Design and Implementation of a Mobile Students' Course Registration Platform

Article *in* International Journal of Advanced Technology and Engineering Exploration · March 2015

CITATIONS
2

READS
2,383

3 authors, including:

Adebisi Abimbola Baale
Ladoke Akintola University of Technology
22 PUBLICATIONS **72** CITATIONS
SEE PROFILE

AKANDE NOAH OLUWATOBI
Landmark University
26 PUBLICATIONS **10** CITATIONS
SEE PROFILE

International Journal of Advanced Technology and Engineering Exploration
ISSN (Print): 2394-5443 ISSN (Online): 2394-7454
Volume-2 Issue-3 February-2015

Design and Implementation of a Mobile Students' Course Registration Platform

Adigun Abimbola Adebisi[1*], Akande Noah Oluwatobi[2] and Ajagbe Oluwafemi Adeola[2]
Computer Science & Engineering Department, Ladoke Akintola University of Technology, Ogbomoso, Oyo State, Nigeria[1]
Open & Distance Learning Centre, Ladoke Akintola University of Technology, Ogbomoso, Oyo State, Nigeria[2]

Abstract

This paper describes a Mobile Application Based Course Registration Platform (MABCRP) designed and implemented to facilitate the process of students' course registration within a University system. This was designed to serve as an alternative to web based and online course registration system being currently used by most universities. This intends to bring course registration closer to the students who are vastly great users of mobile devices.The developed mobile application will enable students to automatically register expected courses per semester, view all registered courses and also to add or delete registered courses.Result of user evaluation of the developed MABCRP shows that it has a good usability in terms of usefulness and ease of use. The results also indicate that the developed MABCRP is capable to help students register their academic courses more easily without location being a barrier.

Keywords

Mobile, Web, Online, Student Course Registration.

1. Introduction

In recent years, various sectors such as entertainment, education, health and businesses are being dominated by mobile applications. The reason for this is that mobile computing is able to provide a tool for the user when and where it is needed irrespective of user movement, hence supporting location independence [1]. Focusing on education sector, especially as it pertains to students, course registration plays a vital role. The course registration procedure may be manual, web based or online and mobile based. This enables students to register their courses, update their profiles and pay tuition and any other fees expected of the students. While most educational institutions are gradually leaving the manual method behind so as to embrace the web based and online course registration method, the possibility of using a mobile application has not been explored. As more and more teachers in tertiary education experiment with technology, looking for new ways of enhancing their traditional ways of teaching, the need of flexible tools to support well planned blended learning scenarios is emerging [3]. While the impact of web or online course registration system is appreciated, the advent of mobile communication technology is changing the face of Information Technology (IT).

Mobile technologies are becoming more embedded, ubiquitous and networked with enhanced capabilities for rich social interactions, context awareness and internet connectivity [7]. Mobile phone seems to be an asset most individuals' especially students' possess and take almost everywhere with them; it is therefore a highly effective means of bringing information to them faster, easily and on the move [6]. A survey carried out in [9] using 3900 Purdue University students showed that 68% prefers mobile apps because they are faster while 70% are of the opinion that mobile apps are easier to use when compared to a web platform. Therefore, with an aim to take advantage of the opportunities provided by mobile applications while addressing problems inherent in web based course registration, this paper tends to bring course registration to the doorsteps of the students by developing a Mobile Application Based Course Registration Platform (MABCRP). The developed MABCRP will serve as an alternative channel for registering academic courses through mobile devices. Result of user evaluation of the developed MABCRP shows that it has a good usability in terms of usefulness and ease of use. The results also indicate that the developed MABCRP is capable to help students register their academic courses more easily without location being a barrier.

*Author for correspondence

2. Related Works

The impact of web-based solutions on student related services was studied in [4], University of Ilorin (Unilorin), Nigeria, was used as the case study. The study data was collected using 250 questionnaire designed to obtain information from respondents with respect to the various student related services for which web solutions were implemented during a 12-month period, their results shows that administrators, lecturers and students generally agreed that there was improved efficiency as a result of using the web to deliver course registration services and also submitted that the University should use the student mobile phones more often for information dissemination as the students were quite happy with this mode of communication.

