



RESEARCH PAPER

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Development of an android application for SAU diary in Bangladesh

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Abstract

Nowadays people have been moved so much into the modern technology that they really want an intelligent living environment along with intelligent objects which contain powerful infrastructure with the most desired features. According to various statistics, the number of smartphone users in 2017 was 2.32 billion around the world. In 2020, it will exceed 2.87 billion. Therefore, if organizations and industries are not investing in mobile applications to increase productivity and accessibility among their workforce, they are going to fall behind. Bangladesh government has also taken initiatives to implement the vision 2021 to build a digital Bangladesh. As part of this initiative, the ICT division of Bangladesh government has funded the development of android mobile applications for all government organizations. These applications provide easier access to information and many more facilities. The ultimate goal of this app is to facilitate the user with the process of searching essential information in an instant rather than flipping the pages of the existing paper-based diary of Sylhet Agricultural University (SAU) in Bangladesh with additional functionalities. The paper illustrates the features, development method, result, and uses of our android application named "SAU app". There was no android application for SAU earlier. To embrace the digital world and to precede one step ahead of many others, we have come up with our online mobile application which can solve their problem during checking staffs' information of SAU in a moment. Every person can also easily operate the system in home and aboard.

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Introduction

Android is an operating system and programming platform developed by Google for smartphones and other mobile devices (such as tablets, smart watches). It can run on many different devices from many different manufacturers (Gandhewar and Sheikh, 2010). Android includes a software development kit for writing original code and assembling software modules to create an app for android users. It also provides a marketplace to distribute the app. All together android represents an ecosystem for a mobile app (Butler, 2011).

The general objective of this project is to develop an android mobile application of SAU diary to provide faster and easier information access to find the contacts of SAU teachers, officers, staffs and other useful contact information. It will also provide latest information, news and events notification. This application will be developed in the department of Computer Science and Engineering, Faculty of Agricultural Engineering and Technology, Sylhet Agricultural University, Sylhet.

The paper represents the features, development method, uses and result of our android application titled "SAU app" (Guide, 2015). App is developed for a variety of reasons: addressing business requirements, building new services, creating new businesses, and providing games and other types of content for users.

Android Structural Design

Android is a platform to develop key application for the smart phone and also an operating system for mobile device. Java programming language is used to develop android application by using android SDK tools and API. Android provides an open source development platform that offers developers the strength to build extremely powerful applications. Android helps the developers to take free advantage of the device hardware, access employee information, call, email, messages and so on (Patel *et al.*, 2014).

Beneficiaries/Users

A huge cluster of people will be really benefited from this app. This application will be a great help for the

SAU teachers, officers, staffs and students. The researchers won't need go to door to door for collecting data which he can manage from the app because it really will provide a great stock of information. Those who are interested to communicate with SAU members can use this application easily.

Potential Impact

The potential impacts of this android mobile application are the visibility of SAU will be greatly increased to the world. Users will be able to quickly find the necessary contacts. Portability and flexibility of the digital diary will be increased compared to the existing paper-based diary. And at the end, this diary will add another feather to the process of implementation of vision 2021 building a digital Bangladesh.

The potential impacts of these android mobile applications are:

- a) The visibility of SAU
- b) Users of this application will be able to quickly find the necessary contacts
- c) Portability and flexibility of the digital diary
- d) Reach another milestone to implement the Vision 2021 to build a digital Bangladesh

The first page of our application contains basic informations. fig. 1 describes the android application framework.

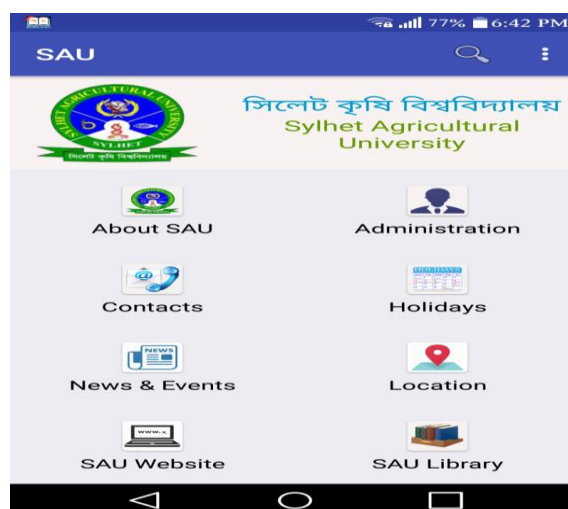


Fig. 1. Android Application Framework.



Fig. 2. Teachers and administrative officers' information.

