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Procedia Computer Science 172 (2020) 863–868

Procedia Computer Science

www.elsevier.com/locate/procedia

9th World Engineering Education Forum, WEEF 2019

An Android Application for Campus Information System

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Abstract

The availability of an online campus information system enables the students to get a better layout of education planning. It helps the university regarding well managed and strategic information management. In this paper, we describe and contextualize the model for an online campus information system for undergraduate students as well as university faculty. Information gathered employing structured interviews from a recognized University. The collected data enables us to prepare an android application for the campus information system, aims to help students as well as faculty in the best possible way.

Keywords: Education planning; Campus information system; online learning; Student-teacher interaction; Android application

1. Introduction

Earlier the leading universities found a challenging job to manage the exchange of information on the university campus as it was an excellent task to perform. So in the 1990s, they started shifting towards a better way by the use of www (World Wide Web). At the end of the 20th century, the potential for the exchange of information within the campus has boosted by making use of information technology and electronic communication. From the 20th century to today's era, starting from the black and white phones trend to smartphones or mini computers, mobile Operating Systems (OS) [1] come far away. Started from Palm OS in 1996 to 2000 pattern of windows pocket PC to Android and Blackberry OS, smartphones OS has dramatically evolved from last year and drastically changed every singular life [2]. The computers and mobile devices are affecting our daily routines in endless ways, including personal and professional. The PC/Laptop/Desktop accessed Web Server applications are gently getting out of the way. Although this mobile phone becomes one of the most commonly used gadgets, it either uses it for business purposes or personal. Moreover, these mobile applications are a cost-effective process, e.g., now a day's most of the colleges and institutions share their college magazines and journals on apps [4], which help in saving the cost of printing and paper. An Android-based campus solution [5] app proposed, which connects the students, parents, staff, and alumni with the college or university. With the help of this app, staff can quickly enter or maintain the attendance, internal marks of the students. They are sharing notes and other official notifications of college or university also available on the app, which can be easily accessed by students and parents using mobile phones. Hence the students can get notifications regarding their test schedules, events, along with their parents also able to access the app to check their child's performance, attendance detail, or achievements of their child and college remotely. Even the most striking feature of this app is that the alumni or students get notified regarding their document to collect their concessions forms and certificates using this app. Thus, this research attempts to modernize the concept of managing and handling the exchange of information within the campus in the best possible way. The objective is to ease information exchange by the use of accessible technologies and to make it more user-friendly in the best possible ways. The purpose is that it could be beneficial for the leading universities to perform their tasks and offer a well-managed system to both students as well as faculty of the university. The network information system improves the capabilities of the campus and proves to be the best way of dealing with the issue as well as offering a managed system to the users.

10.1016/j.procs.2020.05.124

2. Literature Survey

There are various existing applications for the management of campus activities. Every application has its characteristics, disadvantages, and advantages. These applications (apps) made by taking into consideration the needs of a particular institute. These apps provide a single purpose only, and we necessitate different apps for diverse institutional activities. Android Based Campus Solutions help in the accomplishment of almost all institutional activities using mobile phones. Nethaji et al. [6] described the proposed work of the Android Based Campus Solution app. Bhattacharya et al. [1] described the idea and implementation of the MOBILE-CAMPUS application. Ghandi et al. [7] presented the various approaches, guidelines, and standards followed while developing an application also listed in the "Mobile application development –a practical approach." Xhafa et al. [8] described and analyzed the learning methods using mobile phones from both learning and technological perspectives. Li et al. [9] introduced the client terminal's design. Chou et al. [10] described the essentiality and need for mobile gadgets technology in our daily life. Malhotra et al. [3] described construction and design of a device obstacle detection. Cardei [12] defined the advancement of technology in mobile and sensors field. One researcher described the "Smart Campus" application that providing on-campus registration. Moreover, this initial prototype automatically locates and identifies the users' acquaintances, available on campus or not. This prototype implements with the SDA architecture. Reasoning and query are taken place at the semantic box component. All these authors described the layout of different apps using various techniques, but none of them discuss how to maintain the college information system. In the next section, the authors present a characterization of the campus information system for students and faculty.

3. Methodology

As today's time is a digital and tech era with many advancements; similarly, education is the crucial factor of this time. But in India, most of the institutions, colleges, and universities are lacking interaction with the latest trends and technology. The proposed android app helps students to gather their study material directly without any hassle. As this app is serving for academic purposes, students can access the application anywhere, anytime beyond the campus, and there is no need to create a login for downloading files.