The impact of Web Portals on E-Learning was studied in [5], they consider the benefits of using web portals and the problems encounter when using the portal. Their results revealed that web portal positively impact e-learning in the following ways: being used as supplementary to pass across information to the learners in addition to learning through the electronic format; enhancing information sharing, information needs and processing of each user; provide the strategy to overcome the problem of distance; and improving respondents computer and information literacy skills. The study also revealed the challenges faced by the students when using web-portal. These are Loss/Forgotten Password, Slow Network/ Server Access Problem, Incessant power failure and Swift and unannounced removal of important information.

An automated remote student's courses registration platform using computer integration was developed in [2], Computer Telephony Integration (CTI) Technology was used and this enables students to register their courses using a telephone. In the developed system, the student is expected to call a number, after two rings, the system will ask the student to enter his/her registration number and password followed by a hash symbol (#). When the student authentication is complete, the telephone voice prompt will be used to guide the student throughout the registration process.

Teachers' perception of online registration on Exam performance in 35 Kenya Secondary school enrolments was studied by authors in [8]. Their result showed that 88% of the respondents preferred online registration while 9% of the respondents showed preference for manual registration.

3. Research Methodology

The developed Students' Course Registration System (SCRS) has two phases:

The mobile application which will be used by the student and the web portal which will be used by the web administrator. Students are expected to login to the SCRS via the developed mobile application while the web administrator uses the web portal to manage the SCRS.

3.1 Hardware and Software Requirements

This section discusses the basic hardware and software requirements required for the implementation of the system.

3.1.1 Hardware Requirement

The hardware requirements for the developed mobile application are the following:

i. A minimum of 256KB of ROM for the MIDP implementation
ii. A minimum of 128KB of RAM for the Java runtime heap
iii. A minimum of 8KB of non-volatile writable memory for persistent data
iv. A screen of at least 96×54 pixels
v. Some capacity for input, either by keypad, keyboard, or touch screen
vi. Two-way network connection, possibly intermittent

3.1.2 Software Requirement

The software applications that are necessary for the developed SCRS are the following:

- Windows Vista upwards.
- IIS web server for windows.
- ASP.NET WEB SERVICE
- MSSQL (Microsoft SQL)

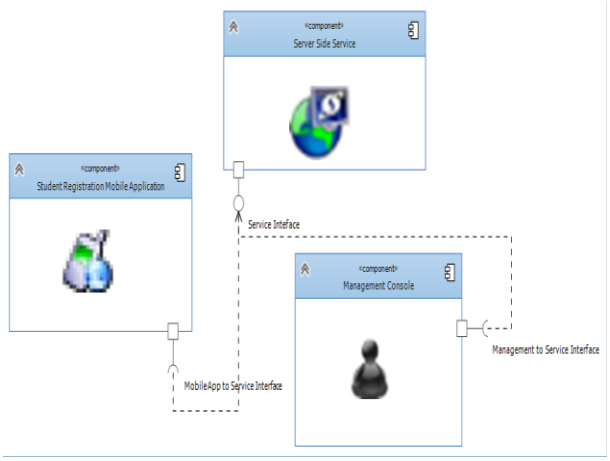

Figure 1: Component Diagram of the Developed SCRS

3.1.3 Database Requirement

The database which is to contain an up-to-date record of students was designed with MSSQL. The database contains eleven (11) tables. In this table, the fields are defined including the name of the field, the variable type and the length of the variable. MSSQL is case sensitive and so adequate care is taken while entering the fields.