About SAU

Welcome to green and clean campus of Sylhet Agricultural University (SAU). SAU has 6 (six) faculties and 47 (forty seven) departments under those faculties. The most promising characteristic of this university is that there is no session jam in academic activities. Sylhet Agricultural University has a distinct significance due to its location in Sylhet city. This university started its academic program on 02 November 2006, and now this is the second-largest agricultural university in Bangladesh. This is a center of excellence in higher agricultural education like Veterinary Education, Livestock, Agriculture, Agricultural Engineering, Food Security, Rural economics and Fisheries research in South-East Asia. Passionate, potential and enthusiastic individuals are working in different disciplines (Table 1).

There are many national and international ongoing research projects. SAU is strongly committed to produce highly skilled and competitive graduates. Graduates of this university are working all over the world with fame. SAU is committed to promote global leadership through education, research and knowledge exchange activities.

Administration: Here we can find out our Chancellor and Vice-Chancellor information

Contacts: There are two categories contact information here. One, faculty members information and two, administrative officers information.

Holidays: From holidays chat we can easily find out our university holidays (Fig. 3).

News and Events: This kind of information can help us finding any kind of new and events information which is related our university (Fig. 4).

Location: We can easily find out our university location using this app.

SAU website: Using this app we can easily go to the university website and find out our necessary information from this website (Fig. 5).

SAU Library: Teachers, students and others can searching their require books, magazines and paper using this app (Fig. 6).

Holiday	Date
Saraswati Puja	22 January
Shaheed day & International Mother Language Day	21 February
Birthday of the Father of the Nation- Bangabandhu Sheikh Mujibur Rahman and National Children's Day	17 March
Independence & National Day	26 March
Easter Sunday	1 April
Bengali New Year	14 April
Shab-e-Meraj	15 April
Buddha Purnima	29 April
May Day	1 May

Fig. 3. University holidays information (Academic Calendar 2018).



Fig. 4. News of this university.



Fig. 5. University website.

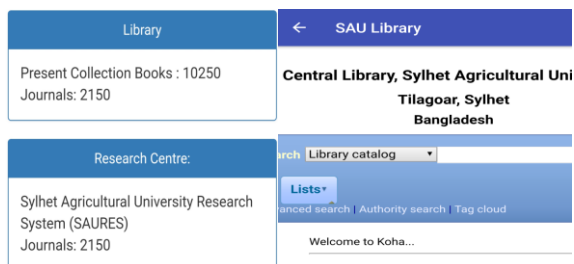


Fig. 6. University library information.

Objectives

The purpose of our project is to represent SAU and make its every part tangible to the world. It is an easy way to find out facts and communicate with university staffs. The main objective of introducing this system is to provide employee/ person information free of cost, anytime, anywhere. An android smart phone without Internet service is sufficient for using this app. All the data is in English language so, everyone can easily operate the system and retrieve data from it (Patel *et al*, 2014). The general purpose of designing the system is to develop a mobile based application that can be used by any user. The secondary objectives are given below:

- To develop an android mobile application of SAU diary
- To test the performance and debug the application
- To upload and publish the application in Google PlayStore
- System is so user friendly that a user just has to find out desired information available on the screen.
- System once installed in android smart phone, it provides information 24 hours without internet connection.

Proposed System

Here the proposed system is shown in Fig. . 7, First of all, the whole details of teachers and staffs are put into the spreadsheet. Then the whole spreadsheet is checked for any missing value or redundant or duplicate value existed or not. Every row of spreadsheet indicates the person's id, the pictures of teachers and staffs located in different folder. The picture of specific person is mapped with his details. A SQL light database is created by reading all the columns and rows. A model view controller framework is implemented that can retrieve data

from database and able to show in different view. Different views are prepared to show faculty, department, teacher and staff list. A view is developed that can show the teachers' and staffs' details. It also shows the icon of call, email and SMS. User can able to call, email and SMS by using this system. Then app is tested by developer and a group of user. Finally, this app is uploaded into Google play store. The community of SAU gets the benefits more than that of manual diary. They can contact with any person in any time.

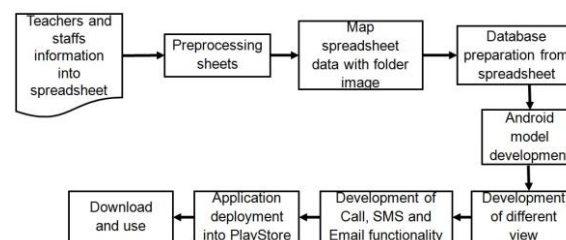


Fig. 7. Overview of SAU app development.

Materials and Methods

To overcome/avoid notebook communication, we have design a system that will provide the university teachers, officers and staffs information to the person using android phone in form of data. We can access easily this kind of person information helping without pc & laptop, internet services required. All the information is provided in English Language so the any type of person can easily operate the system. It provides free information anywhere and anytime. As the system gets installed on android phone (Patel, 2014).

