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Automatic Exam Seating Generator: SmartSeat

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Abstract

The Automatic Exam Seating Arrangement System streamlines exam seating for institutions. It leverages algorithms to automate the tedious guide system. This avoids remaining minute rushes and confusion in locating the right venue. The device provides an application for admins and college students with examination timetables, timing and batch details to successfully control the seating process. Admins input parameters like student numbers and seating potential. Intelligent algorithms generate the greatest plans thinking about proximity and performance, The app automatically generates seat preparations for every student and messages them exam info. It's working is controlled by an admin and advanced as a Java web application to streamline exam coordination. An automated examination hall seating app simplifies allotment and arrangement. Overall, it guarantees equity, prevents dishonesty, and eases admin burden. The paper ambitions to reduce the huge mission of manually allocating examination seats. The device dynamically allocates college students for efficiency. The prepared device routinely locations college students in favored spots. The workload is excessive in institutions but efficiency is low. This software saves enough time during exams with speedy, reliable overall performance.

Keywords: Java, android studio, arrangement, automatic, android app, exam seating, examination hall

INTRODUCTION

Smartphone reputation has pushed fast cell net and network boom, with developing varieties of mobile apps or programs to fulfill individual desires. Though open, Android dreams protection and stability upgrades which is fundamental for improvement. Java is an essential Android development tool, enhancing software programs high quality and device research. Users cautiously depend on Java-based Android apps written by developers to optimize internet enjoyment. Combining Java with expert equipment allows splendid patron reviews on mobile applications or android apps [7]. An automated exam seating plan generator reduces the possibilities for inexperienced seat allocation in university exams. It allows college students without issues to discover their examination hall in the last minute and reach their respective places in time. The app consists of pupil information like registration numbers and departments, subject collectively with exam timing and hall details. It mechanically generates seating plans which students check later. It gives the students and college staff problem-free entry to view their allocated seats and room data. It automates the manual, time- eating project of exam hall allocation and arrangements. The system video displays unit pupil, examination timing, and corridor records and mechanically generates seating plans, allocating invigilators and seats without clashes [11]. Smartphones have advanced past simple communication gadgets into essential everyday existence devices with useful applications. Android affords an open supply cell running device and framework for writing packages

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that decorate reliability and cost. With Android, builders can without trouble create individual first-class cell apps with the usage of Java code and libraries to govern devices. The intention is to design a fine patron experience through Android's development talents [13]. Currently, examination seating preparations are completed manually, gathering scholar records, counting present-day college students, choosing rooms, dividing and assigning university college students to those rooms, and making prepared seating charts for every room. This tedious manner is vulnerable to errors. The automatic seating association system automates this way by uploading student facts properly now into the database. It takes inputs on room numbers, room capability, branches, and rows to robotically allocate rooms and generate seating plan. Key skills are: Auto seating project, Individual room student lists [2].

This proposed internet-based application tool simplifies examination management for instructional institutions through handy scholar/employee verbal exchange. With smooth customization for mobile devices, it improves connectivity and transparency. It tracks scholar, personnel, and room information to optimally employ seats ensuring enough gaps between students of same branches to prevent malpractices. Manual allocation is time-eating, highly priced, and vulnerable to overlaps [6]. By digitizing and systematizing scheduling and seating and making plans for examinations with large student totals, the device targets to ease organizing workflow and ensure sincere exam environments. A mobile software application is needed to automate and control exam operations for ease of students and staff in cases where the manual arrangement of students is a tedious job for exam coordinators.

Overall administration using way of an examination coordinator. Auto-generates seating plans in step with pupil protection concerns. Aims to reduce guide effort in examination logistics through systematization. Provides hassle-unfastened exam hall discovery and seamless coordination for students [14]. The system is designed and developed using the Java programming language as it improved on C and is used in many app developments. Graphical symbols tailored to actual worldwide items may be programmed in Java using language metamodels. Java lets in key photograph-enhancing duties like combination, separation, and duration modification. Java code converters beautify functions based entirely on code templates that redesign layout content material cloth into solid frameworks. Programmers must leverage Java’s strengths to sell software program applications. Java is an item-oriented programming language created by James Gosling and others at Sun Microsystems. A key issue of Java primarily is, it runs on the pinnacle of the Java platform which isolates the Java software from hardware [15]. Sometimes the Exam-hall manipulation gadgets enable schools to assign exam halls on a variety of university college students, permitting access to examination records for certain scholars in a branch. Key desires are automating conventional guide methods and retaining off- closing minute rushes to assign halls. Students can view exam info like scenario, date, time, and variety of college students in their allotted hall. The modern-day structures are slow, inefficient, and depend on guide record generation and calculations important to mistakes. The proposed internet- based gadget targets to decorate workflows, reduce wasted strive in coping with halls, and simplify administrative obligations around seating allocation and exam timetables. It helps college students understand their allotted halls without delays [12].

