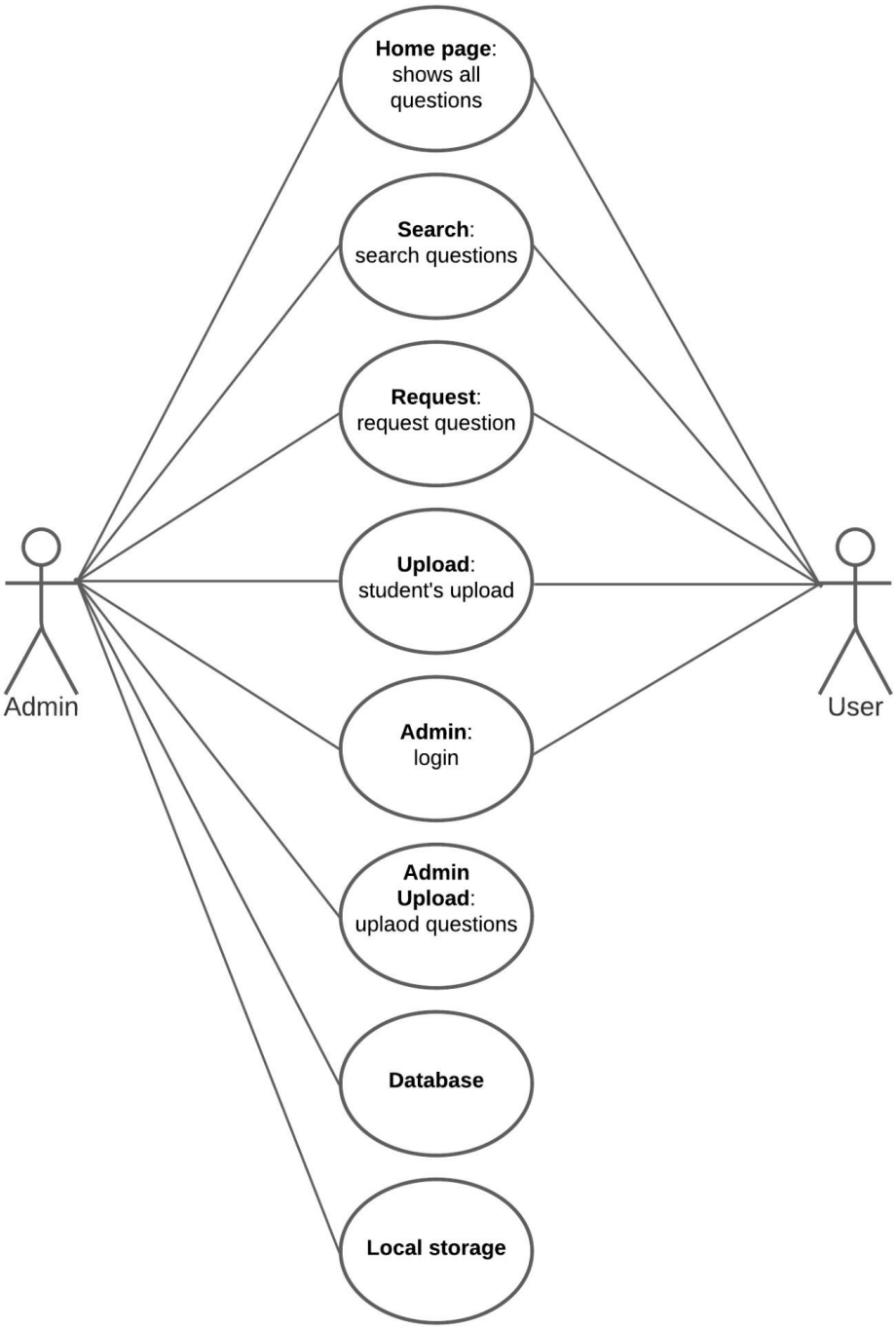


Figure 2: Use-case Diagram of HSTU Hall of Questions This use-case diagram shows the different aspects of actions from users and admins.

