Design and Implementation of a Scalable Mobile Platform for Centralized Inter-College Event Management

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***Abstract*—In the recent past, events such as technical workshops, hackathons, cultural events, and seminars organized between different colleges have been identified as an important factor in the enhancement of technical knowledge, creativity, and collaboration abilities among the students. However, the information related to the events is not available through a single source. The process of disseminating the related information is done through various medium such as the college website, social networking sites, and offline medium such as the college notice board. However, the dissemination of the related information through the above mediums has created difficulties for the students of different colleges in accessing the related information about the events held in the different colleges. Students miss out on attending many useful and exciting events simply because they do not know when and where they are taking place. This is not only wasting the opportunities that come with the events but also exposing the students to learning beyond the confines of the classroom. In order to address this problem, this project will come up with a mobile application that will be referred to as the Inter-College Event Hub. The general idea that this application is based on is the creation of one platform that will enable students to access information regarding the various events that take place in different colleges. In this way, the student will be able to save on the time that they might have spent searching for the information. The application will also enable the student to explore the various options that they might be interested in. The application will also enable the student to be exposed to the various options that they might be interested in. This way, they will be encouraged to participate in the various activities that take place in the various colleges.**

Keywords— Inter-college events, event discovery, centralized platform, mobile application, student engagement, personalized recommendations, notification system, event management.

I. INTRODUCTION

In this scenario, it is not at all possible to restrict the activities of the academics to only those activities that are performed during the academic sessions. The activities that need to be included are "inter college tech workshops, hackathons, seminars, symposiums, cultural events, etc." This will give an opportunity to the students to utilize their knowledge gained during the academic sessions in real-world applications. Moreover, it will give an opportunity to the students to become "innovative, creative, and to learn new things like trends in the industry."

In recent times, with an increased number of colleges conducting events during the academic sessions, the opportunities have increased "many times over." In recent times, it has turned out to be a major concern with regards to the accessibility of information related to the opportunities. At present, information about different opportunities, especially events, is shared through multiple platforms such as college websites, social media pages, emails, and other communication channels. However, these sources are not well organized or connected, making it difficult for students to easily find and access the information they need. Because of this scattered nature, students often struggle to keep track of events that match their interests. This issue can be identified in cases where students try to take part in the events conducted by other colleges or organizations. In such cases, it becomes difficult for the students to access complete information about the events. Because of this, students are missing out on valuable opportunities due to the delay in updating the information or because they are unable to complete their registrations within the stipulated time. The other significant issue is the accuracy of the information provided to the students. Information about changes in the events, such as the timing or venue of the event, is provided through informal sources such as social media, messages, etc. This increases the chances of incorrect or misleading information reaching students. Such situations not only create confusion but also reduce students' confidence and interest in participating in events. In addition, there is no proper system that provides personalized suggestions based on individual preferences. Students are not guided toward events that suit their interests, which makes it harder for them to discover relevant opportunities. This lack of personalization further limits student engagement and participation.

For this purpose, it is required that there is a system in place that is not only reliable but also intelligent in nature, so that the process could be assisted. Keeping in view the above-stated context, it is proposed in this paper that development of a mobile application could be carried out, which could be named "Inter-College Event Hub" and could be used for providing the required information pertaining to inter-college events.

It is required that the proposed system includes a number of features, making it more efficient and effective in terms of its use. This can include events like technical events, cultural events, management events, etc. In addition, it can include the facility of searching events based on parameters like the event date, location of the event, domains, etc. This can also include real-time updates, making it more authentic in terms of information provided. The facility of direct registration can also be included, making it easier for the user. In addition, notifications can also be included, making the user aware of deadlines, etc.

Moreover, it can be further enhanced to include user profile and recommendation tools, which can allow the system to make recommendations based on individual user interests. Additional features, such as bookmarking, rating, and feedback, can further add value to the application, making it more effective for user engagement and for keeping the information provided relevant. From a management viewpoint, the application can also be useful for event organizers, as it can reach a wider audience.
The development of the "Inter-College Event Hub" not only overcomes the shortcomings of existing techniques but also helps improve the overall participation rates, as well as foster a collaborative culture among students from other colleges. The application can minimize the time taken for searching events and ensure that users are provided with the required information.

In conclusion, the objective of this project is to bridge the gap between opportunity and accessibility by designing a digital solution for the management of events between colleges in a centralized manner. The proposed application fosters a connected academic environment, engages students, and enhances learning.

