Dynamic Seat Allocation System for Examinations Using MS SQL Server

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Abstract-- The software product "Seating Arrangement System" is an application which arranges the Seat matrix for an examination. The application creates the databases for different Allocation table at run time, information provided by user. The application then establishes the connection to SQL Server database and allocates the seat for students. The application "seating Arrangement" design and arranges seat matrix in MS SQL Server format. This application is general purpose that is it takes the information about database to create of any size and can be added any number of tables to MS SQL Server database. The application takes database name as the input. User must have proper right to use the application. Then it establishes the connection to MS SQL Server database. After successful establishing of connection, the application takes the name of table, number of column, number of rows as input from the user and creates the table in runtime in the specified database name provided earlier by the user.

Keywords: Seat Matrix, Seating Arrangement.

INTRODUCTION

The objective of this project is to develop a systematic and efficient seating arrangement system for exam halls. This system aims to minimize the chances of cheating, ensure equitable distribution of students, and optimize space utilization within the examination venue. The purpose of this project is to develop a comprehensive and user-friendly ASP.NET application for efficiently managing exam hall seating arrangements. By automating the allocation of seating positions based on various criteria such as student preferences, special accommodations, and exam regulations, the system aims to streamline the process of organizing seating plans for examinations. With intuitive interfaces and dynamic algorithms, administrators can generate optimized seating arrangements, minimizing conflicts and ensuring a fair and organized environment conducive to successful examinations. Additionally, the project seeks to provide flexibility for last-minute adjustments and updates, ultimately enhancing the overall efficiency and effectiveness of exam administration processes.

Managing seating arrangements during examinations can be a challenging task for educational institutions. Traditional methods often lead to inefficiencies and potential biases. This project proposes a digital solution to automate and optimize the process, taking into consideration various constraints such as student numbers, seat availability, and accessibility requirements. The scope of this project encompasses the development of an ASP.NET application specifically tailored for managing exam hall seating arrangements. Key features include the automation of seating allocation based on various criteria such as student preferences, special accommodations, and exam regulations, as well as the provision of intuitive interfaces for administrators to generate optimized seating plans.

RELATED WORKS

The existing system only provides text-based interface, which is not as user-friendly as Graphical user Interface. Since the system is implemented in manual, so the response is very slow. The transactions are executed in off-line mode, hence on-line data capture and modification is not possible. Off-line reports cannot be generated due to batch mode execution. The traditional manual methods of arranging exam hall seating come with several notable disadvantages. These issues highlight the necessity for an automated, systematic approach to improve efficiency and fairness in examination settings. Assigning seats manually is laborintensive and time-consuming, especially in large institutions with thousands of students. The process must be repeated for each exam session, adding to the administrative workload.

Manual seating arrangements are susceptible to mistakes, such as duplications, omissions, or incorrect placements, leading to confusion on exam day.

PROPOSED WORK

The implementation of an automated exam hall seating arrangement system offers numerous advantages over traditional manual methods. These benefits highlight the effectiveness, efficiency, and overall improvement in the management of examination logistics. Hence, there is a need of reformation of the system with more advantages and flexibility. The Seating Arrangement System eliminates most of the limitations of the existing software. The main objective of Seating Arrangement System is to enhance and upgrade the existing system by increasing its efficiency and effectiveness. The software improves the working methods by replacing the existing manual system with the computer-based system The Seating Arrangement System automates each and every activity of the manual system and increases its throughput. Thus the response time of the system is very less and it works very fast.

System Architecture

This comprehensive architecture provides a detailed overview of Admin log into the application, register student details, enroll paper details, adding exam hall details, exam time table details and hall allotment details. Student can log into the application. Then view the paper details, exam time table details and view the exam hall details.