The entity relationship diagram which shows the relationship between the different entities in the developed systems is shown in figure 2, the entities involves students, courses, departments, session e.t.c. The Use Case Diagram which shows the relationship between the users of the system is shown in figure 3

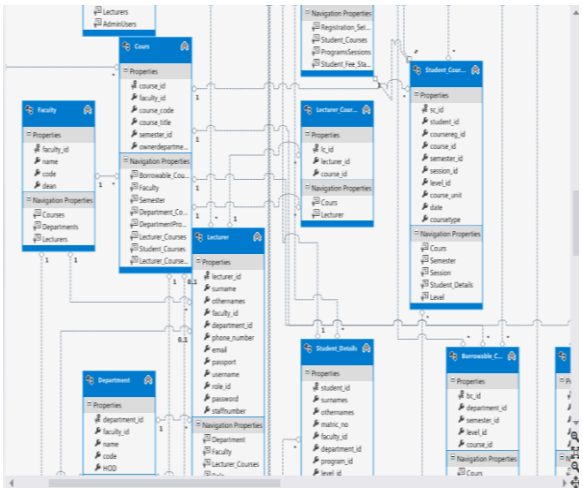

Figure 2: Entity Relationship Diagram

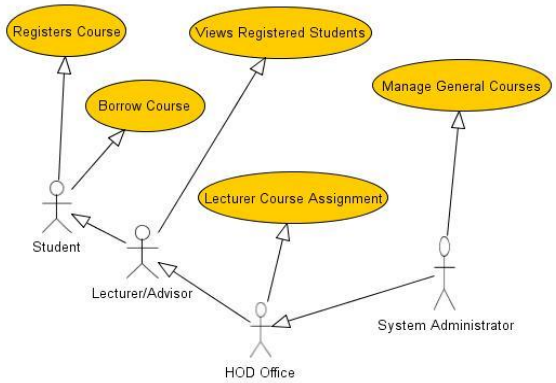

Figure 3: Use Case Diagram

4. Results and Discussion

Since the application is to be run on mobile devices which are generally known to have a small user interface, the screen display was developed to accommodate the screen once at a time. Where this is impossible, the user can scroll the device display up or down to read the content. All the screens carry sufficient heading information as to what operation is being performed at any time the user selects a function.

4.1 The Login Page

This is the first interface that mobile application displays once the mobile application has been launched. As shown in figure 4, on launching the application, students are expected to supplying their matriculation number and password which is validated on the remote server. They can then register new courses, borrow courses, edit and also delete courses.

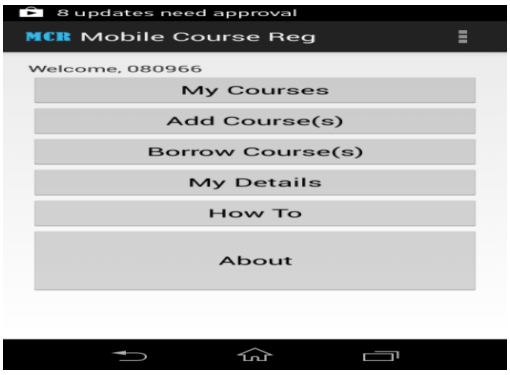

Figure 4: Login Page

4.2 Level and Semester Registration Page

As shown in figure 5, students are expected to select their current session and semester so as to have access to assigned courses.

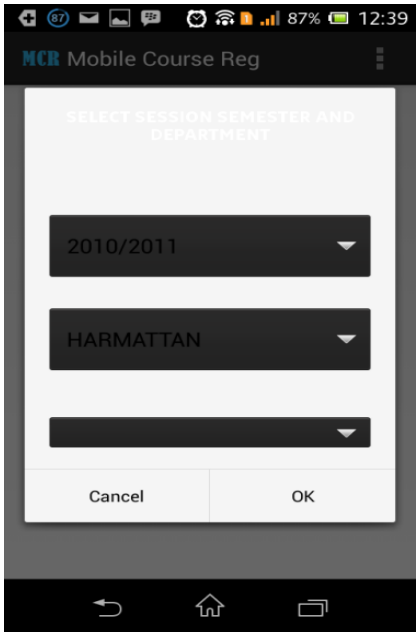

Figure 5: Level and Semester Registration Page

4.3 Administration Section

The administrators include the system administrators, the Head of Departments (HOD) and the lecturers in charge of courses. All administrators have access to a login section as shown in Figure 6 which allows the administrators to login with their username and password.