3.4 Activity Diagram

Activity diagram shows the flow of how a system works. Activity diagram of our project is given below-

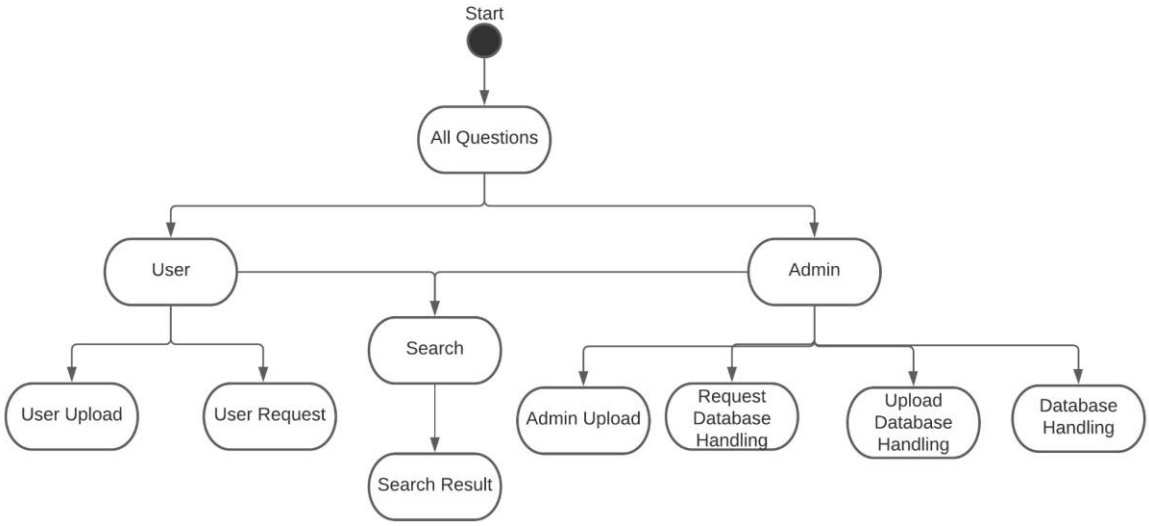


Figure 3: Activity Diagram of HSTU Hall of Questions

This activity diagram gives a broad overview of how our project functions.

3.5 Development Process

To develop this project we used different kinds of processes. Some of those main processes are shortly described here.