The main motive to build the app is to serve various purposes of students, teachers, and administrative staff of an educational institution under a single application. It provides a portable environment, but the working of the application varies depending upon the requirement of the user to the user. Students get connected and updated with recent events or activities relevant to their class, department, or anything going to happen on the campus. Similarly, teachers, parents, and administrative staff also connected with each student. Parents can track their child's performance. Administrative officials able to issue certificates to a student without any issue, faculty maintains the attendance, marks details easily through this mobile-based application. In this paper, the authors designed and develop an application with the help of Android Studio and SQLite Database. This application tested under the robotium. The authors also check the performance of the application using promethee.

3.1 Characterization Model

To formulae conceptualize and characterization of campus information systems adequate to the case and context dealt with, we took into account the preparation of an android app that would act as a prototype. The app would contain necessary information regarding the campus affairs on the perception of both faculty as well as students.

3.2 Features and Specifications

Today's era is a tech world with many advancements and supporting a large number of Smartphone applications that make life more advanced and comfortable. Android, a famous open-source mobile OS is written in Java, developed by Google comes with an online store as an Android market consisting of software, approximately 2.0 lack + games, widgets, and applications. Users can also download and use applications developed by third-party developers. Android Software Development Kit (SDK) used for software development, and till now, around 20, 0000, android apps developed with over 3 billion+ downloads. For core system services

such as memory and process management, network stack, security and driver model, Android lean on Linux version 2.6. Fig. 1 shows the faculty and student modules. Fig. 2 represents the college information system. Fig. 3 depicts the modules of an application.

3.3 Working of an Application

In this, we built an application based on the college information system, which helps to maintain the faculty as well as student information. Fig.4 represents the user interface. Fig.5 shows the home mage of an app. Fig.6 represents the login page. Fig.7 represents the history of a college. Fig.8 shows the notification module. Fig.9 represents the courses of a college. Fig.10 shows the student detail page. Fi.11 shows that the performance of this application is to increase.

3.4 Info Classification in India

In India, there are four types of universities- Central universities, State universities, Private Universities, and Deemed universities. There are 227 private universities, 49 central universities, 318 state universities, and 123 deemed universities in India. So to handle such a massive amount of students' particular, there is a need for well managed and classified campus information systems, which acts as a dealing hand with the student's academics, administrative and social senses. The concept stands out to be very useful for both the students as well as the campus. It helps in increasing the capability of a university to handle the student affairs and would be considered as a good step towards smart India. Fig.12 shows that the users of the application are increasing every year.

4. Conclusion

This research attempts to modernize the concept of managing and handling the exchange of information within the campus in a best possible way. The main motive to build the app is to serve various purposes of students, teachers and administrative staff of an educational institution under single application. Thus, network information system improves the capabilities of the campus and offers a well managed system to the users. Also, the teachers and parents can enquire about the details of any student on a single finger touch. The concept stands out to be very useful for students, teachers, parents as well as the campus and help in increasing the capability of a university to handle the student affairs and would be considered as a good step towards smart India. User can easily explore his/her goals or things in this app.

5. Future Scope of Application

As the proposed application is cost-effective, user-friendly, and easy to use so that it can implement under different situations. New features can add to the requirement of users and apps. Due to its various features, reusability is also feasible, and all modules in the application provide flexibility and ease of access.