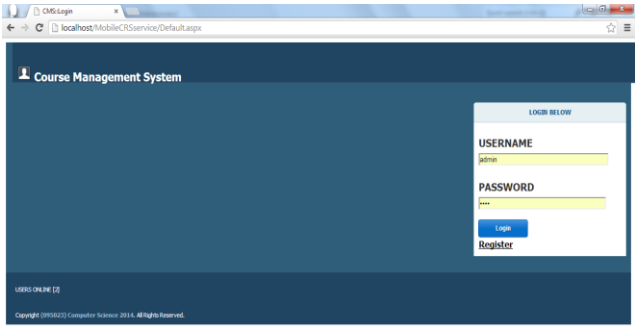

Figure 6: Administrators Login Page

4.3.1 The System Administrator's Section

As shown in figure 7, this is the section where the basic system configuration is done; departments are created, courses are managed, students' levels, sessions and semesters are setup.

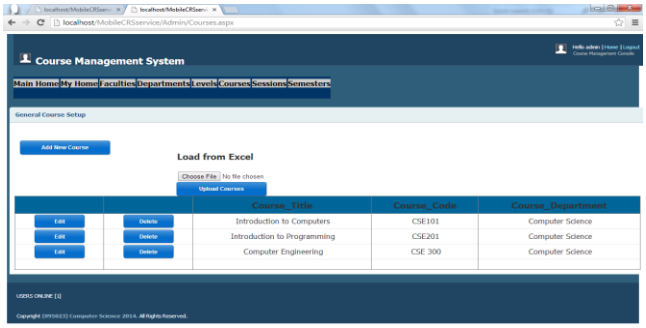

Figure 7: Course Management Page

New levels can also be added using the course management page as shown in figure 8:

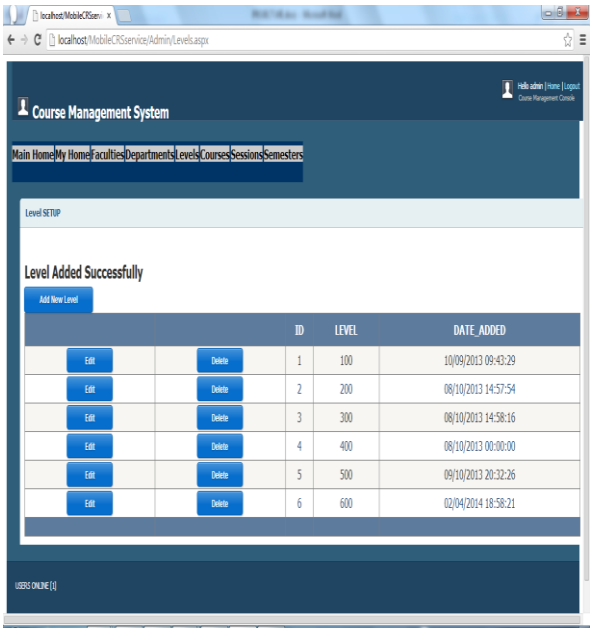

Figure 8: Level Setup Page

4.3.2 The HOD/Lecturers' Section

Expected courses to be offered by registered students will be managed by the HOD and lecturers as the case may be. Figure 9 shows how courses for a particular level were added.

4.4 Students Preference for Mobile Course Registration Platform

In order to assess users' perspective about the developed mobile students' ccourse registration platform, a survey was carried out among 250 students across various levels in the department of Computer Science and Engineering of Ladoke Akintola University of Technology (LAUTECH). The survey demographics showed that 52% of respondents were Females while the remaining 48% were males. When asked about the preferred medium for accessing information on the internet, response received showed that 75% of students use their mobile devices to access the internet while 25% employed either their laptop or desktop computers but interestingly 98% of respondents carry out their course registration using their laptop or desktop computers. Response received from respondents as shown in figure showed that a higher percentage of students preferred the mobile application based course registration platform to the traditional web based.