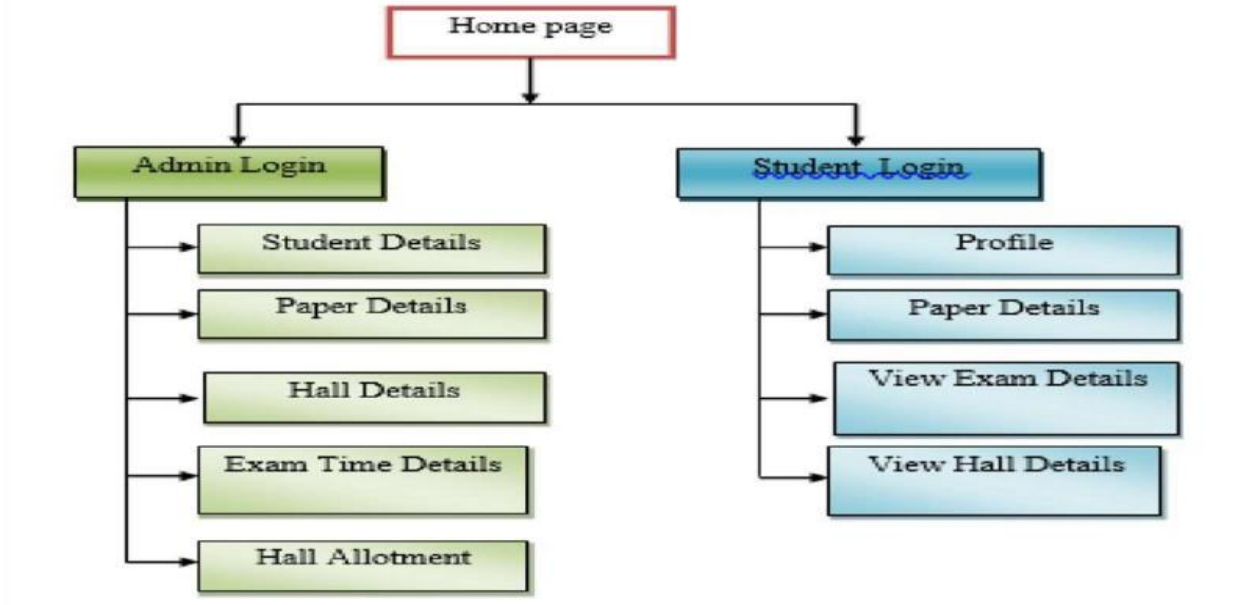

Fig.1 System Architecture

Tools ASP.NET TECHNOLOGY

ASP.NET, the next version of ASP, is a programming Framework that is used to create enterprise – class web applications. The enterprise class web applications are accessible on a global basis loading to efficient information management. However, the advantages that ASP.NET offers make it more than just next version of ASP.NET.

ASP.NET is integrated with visual studio.Net, which provides a GUI designer, a rich toolbox and a fully integrated debugger. This allows the development of applications in a what you see is what you get (WYSIWYG) MANNER.

The .NET Framework is a common environment for building, deploying, and running Web Services and Web Applications. The .NET Framework contains common class libraries - like ADO.NET, ASP.NET and Windows Forms - to provide advanced standard services that can be integrated into a variety of computer systems.

The .NET Framework is language neutral. Currently it supports C++, C#, Visual Basic, JScript (The Microsoft version of JavaScript). The new Visual Studio.NET is a common development environment for the new .NET Framework. It provides a feature-rich application execution environment, simplified

development and easy integration between a number of different development languages.

SQL SERVER

The database component of Microsoft® SQL Server™ 2008 is a Structured Query Language (SQL)–based, scalable, relational database with integrated Extensible Markup Language (XML) support for Internet applications. Each of the following terms describes a fundamental part of the architecture of the SQL Server 2008 database component:

DATABASE

A database is similar to a data file in that it is a storage place for data. Like a data file, a database does not present information directly to a user; the user runs an application that accesses data from the database and presents it to the user in an understandable format.

Database systems are more powerful than data files in that data is more highly organized. In a well-designed database, there are no duplicate pieces of data that the user or application must update at the same time. Related pieces of data are grouped together in a single structure or record, and relationships can be defined between these structures and records.

When working with data files, an application must be coded to work with the specific structure of each data file. In contrast, a database contains a catalog that applications use to determine how data is organized. Generic database applications can use the catalog to present users with data from different databases dynamically, without being tied to a specific data format.

SYSTEM COMPONENTS

Enhancement:

The main objective of Seating Arrangement System is to enhance and upgrade the existing system by increasing its efficiency and effectiveness. The software improves the working methods by replacing the existing manual system with the computer-based system.

Automation:

The Seating Arrangement System automates each and every activity of the manual system and increases its throughput. Thus the response time of the system is very less and it works very fast.

Accuracy:

The Seating Arrangement System provides the uses a quick response with very accurate information regarding the users etc. Any details or system in an accurate manner, as and when required.