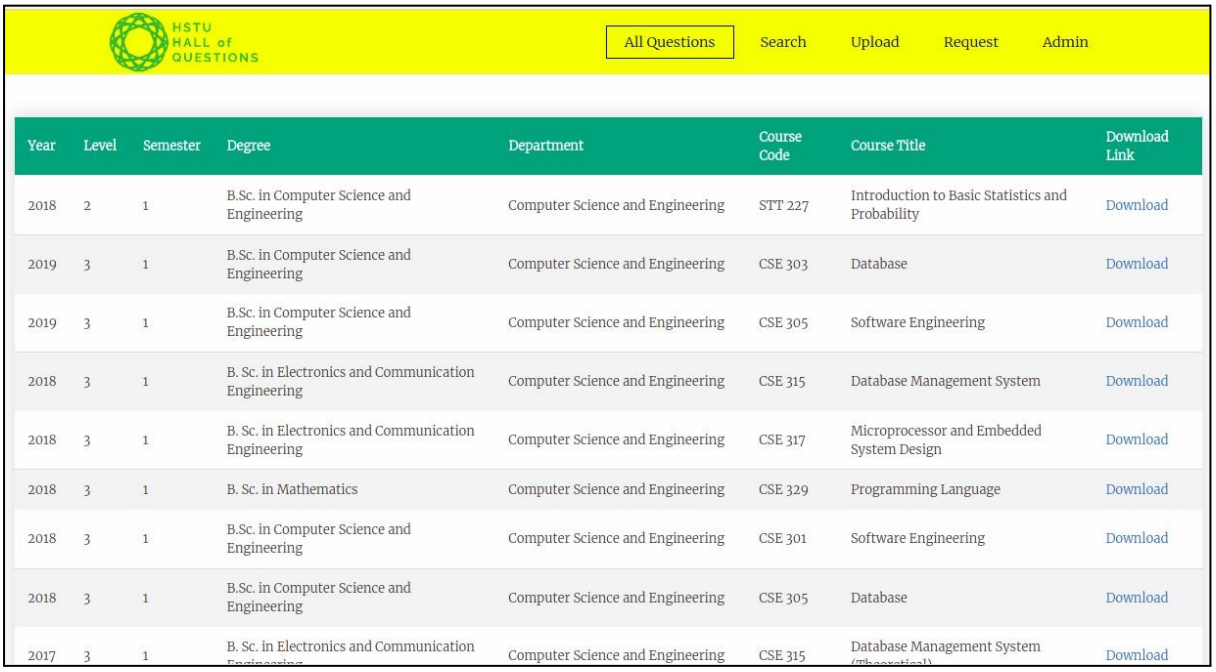
- **Agile Method**: To develop this project we used Agile software development method. Agile software development methodology is one of the simplest and effective processes to turn a vision for a software solution. Agile is a term used to describe software development approaches that employ continual planning, learning, improvement, team collaboration, evolutionary development, and early delivery. It encourages flexible responses to change. In this project we used processes of agile method including:
    - Requirement gathering
    - Requirement analysis
    - Requirement elicitation
    - Implementation
- **Software Testing**: To test this project we used two types of software testing, namely-
    - Unit Testing: We tested each part or functionalities of the project individually. According to the results of the testing, our project evolved towards our objectives.
    - Acceptance Testing: We used alpha testing as our project for acceptance testing.

4. Project Output

Since we have limited space here, we can not show all of the output of our project except a selected few as highlights. These are:

4.1 All Questions

All Questions page shows all the question information from the database.



Year	Level	Semester	Degree	Department	Course Code	Course Title	Download Link
2018	2	1	B.Sc. in Computer Science and Engineering	Computer Science and Engineering	STT 227	Introduction to Basic Statistics and Probability	Download
2019	3	1	B.Sc. in Computer Science and Engineering	Computer Science and Engineering	CSE 303	Database	Download
2019	3	1	B.Sc. in Computer Science and Engineering	Computer Science and Engineering	CSE 305	Software Engineering	Download
2018	3	1	B. Sc. in Electronics and Communication Engineering	Computer Science and Engineering	CSE 315	Database Management System	Download
2018	3	1	B. Sc. in Electronics and Communication Engineering	Computer Science and Engineering	CSE 317	Microprocessor and Embedded System Design	Download
2018	3	1	B. Sc. in Mathematics	Computer Science and Engineering	CSE 329	Programming Language	Download
2018	3	1	B.Sc. in Computer Science and Engineering	Computer Science and Engineering	CSE 301	Software Engineering	Download
2018	3	1	B.Sc. in Computer Science and Engineering	Computer Science and Engineering	CSE 305	Database	Download
2017	3	1	B. Sc. in Electronics and Communication	Computer Science and Engineering	CSE 315	Database Management System	Download

Figure 4: Screenshot of Home page

4.2 Search

'Search' page takes the customized search queries for users to provide the best match to the desired questions.