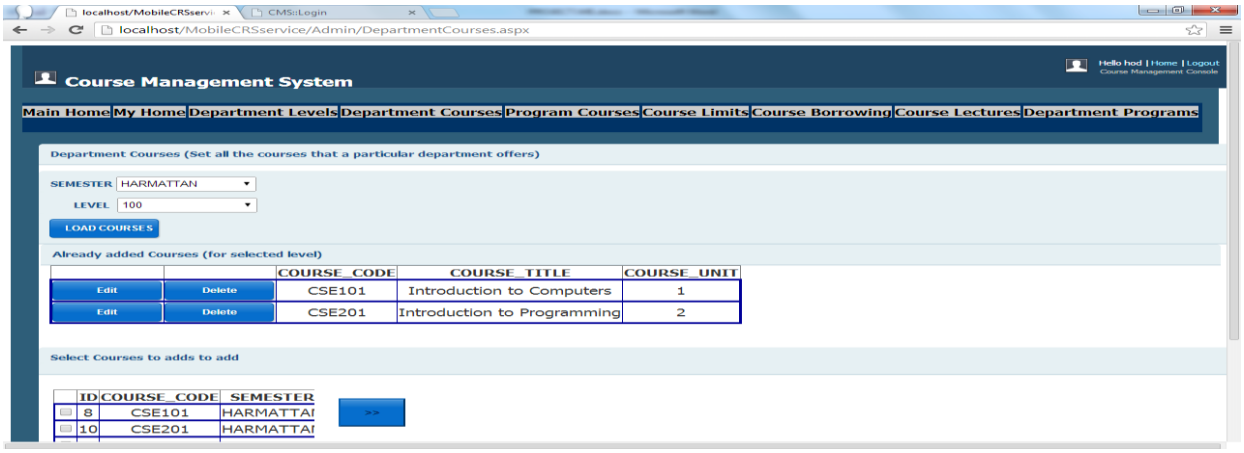

Figure 9: Course Allocation Page

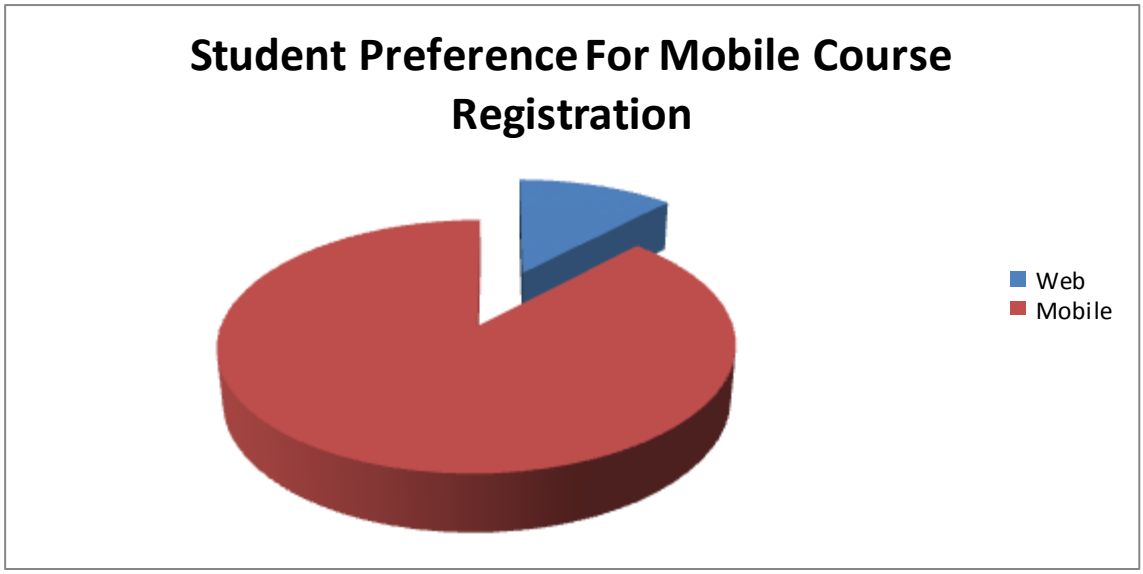

Figure 10: Students Preference for Mobile Course Registration

5. Conclusion

The number of mobile phone users is increasing on a daily basis while the rate at which students are acquiring these sophisticated and expensive mobile devices is alarming. The research carried out has shown that academic institutions can make use of the opportunities presented by this mobile technology to make course registration easier and affordable for students by developing mobile applications that can be used purposely for course registration. If done, this will facilitate course registration at both undergraduate and post graduate level.

References

[1] Niroshinie Fernando, Seng W. Loke, Wenny Rahayu. "Mobile Cloud Computing: A Survey", Future Generation Computer Systems, Vol. 29, 2013, pp. 84–106.

[2] Maged Fahmy. "Automated Student's Courses Registration using Computer –Telephony Integration." The International Arab Journal of Information Technology, Vol. 4, No. 4, 2007, pp. 353 -358.

[3] Georgouli, K., Skalkidis, I., and Guerreiro, P. "A Framework for Adopting LMS to Introduce e-Learning in a Traditional Course". International Forum of Educational Technology & Society, Vol. 11, No 2, 2008. pp. 227-240.

[4] Mejabi O.V. and Babatunde A.O. "Impact of Web-Based Solutions on Student Related Services: Case Study of the University of Ilorin", International Journal for the application of Wireless and Mobile Computing (IJFAWMC) Volume 2, 2013, pp. 11-28.

[5] Tella Adeyinka, Bashorun, M.T and Adu, E.O. "Impact of Web Portals on E-Learning", ARPN Journal of Science and Technology, Vol. 3, No. 7, 2012, pp. 766-773.

[6] Emmanuel Rotimi Adagunodo, OludeleAwodele and Sunday Idowu. "SMS User Interface Result Checking System", Issues in Informing Science and Information Technology, Vol. 6, 2009, pp. 101-112.