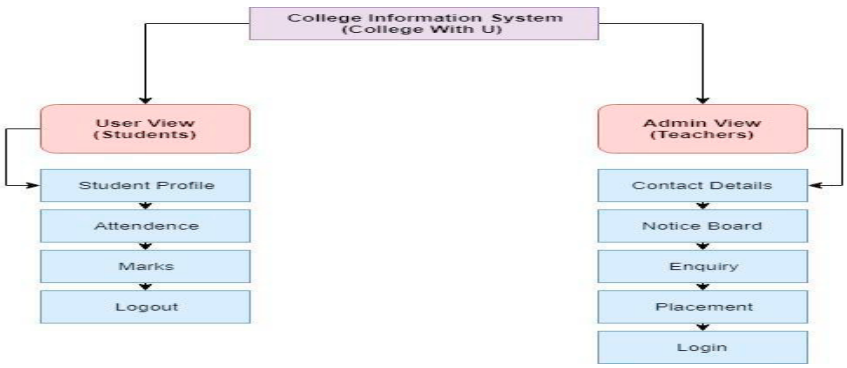

Fig.1 Representation of Faculty and Student Modules

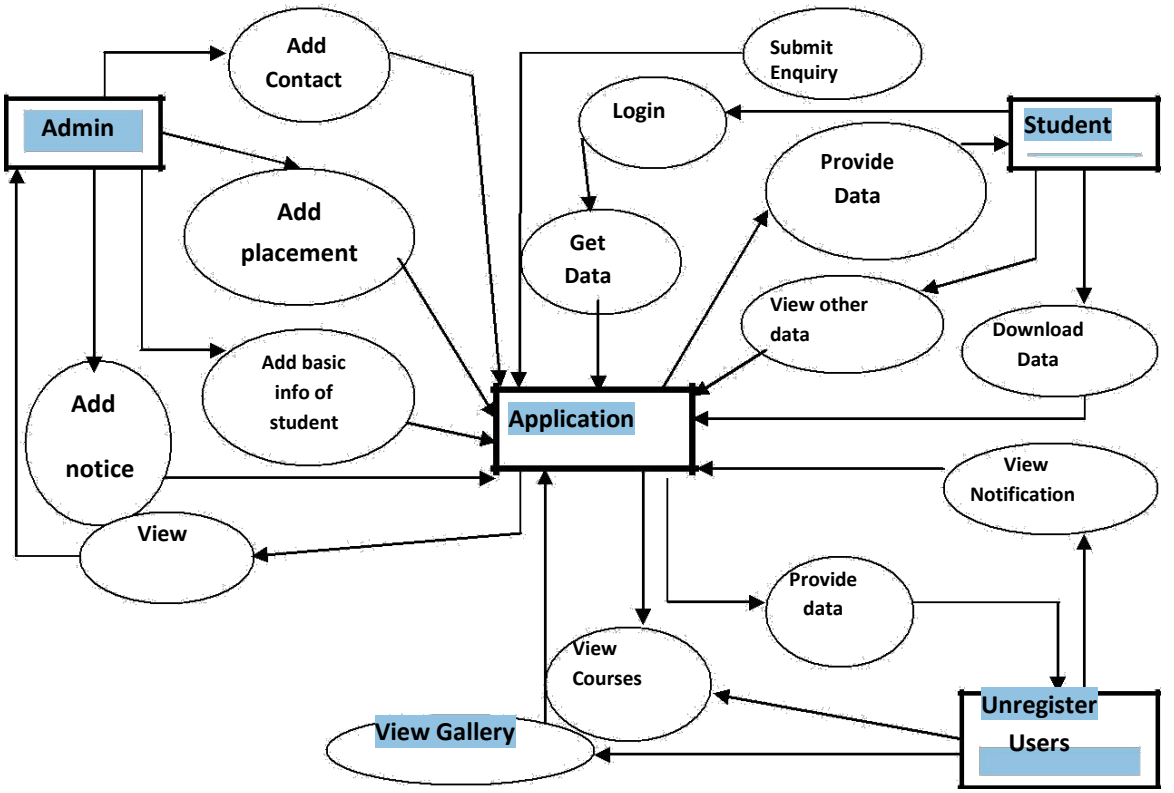

Fig.2 Representation of College Information System

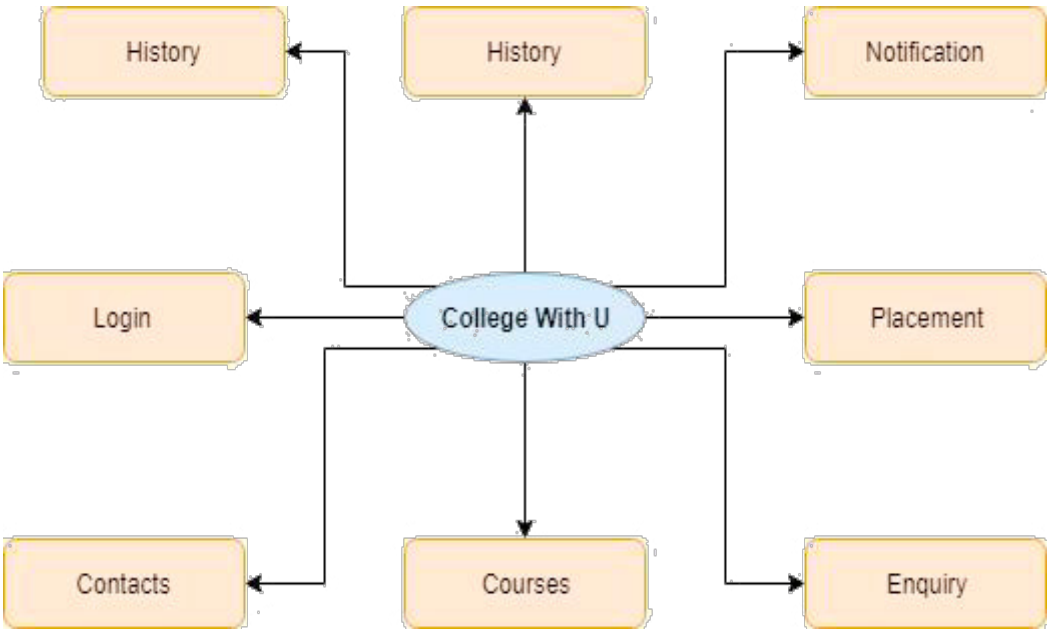

Fig.3 Representation of Application Modules

Fig.4 Represents the User I/F

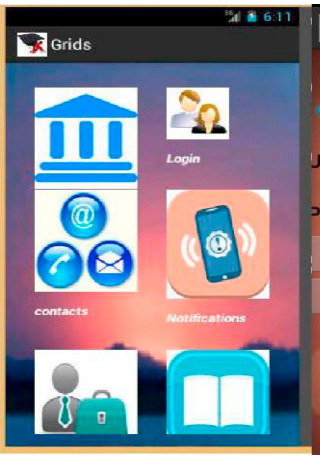

Fig.5 Home Page

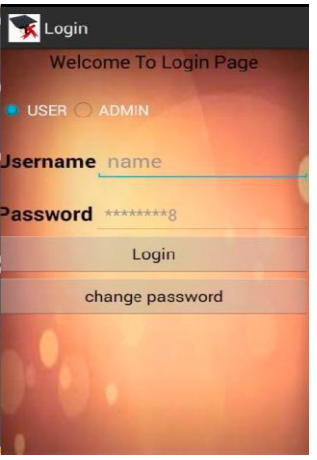