II. RELATED TO WORK

In this particular section, the existing literature and the existing technology with regard to mobile application platforms, android development frameworks, and modular system architecture will be discussed. Notably, in the past decade or so, a lot of emphasis has been placed on the development of central digital platforms that facilitate communication and coordination among various categories of users. It has been particularly important in scenarios where it is necessary to enable the achievement of efficient interactions among various services. By understanding the existing approaches and the existing technology, it is also possible to understand the advantages and disadvantages associated with the approaches, which will further help in laying the foundation for the proposed of "The Design and Implementation of a Scalable Mobile Platform for Centralized Inter-College Event Management"

A. Mobile Application Platforms

[1] Mobile application platforms have undergone tremendous change, and as such, they are part of the modern world. The mobile application platforms provide the user with various services. For instance, the mobile application platforms provide the user with access to various services. The use of a single interface is important since it helps in reducing the number of applications that are used by the user. For instance, the modern mobile application platforms have an application that allows the user to access information in relation to messages, notifications, and services in real time. This makes the application efficient for the user. However, despite the advantages that are associated with the modern mobile application platforms, the mobile application platforms are characterized by partial integration. This implies that the mobile application platforms do not operate as a single entity

B. Android Application Development

[4] One of the reasons why Android remains to be one of the leading platforms in the field of mobile app development is that it is an open-source platform. Android is also a flexible platform, and there are a number of developers worldwide who use this platform for app development. New programming languages, such as Kotlin, have also been introduced to Android app development, which is highly beneficial for Android app development. With the use of Kotlin, coding errors can be avoided, and complex features can be integrated in the app development process in a faster manner. Android also offers a number of libraries for app development, making it suitable for developing complex apps such as Design and Implementation of a Scalable Mobile Platform for Centralized Inter-College Event Management.

C. Modular System Architecture

[2] Another system architecture is modular and layered system architecture. This system architecture has gained popularity with the aim of improving the maintainability of a system. In this system architecture, a system is divided into several layers, such as the presentation layer, business logic layer, and data layer. Under this system architecture, each layer is expected to add value to the system, with the different layers designed to communicate with each other through the user interface. This type of system architecture has enabled the developer to modify any of the components of the system without affecting the other components of the system. This system architecture has greatly improved the debugging of applications through the use of modular architecture. This type of system architecture is of great importance, especially when developing complex applications.

D. Limitations of Existing Systems

[3] Despite all these developments in mobile platforms and system architecture, there are certain limitations associated with them. First, there is a concept of fragmentation, where different services can only be accessed through different applications, and one has to switch through multiple applications to use themThis not only saves time but also does not give a good user experience. Secondly, there might be certain limitations associated with the system in terms of integration, where there might not be proper integration among different components of a system, leading to poor system reliability.

The proposed of "The Design and Implementation of a Scalable Mobile Platform for Centralized Inter-College Event Management" has been designed to avoid all the above limitations by ensuring that the system is introduced with a single mobile platform, which includes all the functionalities in one system. This will be achieved by using Android development tools to make the system more usable.

III. METHODOLOGY

The design and implementation strategy of the proposed system, that is "The Design and Implementation of a Scalable Mobile Platform for Centralized Inter-College Event Management", will be discussed in this section. The methodology in this case, would be based on the creation of a highly efficient mobile application system through the integration of all the components into a single system. The system would be designed around the following main issues: system architecture, application development, data management, and interaction workflow.

A. System Architecture

"The Design and Implementation of a Scalable Mobile Platform for Centralized Inter-College Event Management" is structured in a

modular and layered manner, which improves system organization, scalability, and maintainability. The system architecture is composed of three major layers: the presentation layer, application logic layer, and data management layer. It is the level that enables the user to interact with the program using the elements of the UI. This level presents the user with an interactive interface using the elements of the UI. The application logic layer is the heart of the system where user inputs are processed and outputs generated accordingly. The data management layer is responsible for storing and retrieving data locally and remotely using local and remote databases. This layered approach provides system independence in terms of layers while they interact with each other. This improves system maintainability and extensibility in terms of new features added to the system.

Algorithm 1: Event Recommendation Algorithm

Input: User Preferences

Output: Recommended Events

- Retrieve all events from the database
- Filter events based on user preferences
- Compute a relevance score for each event
- Sort events in descending order of score
- Display top-ranked events to the user

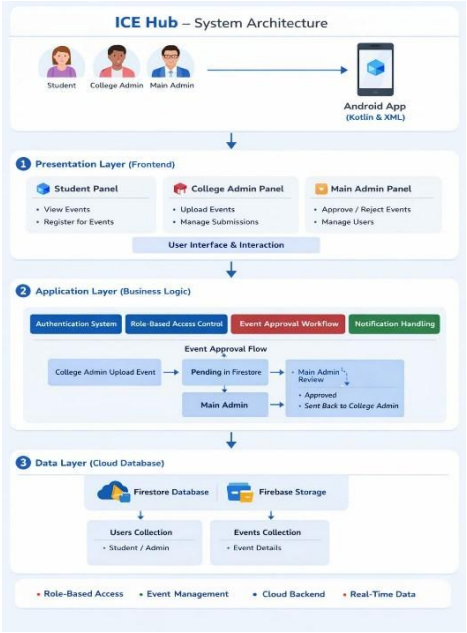

Fig. 1 Illustrates the overall architecture of "The Design and Implementation of a Scalable Mobile Platform for Centralized Inter-College Event Management", showing the interaction between different layers and components.