[7] Laura Naismith, Peter Lonsdale, GiasemiVavoula and Mike Sharples. "Literature Review in Mobile Technologies and Learning", Future Lab Series Report 11, submitted to the University of Birmingham, 2008, pp. 1-48. ISBN: 0-9548594-1-3.

[8] Odero Tom Akal and Oloko Margaret. "Effect of Online Registration on Exam Performance in Kenya Certificate of Secondary Education Enrolment: A Case of Sotik District, Kenya", American International Journal of Contemporary Research, Vol. 3 No. 7, 2013, pp. 117-127.

[9] Bowen, Kyle and Mathew D. Pistilli. "Student Preferences for Mobile App Usage" (Research Bulletin). Louisville, CO: EDUCAUSE Center for Applied Research, 2012.

Adigun A. Adebisi has a B.Tech, an M.Tech and a PhD in Computer Science from Ladoke Akintola University of Technology, Ogbomoso in Nigeria where she has been an academic staff since 1998. Her research interests are Datamining and Knowledge discovery. She has over 20 published papers in both local and international journals. She is also a member of Computer Professionals of Nigeria (CPN) and the National Computer Society (NCS).
Email: aaadigun@lautech.edu.ng.

Akande, Noah Oluwatobi is a first class graduate of Computer Science from the department of Computer Science and Engineering, Ladoke Akintola University of Technology, Ogbomoso, Nigeria. He graduated in the year 2010 and is presently rounding up his Master of Technology degree in the same field. His research interests are Data and Information Security, Intelligent Transportation Systems, Mobile Application Development and Pattern Recognition Systems.

Ajagbe, Oluwafemi Adeola is a graduate of Computer Science from the department of Computer Science and Engineering, Ladoke Akintola University of Technology, Ogbomoso, Nigeria. She is presently rounding up her Master of Technology degree in the same field. Her research interests includes performance evaluation of selected heuristics approaches to solving vehicle routing problem with time windows and cloud computing.