The methodology can be divided into three major parts i) requirements analysis and designing the application, ii) Development of the mobile application and iii) Performance analysis, debugging and publishing the application to Google Play Store.

The proposed design of the mobile application consists of multiple screens (Fig. 1).

- a) Home screen: This screen will contain buttons like About, Faculties, Contacts, Map, Search, News and Events
- b) About: This screen will contain information about SAU
- c) Faculties: List of faculties and their departments
- d) Contacts: All contacts of SAU (Name, email, phone, photo)

- e) Map: Map and location information screen
- f) Search: To search contacts quickly
- g) News and Events: To get latest news and events

Development of the mobile application: The mobile application will be developed using Android Studio and Physical Android Simulation device.

Performance analysis, Debugging and Publishing to Google Play Store: The performance of the mobile application will be analyzed and debugged. After rigorous testing and debugging, the app will be uploaded and published in Google Play Store.

Performance analysis, debugging and testing data will be used in project report preparation.

The proposed project aims to develop an android application for SAU diary. Because, it is not possible to always carry the diary with us. But we carry our smartphones with us. Besides, it is not always possible for a person outside SAU to communicate with any of the SAU members due to the lack of any digital directory. Moreover, SAU diary provides very short contact information due to space limitations.

Therefore, this project will develop an android mobile application that will enable its users to easily access and find the contact information of SAU teachers, officers, staffs and others. It will also have the location information to guide a new visitor to find his/her required destination inside SAU. Users of this mobile application will also get notifications of special events, launches, and so on.

This app will therefore provide faster information access, portability, and dynamic content with location information to keep SAU ahead of other universities in technology and innovation. This application will help SAU to increase visibility, and thereby, indirectly help to increase its ranking. This project will also establish another footprint to implement the vision 2021 of the government to develop a digital Bangladesh.

Android Development Tools

For open source mobile applications Android is the significant platform. This app used Android SDK to

build user application in Java. Our app is more flexible when it can be developed in android. We not only can develop but also can run and test the application on both of the emulators and real Android devices using the add-on Android SDK (Table 2).

Results and discussion

In a nutshell this app is the virtual outlook of the Sylhet Agricultural University. Exploring the requirements of Sylhet Agricultural University (SAU) in Bangladesh and others related in every moment would be the thriving force for this app. It's a storehouse like diary where all the essential news/ facts/ information' sare at one's fingertips. Users may visit the app they would find it easy to call any of the person of SAU whether the desired name is in his phonebook or not. Based on teachers and staffs' requirements our online mobile application has been launched to digitally expound information of SAU.

Specifically following outputs has come out from this project -"Sylhet Agricultural University App":

1. An android application for SAU diary developed
2. A test report of the android application published

Table 1. describes university information at a glance.

No. of Teachers: 255	Central Mosque: 01
No. of Officers: 154	Computer Laboratory: 01
No. of Staffs: 210	Cafeteria: 01
No. of Students: 3000	Health Care Center: 01
(Hon's, Masters and PhD)	
No. of Halls: 07 (05 for male, 02 for female)	Gymnasium: 01
Auditorium: 01(old)	Veterinary Clinic: 01
Bank: Rupali Bank Ltd. With ATM Booth	

Table 2. describes the development tools in android platform.

Specification	
Minimum Android API level	API 18
Area of usage	All of the world
Languages	1. Java 2. XML (eXtensible Markup Language)
Android Development	1. Eclipse IDE 2. Google Maps API 3. JSON (JavaScript Object Notation)

Conclusion and recommendations

It is an era of science. Everyday new technology is emerging. People are now more inclined to go for easy going accessories/device. The modern technology with intelligent features has made life easier. It is a helpful source of information. With that spirit we have developed this android mobile application named "Sylhet Agricultural University App" to ensure that sort of ease for the users in this age.

This diary is being used by many people. The SAU teachers, staffs and others in home and abroad are using it with their satisfaction. At first this app was launched with the budget from Sylhet Agricultural University Research System (SAURES). Android is our chosen platform which is open source, developed and distributed by Google. Just click for the info and save the time. From Google Play Store we can download our Sylhet Agricultural University app.

Later we are going work for the modification and upgradation of the SAU app.

References

Butler M. 2011. Android: Changing the mobile landscape. *IEEE Pervasive Computing* **10(1)**, 4-7.

Gandhewar N, Sheikh R. 2010. Google Android: An emerging software platform for mobile devices. *International Journal on Computer Science and Engineering* **1(1)**, 12-17.

Guide travel. 2015. "android mobile application." PhD diss., Asian University for Women.

Patel Vimal B, Rahul G, Thakkar and Bankim L, Radadiya. 2014. "An android application for farmers to disseminate horticulture information." *International Journal of Computer Applications* **88**, 4.