

E- Notice Board System

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Abstract: *A University with its cutting edge state of the art infrastructure heavily relies on communication and information processing from one key location to another. This research paper focuses on Rashtrasant Tukdoji Maharaj Nagpur University. As its case study, and appears at the development of an records processing infrastructure containing hardware and software program modules that are set up and ported on a number key locations within an institute. Although with such excessive precedence of communication, most of the universities nonetheless use a timber word board striking on a wall to show daily announcements or paper primarily based attendance system. The over-reliance of this practice in a college is still now not adequate to skip applicable statistics around. The foremost electricity of the lookup work is its usability and facts processing in the course of the tutorial or business vicinity. The modules include a large spread touch display appearing as a digital notice board showing facts to students. An admin panel that would handle network communication, software interface created via web technology and teacher interface that would upload information to be displayed on the notice board.*

Keywords: Distributed computing, MVC (Model View Controller), dynamic information processing, DNB, touch interface, animation

I. INTRODUCTION

The notice board is a place where people can read about different announcements such as test results, attendance, seminars or they can share some information regarding any study anomaly.

Following problems are encountered due to wooden notice boards in given vicinity.

- Multiple people struggle and cluster a single wooden notice board for information just released e.g. Exam results.
- People mutilate, remove or destroy paper notices from the notice board leaving other people to be uninformed.
- Some people don't have the sufficient time to stand and read from notice board.
- There is unregulated display of information, difficulty in storage and no efficient reference to the past relevant information being posted.

This research is mainly focused on information dissemination within the key locations of a university, so as to create out official and academic operations within a paperless community. As the world tends to grow in the line of interaction thus we choose the case study of Priyadarshini College of Engineering Rashtrasant Tukdoji Maharaj Nagpur University.

The application comprises of the Digital Notice Board (DNB), touch based interface, separate student and teacher accounts, admin interface and high end animations.

The application is aimed to serve administrative and academic protocols, thus making administrative and academic duties easier, flexible and more efficient. The application would cover following aspects related to MUET.

- Daily announcements.
- