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Institute Examcell Automation with Mobile Application Interface



Sujatha Karimisetty, Sujatha Thulam, and Surendra Talari

Abstract Nowadays examcell runs in every college which maintains the student lists and results. However, activities are mostly done manually and this involves a lot of paperwork and delays in searching for relevant data. The manual process of student registration and result generation is always bulky and tedious. All these problems can be eliminated if the college examcell system is automated. Institute Examcell Automation with Mobile Application Interface will make examcell activities more efficient by covering the important drawbacks of manual system, namely speed, precision and simplicity. By this system, the examination coordinators can easily conduct the registration of the students and generation of instant results systematically. This also needs 'less manpower' to execute the system and is more efficient in producing Graphical Output. Organizations can easily check the performance of the student that they give in examinations. As a result of this Organizations can view this result easily. This will also help the students and parents in knowing their percentage and backlogs. Using machine learning the results are predicted to check the students will pass/fail. This system can be used by any colleges who need to automate examcell in the college.

Keywords Institute examcell automation with mobile application interface (IEAM) · Instant results · Graphical output · Machine learning algorithms

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1 Introduction

Assessment with proper evaluation methodology plays a key role in all educational institutions [1]. Assessment is generally done in the examination cell. The examination cell usually runs with a head by the Chief Superintendent of Examinations with supporting staff. The Prime responsibility of examination cell is conducting all examinations in a fair and systematic manner under the directions of the Chief Superintendent of Examinations and maintaining all records related to marks and examinations. The examination cell of the Institute is the most active and vibrant body which remains active throughout the year, This wing works full-fledged with a good number of well trained, dedicated and work minded people. The examination cell needs to conduct the exams on stipulated dates specified by university and need to look after other related works. Practical Assessment and Internal exams are also conducted by the Institute. The overall departments rely on the examcell for the marks and analysis of reports regarding results [2].

However many examination cells are running manually and hence they are unable to retrieve data instantly when a need arises such as a parent enquiring for his son, University asking to register students for regular and supplementary, listing students for placements as per eligibility criteria and many more queries. Though some examination cells are atomized, updating data is becoming cumbersome as there will be various types of marks to be updated such as internals, externals and assignments. Many times faculty, student, parent would like to know the status of backlogs or percentages, but eventually, have to wait for getting data from concerned department. Hence an Institute Examination Cell Automation with Mobile Application Interface is required for getting information instantly.

Exams are held at regular intervals as per predefined schedules that play an important role in any educational institute. Examcell cell staff need to take care of many things otherwise questions papers or answer sheet shortage may arise or sometimes staff substitution may be required. There are huge manual calculations which are paper based. The requirement of centralized system is required that manages the activities defined by the examination cell. A centralize system is required for making the conduction of examinations easy and automate the complete life cycle of managing examinations.

Examcell serves with a large number of duties due to which the process becomes very slow and tedious. Lot of documents are still maintained in examcell leading to scarcity of physical space and making searching crucial. Retrieval of documents or answering enquiries will be delayed due to this issue.

2 Literature Review

Fatima discussed the concept of computerized system for E-examcell which involves forms filled online with interfaces related to student and examcell. E-examcell is faster and required for applications and hall ticket generations. E-Examcell explains

the problems in manual examcell and stresses the need for automation. This deals with the application process and downloading hallticket online [3]. However, the need of the day is multiple queries required by the student and parents such as updated backlogs status and so on.

Kaiiali in Secure Exam Management System for M-Learning Environments proposed e-learning techniques which allow to make exam system that focuses on the issues which violate the security in conducting examinations. This focuses on random distribution of questions and good assessment preventing the unattended exam issue which usually happens if the exam is conducted in a dedicated classroom [4]. Ebel highlighted the purpose of marks and their effects. Institutional marking systems is to be enforced for a clearly defined marking system [5].

3 Institute Examcell Automation with Mobile Application Interface (IEMI)

Institute Examcell Automation with Mobile Application Interface aims to ensure examcell activities make the examcell activities to be managed effectively. IEMI aims is to introduce a centralized system to ensure in relation to examination, evaluation and documentation all the activities are effectively managed. The coordinators of examcell are struggling with present system and with IEMI their work becomes enjoyable. Automation of examination system allows to conduct examinations without any errors in a systematic manner.

3.1 The Objectives of IEMI are Listed as Follows

- Maintain Complete Student and Marks Database and other records pertaining to examcell
- Serves all Examination notices to all Concerned Individuals/department
- Provision to update results released in pdf to database by automatic pdf to text conversion
- SMS results to students and parents
- Support to different level users (a) administrator (b) Faculty (c) Students (d) Parents
- Backlog reports semester wise and aggregate
- Support for placement drive by segregating eligible students as per proposed criteria
- Restrict Wrong exam application registration by eliminating detained, passed students in a particular subject to avoid fines by university for false registrations
- Accept Question Bank from Concerned Faculty
- Generate Question paper from Question Bank basing on predefined Criteria

- Invigilation duty charts and Seating plans
- Result Analysis Graphs Generation
- Cumbersome can operate pump remotely from anywhere and anytime using an internet connection.

3.2 IEMI Working Methodology

The working methodology of the IEMI system is shown in the following Fig. 1.