User-Friendly:

The software Seating Arrangement System has a very user-friendly interface. Thus the users will feel very easy to work on it. The software provides accuracy along with a pleasant interface. Make the present manual system more interactive, speedy and user friendly.

Availability:

Thus, there is no delay in the availability of any information, whatever needed, can be captured very quickly and easily.

TESTING AND IMPLEMENTATION

The Student Details

we add the total no. of students in each department class. Because based on the no. of students we allocate the hall for examination. We can also view the total no. of students who are available in each department class.

Subject Details

we add the subject for each department in each semester. The semester will be whether odd semester or even semester. Every year we map the subject for each department and also set the password allocation for that department. Using this password, department head will navigate to the paper details web page.

Details

we include paper counting details, paper details and view paper details. In paper counting details, we insert total no. of core papers, elective papers and core elective papers are need for each department class. According to the no. of paper details, we allocate the course details for that elective paper and core elective paper, core paper. Finally we can view course details for each department class.

Examination

we schedule the exam date for every department class. First of all we select department and semester type,

paper type and automatically subject details and displayed. We set the exam date for each subject in department.

Time table

already we scheduled the examination date for each department. Based on the examination schedule, we can view the time table for each department class as semester wise.

Hall Allotment

we create the no. of blocks. In that block, we add no. of desk and room number for that block. Then we can view the available blocks through block name. Finally, we allocate the hall for every exam based on the no. of students in each department class.

Implementation

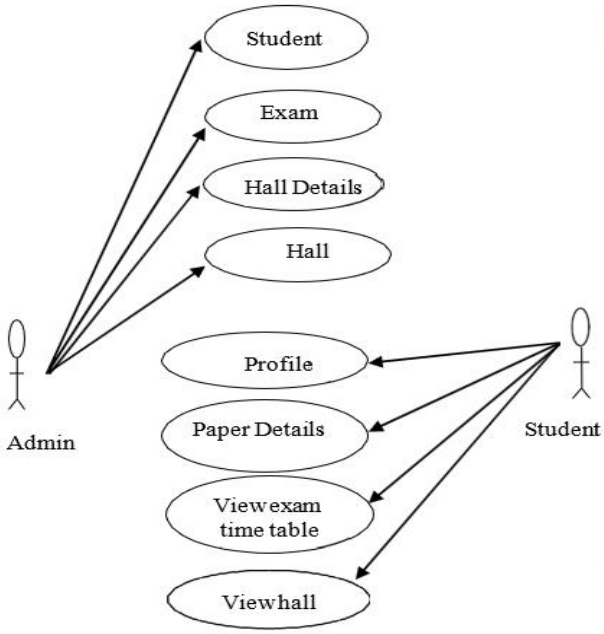

Fig.2 Use Case Diagram

Fig.3 Interface Diagram

CONCLUSION AND FUTURE ENHANCEMENT

The proposed automated exam hall seating arrangement system offers numerous advantages that address the shortcomings of traditional manual methods. By enhancing efficiency, accuracy, fairness, and scalability, the system not only improves the examination process but also provides a better experience for students and staff. This technological advancement represents a significant step forward in the effective management of educational assessments. The Exam Hall Seating Arrangement Project was designed to meet the requirement of the Project. It is Error free and makes the user to retrieve the data immediately. This project was aimed at this and it successfully achieved within the limited time period. Multiple reports are generated to facilitate any query and the entire system is perfectly matching current manual system accuracy and fast results. The benefits of the computerization are to minimize the human errors by reducing the workload. The transition from traditional manual methods to an automated exam hall seating arrangement system represents a significant improvement in the management of examination logistics. The proposed system offers numerous advantages that address the inefficiencies and challenges associated with manual seating arrangements.

6.1 Future Enhancements

Integrate the seating arrangement system with popular LMS platforms (e.g., Moodle, Canvas) to automate data import and export, streamlining the process of updating student information and exam schedules.

Allow administrators to manage seating arrangements directly from their LMS, creating a more cohesive administrative experience. Implement machine learning algorithms to predict and accommodate potential issues, such as high-risk cheating zones or

areas that might need more invigilators. Use data from past exams to improve future seating arrangements, learning from patterns and feedback to continually optimize the process. Mobile Application: Develop a mobile app version of the system for on-the-go management, allowing administrators to make adjustments and view seating plans from mobile devices. Intuitive Dashboards: Create more intuitive and interactive dashboards for easier data visualization and management of seating plans.

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