LITERATURE REVIEW

The study examined suggests a Web Application primarily based Exam Hall Seating Management System that aims to simplify the allocation of examination halls for college students inside the institution. Limitations to look at: 1. The proposed system lacks readability on the technical details and functionalities of the development of Exam Hall Seating Management System. 2. The textual content does no longer offer any consequences or results of implementing the proposed tool. Future Work: 1. Detailed technical specs of the net software and gadget architecture want to be elaborated. 2. Conducting user testing and amassing comments to enhance the machine's overall performance and consumer revel in [1].

The Exam Hall Seating Management System, as provided in the study, objectives to simplify the process of allocating examination halls in educational establishments by using developing a web-based totally platform for students and directors. The Limitations of the have a look at:

1. The look at lacks readability at the technical info and functionalities of the evolved Exam Hall Seating Management System.
2. The textual content does not offer any consequences or consequences of imposing the proposed device.

Future Work

1. Detailed technical specs of the web application and system structure need to be elaborated.
2. Conducting user testing and gathering remarks to enhance the gadget's performance and person revel in [3].

The study is a project report on an "Automatic Exam Hall Seat Arrangement System" that aims to develop a software application to automate the process of seat allocation in university/college examination systems Limitations:

1. The study does not provide details on the sample size or the scope of the implementation of the automatic exam hall seat arrangement system.
2. The study does not discuss any testing methodology or results of the system's effectiveness in real- world scenarios [4].

The study focuses on the development of an application system for exam hall allotment and seating preparations to simplify the process for each college control and college students. Limitations of the examine:

1. The study especially focuses on the improvement of an automated examination hall allotment and seating association machine that does not require specified statistics at the technical components used within the system.
2. The observe lacks facts on the trying out, validation, and evaluation of the proposed gadget in a real educational institute placing, thereby limiting the know-how of its effectiveness and performance.
3. The examine does no longer point out any particular constraints faced all through the improvement and implementation of the system that may provide insights into ability limitations in actual-time operations [5].

METHODOLOGY

Following these few constraints we have developed the software application for assigning the seats:

Vacant Rooms Available for Allocation

When exam coordinators list the number of empty rooms available for occupancy, it also measures the room’s seating Capabilities basing on the number of rows of benches and columns in that room and it accounts for it.

Count of Students who Appeared for the Examination

The examining officer must determine the total amount of students who are to appear for the examination. Each student has an assigned registration number which is used for sorting the students to ensure maximum fairness. Students who are rejected or absent are also identified with slight distinction. The selection process need not be one after the other due to the presence of different batches attempting examination in the same hall at the same moment.

Student Seating Allocation

The students sit next to each other in specific way that no two students in the same class or branch sit next to each other or one after the other. Students are ranked according to the number of their

enrollment. Once the room is occupied, students begin to fill the next room. Similarly, students from other disciplines fill the gap such that no two students of same branch are together (Figure 1).

STEPS INVOLVED

- *Step-1:* Initialization of the smart app.
- *Step-2:* User authentication: In User authentication, the registered user logs into the app by imparting his/her Username and password. In case the password is forgotten or wrong then the consumer Can reset it through the link via domain mail.
- *Step-3:* Exam Seating plan constraints and information are given by the Exam coordinator: The app then generates a seating plan according to the constraints put forward by the aid of the examination coordinator.
- *Step-4:* Exam Sheets of the Students are placed on the respective places based on the Seating plan generated.
- *Step-5:* The students check their seat allocations via the application and reach their respective places.

TOOLS

Android studio

Android Studio is an Integrated Development Environment (IDE) especially for Android Application Development. It is how we make software applications for Android. It comes from IntelliJ IDEA, a tool for making software with Java, and uses its main parts. A thing about Android Studio is the 'Apply Changes' feature. This helps update an ongoing app quickly with new code or things. For smoother coding, it has a code editor. This editor makes coding easier with auto-complete, code fixing, and checking. Once an app is made, it's changed into an APK file to be added to the Google Play Store. Android Studio has cool features like super-efficient code editing, a detailed layout editor, easy-to-use wizards, templated based wizards and Lint tool checking [10].

Java

Java is one of the first programming languages for designing the experience and functionality of a chair design application in general. Object-oriented Java attributes allow you to instantiate basic interactions such as Student, Seat, Exam, and Chart. The algorithm for allocating seats can be implemented in Java code.