There are two main modules installed on webserver and as Mobile App. The web server is used for maintaining the student and marks database. This requires to retrieve data from pdf and post them into database. Mobile App is installed on Staff, Students and Parent mobiles.

There are mainly four users of the system: Examcell admin who updates information to the webserver and then IEMI app is used by Staff, Student and Parent. The functionality of the users are unique and are as defined in the below sections.

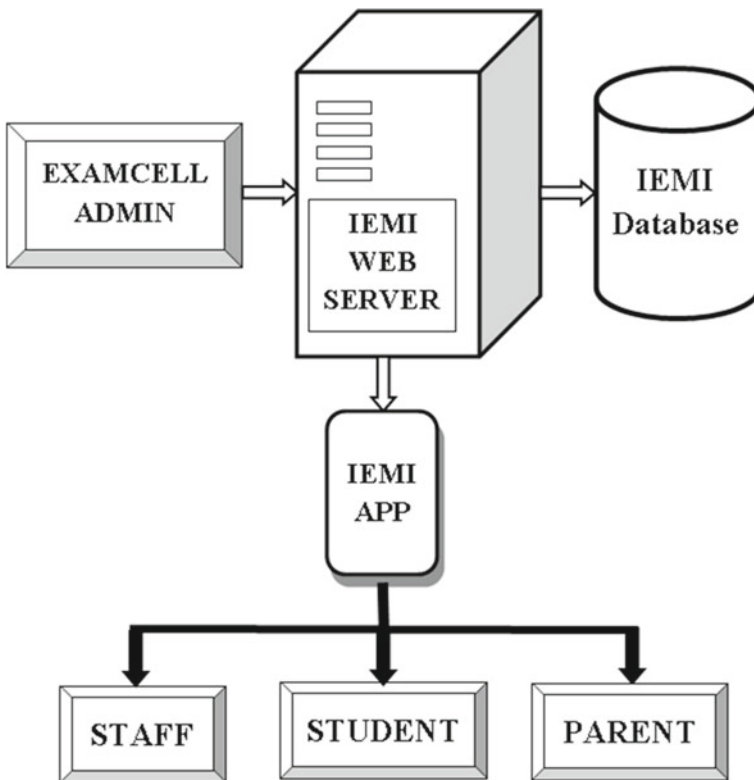


Fig. 1 Working methodology of IEMI

3.2.1 Examcell Admin

The admin responsibility is to periodically update the database without any issues. This is updated to the server. The admin maintains Student data along with all marks semesterwise. The IEMS has a feasibility to convert the pdf files of results delivered by university automatically.

3.2.2 Staff

Staff installs the IEMI app onto his mobile and he periodically checks for assigned examcell duties and notifications. This user has a provision to check results and access previous question papers.

3.2.3 Student

The student has provision only to verify his personal and academic data. He can check results instantly and can also view semester wise and aggregate reports. This tremendously motivates students to clear their backlogs by viewing the count that is piling up.

3.2.4 Parent

Parent has a provision to view the details of his son provided he registers his mobile number in the college. The results can be viewed anytime along with backlogs list.

4 Results

This system allows only registered students or faculty or staff to login to the system. Hence it avoids unauthorized access. Students can view their results and backlogs and even give their feedback or complain about any issues. This makes immediate availability and improved accuracy of student data. Better convenience for students with less human effort. This is easy to handle, operate and update involving zero paper. Students and parents get instant updates on results. Faculty get notifications to upload question banks.

The comparative analysis of manual system along with IEMI is as shown in below Table 1.

The student database is used to predict the students would fail in upcoming exams and basing on this the False Acceptance Rate (FAR) and False Rejection Rate (FRR) which are tabulated in Table 2. FAR is the Rate of identifying students as fail, who

Table 1 Comparative table of manual and IEMI systems

Category	Manual existing system	IEMI system
Speed of accessing individual results	Slow	Fast
Data maintenance	Paperbased	Database
Notifications and SMS alerts	Not available	Staff, students, parents get SMS alerts and notifications
Backlog reports	Cumbersome	Staff, students, parents get SMS alerts and notifications
Result analysis reports and graphs	Manually done	Automatically generated

Table 2 Result analysis table with FAR and FRR

Data set	FAR	FRR
Set 1	1.3	0.8
Set 2	0	1.5
Set 3	0.5	2
Set 4	1.12	1.2
Set 5	0.75	1.3

are reliable to pass by manual calculations. Similarly, FRR is Rate of identifying students as pass, who are reliable to fail by manual calculations.

The sets indicate the values taken for a batch of students and predicted accordingly. The tabulated values of FAR and FRR show that the system is successful and is accurate than manual system.

5 Conclusion

The need for this automation is required because of a large amount of data is being on paper and it made analysis of results a tedious task, apart from consolidating the amount of data that is generated in an institution from various departments. The automation system is like an intermediary between staff and students, thus easing the activities of each regarding examination results and many more. This makes examcell organized basing on crucial data where other systems are dependent on this data acquisition. The solution, however, will manage a great deal of menial work. The system under consideration is prepared in order to replace the current paper record system with an automated online management system. College staff are able to directly access all aspects of a student's academic progress through a secure, online interface through a website.

6 Future Scope

Future scope requires to put the data in cloud so that the data can be accessed more securely and quickly. Add additional modules like conducting online exams and online exam application formats and downloading hall tickets online.

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