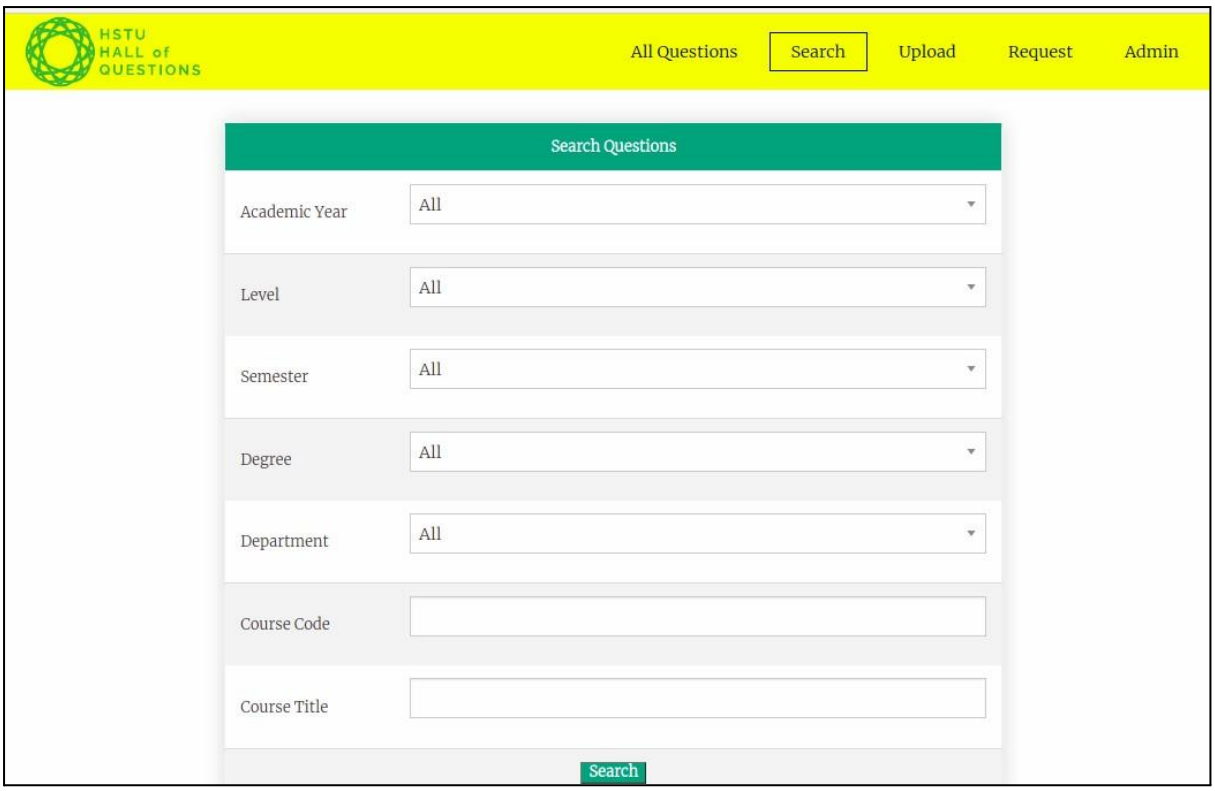


Figure 5: Screenshot of Search page

4.3 Admin Actions

Through the 'Admin Upload' page an admin can upload questions into the database. And uploaded questions are immediately reflected throughout the project.