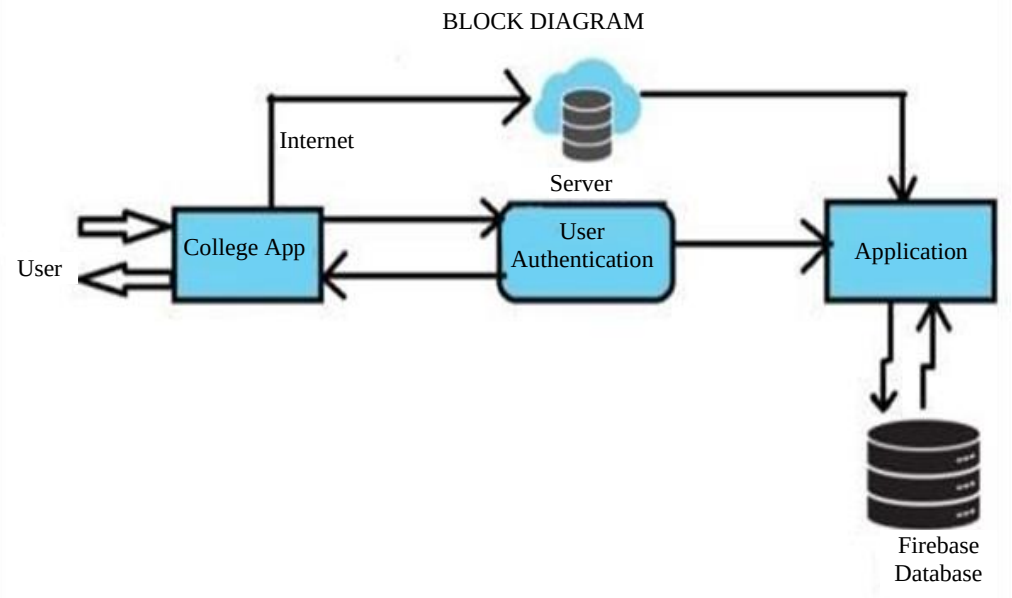

Figure 1. Block diagram of app working.

Functions such as searching, sorting, and importing/exporting data can be written as Java methods. Java allows for complex logic that minimizes page reduction and integrates with databases to store student information, research, and programs. Java has great libraries and tools for doing useful things and fast app development [9]. Overall, Java offers pass platform capabilities, performance, and nice company features to efficiently enhance the central capabilities of the seat planning application.

Google Firebase

Google Firebase can show lower benefits and provide you stage for a useful and useful seat planning application to present cloud hosting solutions. Its real-time NoSQL database allows seat estimates to be unified at an unspecified time in the gadget's destiny. User authentication through Firebase allows authorized scholars and administrators. App content fabric details such as posture charts and test plans can be stored in Firebase's cloud storage enterprise. Push notifications of exam updates and changes can be sent to university college student using Firebase Cloud Messaging. Firebase Performance Monitoring has finding things to improve app balance and speed [8]. Overall, Firebase offers capabilities such as information garage, patron manipulation, content clothing content internet web site hosting, analytics, and messaging to efficiently assemble and develop complex seating planning applications.

TEST CASES

Figure 2 depicts the Login page to access the SmartSeat app. Here the Student, Faculty and the Exam Coordinator can login via their respective username and password.

Figure 3 shows a process of resetting the password of an account in case of the Users or Exam Coordinator forgetting their password. When the User clicks on Forgot Password an email compressing of a link to reset password will be delivered. The linkwill be expired in a few minutes before which they can set their new password and login to their accounts.

Figure 4 depicts the Dashboard page of the app where the Main Menu is present. There are mainly two sections namely, Seating Arrangement and Help and about. The Users can also logout of their accounts by clicking on the logout button.

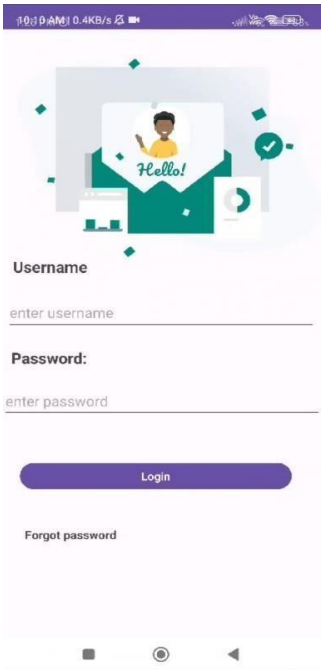

Figure 2. User Login.