Fig.6 Login Page

Fig.7 History Page

Fig.8 Notification page

Fig.9 Courses Page

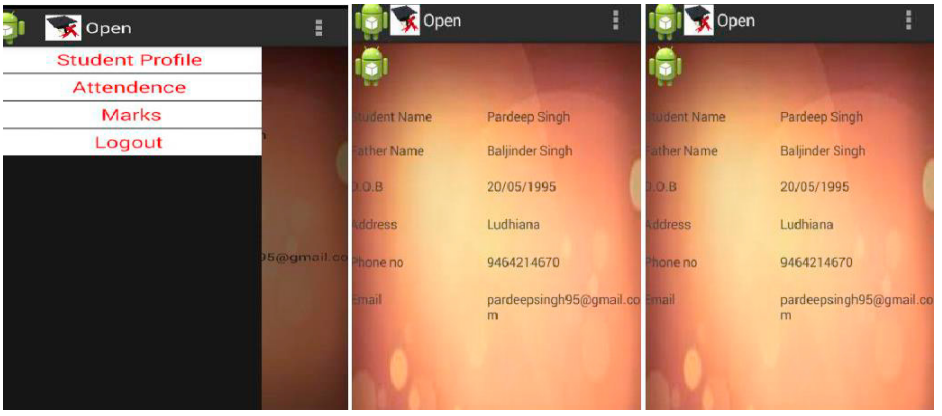

Fig.10 Represents the Student Details Page

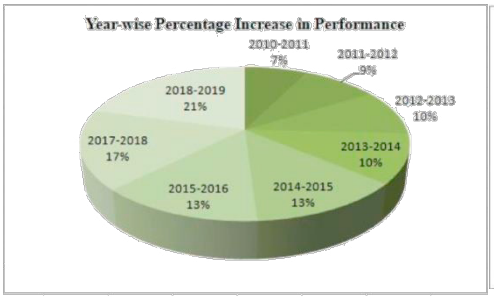

Fig.11 Performance of App According to the Years

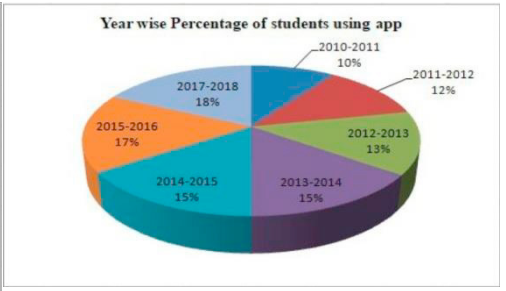

Fig.12 No. of Users Increasing per Year

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