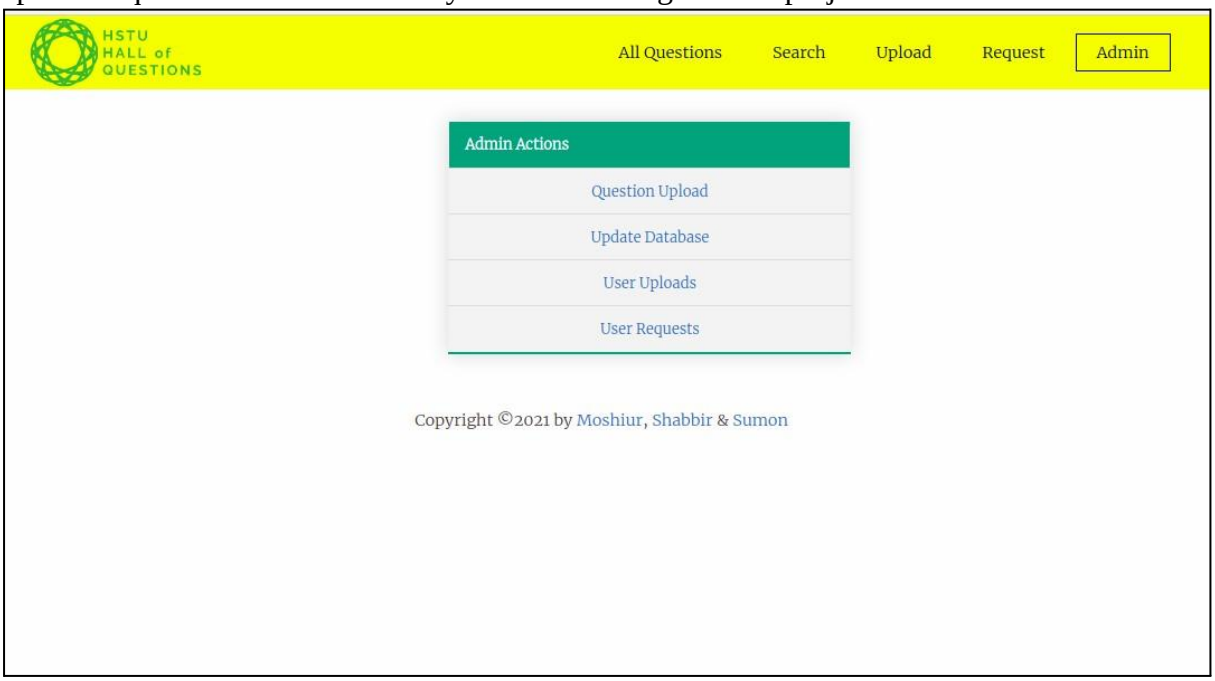


Figure 6: Screenshot of Admin page

5. Constraints and Challenges

First of all, it was a good experience creating this project, but we also faced some challenges and constraints completing this project because of a few circumstances.

- **Collaboration**: It was hard to keep members on the same page. When in a group, it is one big challenge to manage a group that is widely spread out and has different opinions and ideas but we managed to settle this issue by having an effective and efficient discussion. Keeping the team on the same page makes things happen interactively. Each team member will know exactly what's going on, what we need to do, and what each of us is working towards.
- **Communication**: Furthermore, communication was hampered among our team members due to COVID 19. It was hard for every member in the team to communicate, interact and work properly. Miscommunication, poor communication, is one of the biggest project challenges that get in the way of delivering projects successfully.
- **Data Collection**: Collecting the question sets of different departments, faculties, level, semester, year was a great challenge for us. It took real hard work and consumed quite a significant amount of time for us to collect the question sets from the library, scan them and create PDF files from them, yet there are many question sets left to include into our database.
- **Difficulty**: Because of lack of experience in web application development, it was quite challenging for our team to provide our desired functionality in our web application. We tried our level best to create an efficient, user-friendly interface from the front end and to handle and manage the searches and requests for questions from the back end.

6. Limitations and Future Scope

Since this is our first web based application project, there are some limitations in this project.

- **Lack of Data**: As we are only a group of three peers, it was hard for us to collect the massive amount of question sets from the library. So, we opted to collect a few (30+) questions.
- **Database Updation**: Admin can only delete an entry from the 'question' database. But fields of an entry can not be updated.
- **Community Blog**: Users can not communicate with each other in a community manner where each of the users may discuss their thoughts on their asking questions.
- **Misc**: There are a lot of great scopes of development in the interface and searching, requesting, downloading and uploading functionalities.

We eagerly want to overcome these limitations in future. We hope the best from this project to serve people in need.

7. Conclusion

‘HSTU Hall of Questions’ is a project that we created to provide convenience to the students of HSTU. They will be benefitted by collecting the previously appeared question sets to get preparation in any course and make an efficient blueprint of their study plan throughout their whole university period.

As now everyone is connected through the internet, digitalisation in every aspect is wanted by all. Like many other aspects, study plan and preparation of exams are very important aspects for the students. Our project will bring simplification, efficiency in these aspects for the students of HSTU. Our team hopes that our project will be able to make a good contribution to the use of technology to increase the effectiveness of study for all the students of HSTU.