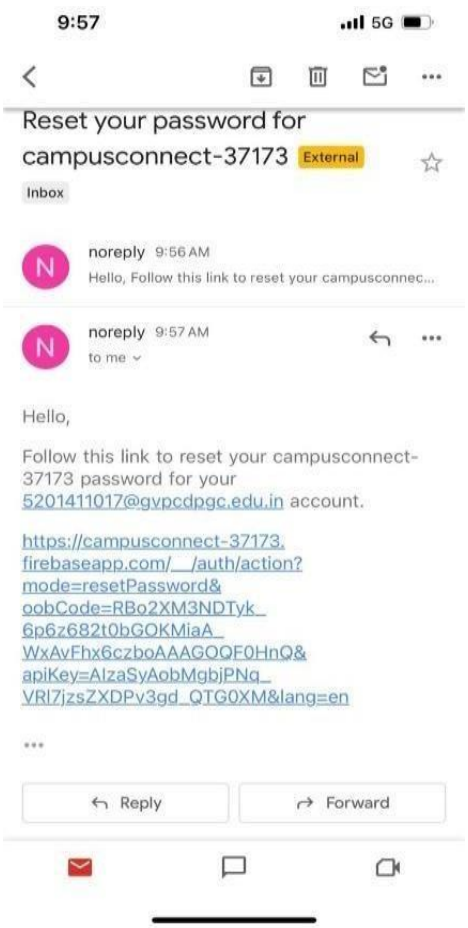

Figure 3. Reset Password.

Figure 4. Dashboard.

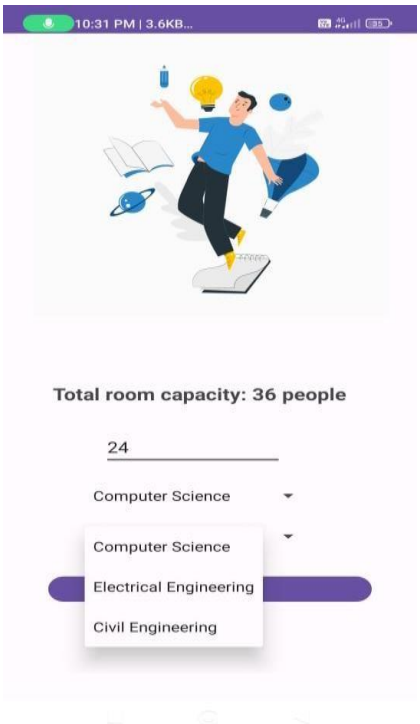

Figure 5. Input for the Seating Plan.

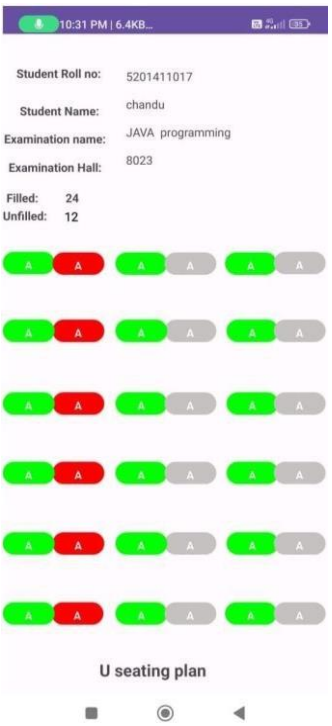

Figure 6. Generated Seating Plan.

Figure 5 shows the page that appears once the Exam Coordinator clicks on Seating Arrangement. Here the Exam Coordinator gives input such as Number of students and the two distinct branches attending the exam to autogenerate the seating plan.

Figure 6 depicts the generated seating order for the exam. The two branches attending for the exam are represented by unique colors. On clicking any seat, the details of the student in that particular seat are shown. Additional details like Examination name and hall number and the no. of filled and unfilled seats are also provided.

CONCLUSION

Automating the seating procedure considerably simplifies exam management. Advanced algorithms assign seats pretty primarily based on wishes and constraints. It minimizes mistakes and bias even by offering customization and safety. Insights from analytics further optimize arrangements over the years. In all, it revolutionizes examinations via performance, equity, and accuracy improvements. The examination management software automates seating and room allocations. It reduces manual attempts for the body of workers and complexity for institutes. Centralized facts allow each time to get the right of entry. By simplifying arrangements, it cuts manpower needs and workloads. Overall, it streamlines examination coordination for efficiency blessings. Faculty takes attendance of students attempting the current examination. We are in the process of planning the implementation of a feature where designated faculty members will be assigned to examination rooms. This faculty possess the ability to take student attendance of the current exam and submit it to the exam coordinator. Attendance is stored in the database which is later reflected in the app. Exam coordinator receives the current exam student attendance and inputs it into the database and the attendance is then reflected in the app. The user interface (UI) will undergo modifications according to the guidelines provided to us by our Guide. The examination corridor seating utility brings performance in handling preparations. It permits quick, reliable test coordination for students. Overall, it streamlines a key administrative task to boost productivity.

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