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# SMS based Student Services Administration

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**Abstract**— Use of Short Message services (SMS) for various applications have increased significantly. There is still one area where these services have not been utilized to the right potential is in the field of academics. Although it has the widest reach of all the technologies in the college campus, it is still very much underutilized in the student services administration. In this paper, assessment of SMS based applications for student services administration is explored and an approach for implementing these applications is proposed. The proposed applications include use of Short Message Services by educational institutes for Information Dissemination, Alert services, and Information On-demand services for students.

**Index Terms**— Communications Applications, Information Broadcasting, Information On-Demand Services, SMS, Student services.

## 1 INTRODUCTION

Colleges generally use Notice boards or Bulletin boards to convey important information to the students such as their respective test scores, attendance records and notices/circulars. This method is unreliable as there is no guarantee that this information would be conveyed to every student. To deal with this issue, use of automated Short Message Service (SMS) software is proposed in this paper. SMS is one the most basic features and is provided in all mobile phones. It is also one of the easiest and fastest ways of communication. A study has revealed that a student's access to mobile phone technology is very high and therefore mobile phones present a very attractive option to ease communication between the students and the Department. The study also shows that there are a number of advantages that accrue from the use of SMS for communication. Students prefer SMS because it keeps them informed of what is happening at the University. Most students felt happy and connected to the university. This shows that SMS communication is an effective way of communication between educational institutes and its students.

## 2 PROPOSED SYSTEM

The proposed software would provide the following student services using Short Message Service (SMS)-

- Delivery of student specific information including test scores and monthly attendance records. This information can also be forwarded to multiple subscribers including parents on a regular basis.
- Information Dissemination to the students on campus related events and activities. This is especially helpful when a message requires immediate attention such as change in lecture timings or rescheduling of co-curricular activities.
- On-demand services for students that provides express delivery of personal records such as test scores and attendance information.

## 3 IMPLEMENTATION

### 3.1 Requirements

For implementation of the proposed software, the hardware and software requirements are as follows-

- GSM Modem
- College Server
- JDK, JRE and Netbeans IDE.
- Java Communications API
- Apache Tomcat web server
- Microsoft Excel
- MySQL RDBMS

### 3.2 Working

The primary module of the proposed software deals with distribution of student records and notifications via SMS. This software module accepts input in the form of Microsoft excel files which are uploaded by the institute's authorized faculty members. These files have a predefined format in which the data is manually entered by the faculty members or administrators. The input fields can accept data in alphanumeric form. The data entered in the files includes the test scores, attendance records, and notifications which are to be sent to the respective students.

A database consisting of student information such as student name, student ID number, phone number, mobile number of parent/guardian, registration number, etc. needs to be stored on the college server. The student ID number or registration number is set as the primary key that is also used as an input parameter while entering result/attendance data into the excel files.

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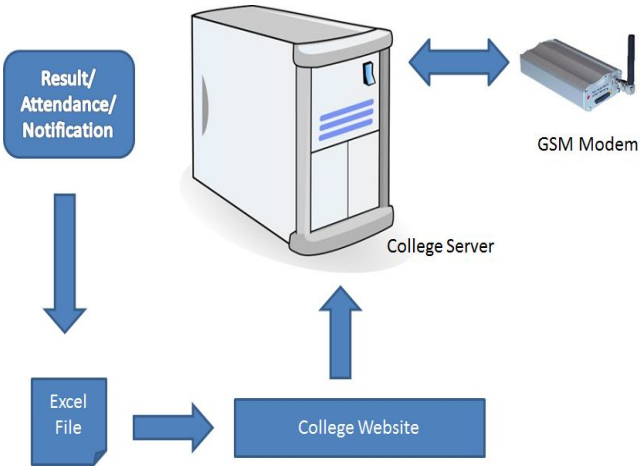


Fig 1. Flow of Implementation

Fig. (1) Depicts a brief overview of the working of this software module. The module accepts the input and sends an SMS to all or a selected group of students. The figure shows the flow of implementation of this software module that is installed on a college server. The server is connected to a GSM modem. The Excel files are uploaded to the college website which acts as a user interface for uploading and managing files on the web server. These files are then accessed by the software module installed on the college server. This is done so that the authorized users are able to use the service from anywhere as files are uploaded using the internet. Once the file is accessed by the server, the software module communicates with the attached GSM modem using AT(Attention) commands to send the SMS to the desired recipient.

### 3.2.1 AT Commands

AT commands are instructions used to communicate with the GSM modem. AT is the abbreviation of ATtention. Every command line starts with "AT" or "at". There are two types of AT commands:

1) Basic AT commands are commands that do not include the "+"operator in the syntax. For example, AT followed by D (Dial), A (Answer), H (Hook control), and O (Return to online data state) are the basic commands.