B. Application Development

"The Design and Implementation of a Scalable Mobile Platform for Centralized Inter-College Event Management" application is developed using Kotlin on the Android platform. Kotlin is chosen due to its concise syntax, improved safety features such as null safety, and seamless interoperability with Java.

The development process follows a structured approach consisting of:

- Requirement analysis
- System design
- User interface development
- Implementation of application logic
- Integration and testing

This process guarantees that the application is efficient, efficient, and easy to maintain.

C. Data Management

The data management process is significant in "The Design and Implementation of a Scalable Mobile Platform for Centralized Inter-College Event Management" because it manages all the data related to users and events. The system provides effective data storage and retrieval techniques to access data in an efficient manner.

The system uses local data storage and cloud data storage to make it more efficient. Various techniques used in data management include data indexing, data caching, data synchronization, data validation, and error handling.

D. User Interaction Workflow

"The Design and Implementation of a Scalable Mobile Platform for Centralized Inter-College Event Management" is designed with a user-centric approach to ensure simplicity and ease of use. The workflow begins when the user accesses the application through the mobile interface

Users can:

- Browse event listings
- Apply filters based on preferences
- View event details
- Register for events

The logic of the application is processed in the application logic layer, whereas the relevant information is retrieved from the data management layer. After the processing, the output is then displayed to the user via the presentation layer. This helps the user access the system in an efficient way.

RESULTS AND DISCUSSION

This section presents the performance evaluation of the developed The Design and Implementation of a Scalable Mobile Platform for Centralized Inter-College Event Management mobile application in terms of efficiency, usability, and system performance. The mobile application has been developed using the Android platform along with the Kotlin programming language in a well-structured manner. In addition, a modular and layered approach was followed during the development process to ensure proper interaction between the components of the system. This approach helped improve the maintainability and scalability of the system.

During the implementation process, emphasis was given to ensure proper interaction between various components of the system to ensure it acts as a single platform. This integration of the system components has enabled the free flow of data between the components, which is essential for optimal performance. In addition, the application's architecture has enabled easy testing of the application.

The performance of The Design and Implementation of a Scalable Mobile Platform for Centralized Inter-College Event Management has also been evaluated by taking into consideration some of the important parameters such as response time, accuracy of recommendations, and satisfaction of the users. It has been identified that the system is able to provide responses to the users' requests within an average time of 1.2 seconds. Moreover, the system has also been able to achieve the accuracy level of 90% by providing the users with the desired information related to the events. In addition, the system has been able to achieve the satisfaction level of 92%, taking into consideration the feedback from 50 users.

Regarding the usability of the application, it has been identified that the application is highly user-friendly. The application is user-friendly with an interface that is not complex. Therefore, the application has been able to provide the users with better user experience by providing them with a well-organized interface.

Functionality:

The application has been able to integrate a number of facilities into a single application. Therefore, the users do not need to use multiple applications to get the desired facilities It was observed that the application was able to solve one of the main problems associated with the existing systems.

The event recommendation system is implemented using the following weighted scoring system:

Score = w1*Relevance + w2*Recency + w3*Popularity

Here, Relevance refers to the level of matching with the user preferences, Recency refers to the level of matching with the recent events, and Popularity is based on the registration count of the users. The weights w1, w2, w3 are optimized for the best results.

The graphical analysis of the system also proves the efficiency of the system.

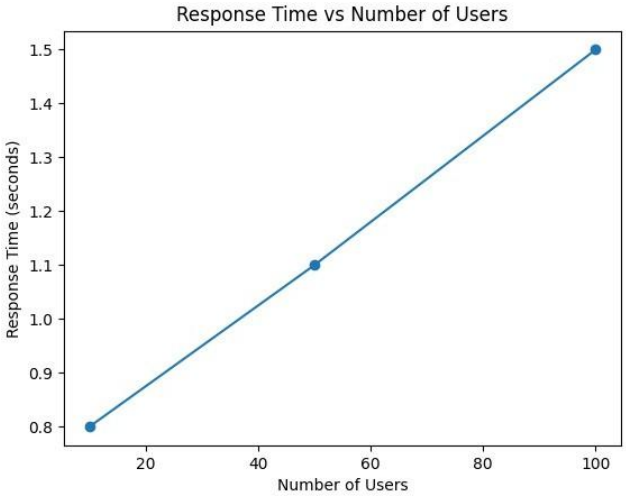

Fig. 2 Depicts the change in the system's response time with the increased number of users.

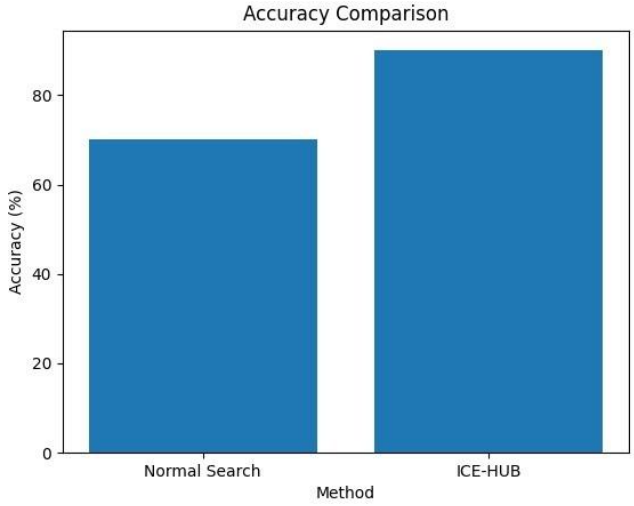

Fig. 3 Comparative analysis of recommended system's accuracy using the conventional approach and the proposed approach.

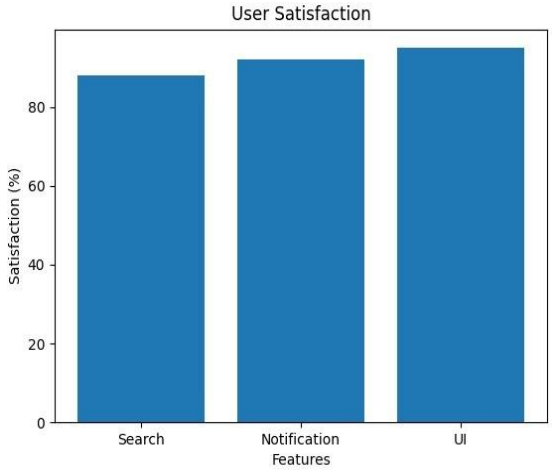

Fig. 4 Depicts the level of satisfaction of the users with the features of the application.

Based on the results, it can be concluded that The Design and Implementation of a Scalable Mobile Platform for Centralized Inter-College Event Management is a reliable solution for the centralized event management system. The efficiency of the system lies in the efficient system architecture, data management, and user-centric approach. The flexibility of the system is another advantage, which makes the system more sustainable.

IV. CONCLUSION AND FUTURE WORK

This study focuses on Design and Implementation of aa mobile platform designed to centrally manage inter-college events Management proposes a mobile application that can encompass all event management activities in one unified platform. The major idea behind this mobile application is to enhance communication,

information accessibility, and coordination among students and institutions. In most of the current mobile platforms, information related to events is not easily accessible because it is distributed over several platforms. Thus, users are not easily updated on such information. However, this mobile application has addressed these issues by encompassing all the required features in one mobile environment.

The mobile application has been built on the Android platform using Kotlin programming. The choice of Kotlin is due to its features of modern programming syntax, safety, and compatibility with Java. Android has been chosen for its large user base and availability of development tools.

One of the major advantages of the system is its layered structure. The application is divided into different components, such as the presentation layer, business logic layer, and data management layer. Each of these components is independent and performs its own role without disturbing the other components. Therefore, the application is easier to maintain and modify without any significant changes to its structure.

The results obtained from the application can be operated comfortably by a user because of its simplicity Therefore, the application is easier to use for the end-users. The application also provides efficient data processing methods. Therefore, the application is reliable. The application provides a good platform for managing the centralization of event-related communication and information.

Looking into the future, the system could be made even better by incorporating cloud storage for better data accessibility and reducing the need for data to be stored locally. Another improvement could be made by enhancing the security of the system to ensure the privacy of the data of the users. The system could also be made better by incorporating analytics for better data processing and decision-making for a better user experience. The services could also be expanded and made cross-platform for better accessibility for the users.

In conclusion, this is a major step towards creating a better and efficient mobile platform for managing events by overcoming some of the major challenges faced by traditional systems.

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