2) Extended AT commands are commands that include a "+"operator in the syntax. All GSM AT commands are extended commands. For example, AT+CMGS (Send SMS message), AT+CMGL (List SMS messages), and AT+CMGR (Read SMS messages) are extended commands. In the software proposed in this paper, we would be using the extended AT commands to send instructions to the GSM modem.

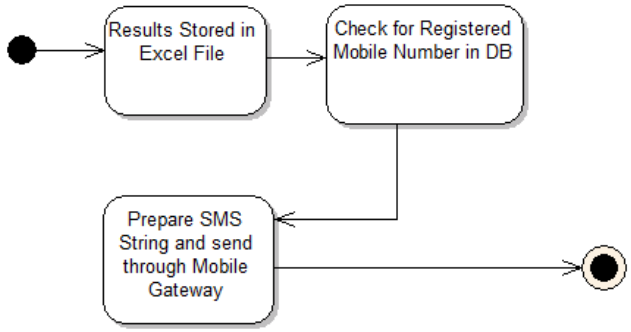


Fig 2. Activity Diagram for test result distribution

Fig. (2) Describes the activities involved in distribution of test scores via SMS to the students. The software first reads the data stored in the Excel file, which can be in numeric form (e.g.130/150) or Alphanumeric form (e.g. Grade A). Then, the database is searched for the student's record using the primary key. Once the record is found, the mobile number is extracted from the record; an SMS string is prepared by inserting the result data of the respective student and this string is sent via SMS on the mobile number which was extracted from the record. The same process is carried out for delivering attendance records via SMS. The Excel file containing the attendance data (e.g. Sub1=80%) is read and the SMS is delivered to the respective students on a weekly or monthly basis.

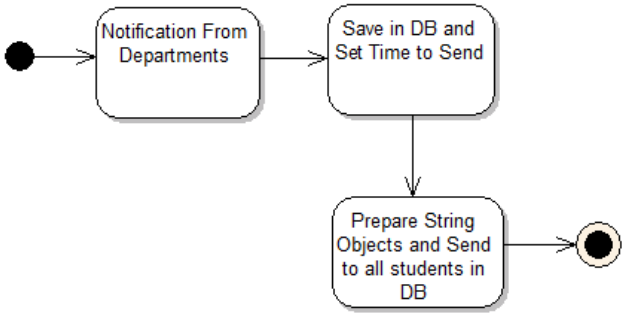


Fig 3. Activity Diagram for sending notifications via SMS

Broadcast of notifications or messages via SMS enables the institute to convey important updates or notices requiring immediate attention to its students. For sending a notification, the message is entered in an Excel file by an authorized member of the institute. This file is uploaded and saved in the database. The phone numbers of the students are extracted from the database and the SMS objects are created. The software also provides the feature to schedule message delivery to a specific time. The notifications are delivered to the students at

this specified time. A brief overview of the activities performed during this process are shown if Fig. (3).

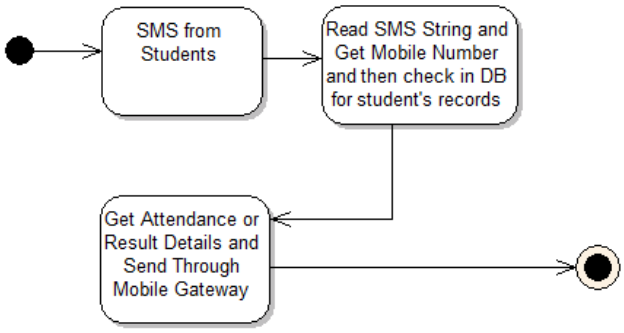


Fig 4. Activity Diagram for On-Demand Services

The Final module of the software deals with Information On-demand services. With the help of this service, students can access their academic records such as test scores or attendance information any time and from anywhere. SMS Keywords are used for this purpose. For example, we can assign keywords such as RES to test scores and ATT to attendance records. The software uses an auto-reply feature. Reply message will be based on incoming SMS content. When an SMS containing a keyword is received from a Registered Mobile Number, the mobile number is searched in the database; the associated records are extracted and sent via SMS.

## 4 Conclusion

As academics are one of the most important aspects in life, it is extremely important for educational institutes to provide effective and timely services to the students concerning general student affairs. This paper introduces an approach for implementing such services quickly through a low cost computer application. The application uses the Short Message Service (SMS) feature that is widely available in every mobile phone, which makes it one of the most efficient methods of communication. Use of Automated Short Message Services for communication between educational institutes and its students is an efficient and simple approach for students to keep track of their academic progress and other on-campus activities, saving time and stress for the students as well as faculty members.

## References

[1] Vijay K. Garg, GSM architecture. Principles and Applications of GSM (Pearson, 2006).
[2] Gwenael Le Bodic, Mobile Messaging Technologies and Services (Wiley, John & Sons, March 2005).
[3] Harding Ozihel, SMS Gateway (International Book Marketing Service Ltd, 2012).
[4] Joshua Bloch, Effective Java (Addison-Wesley, May 2008).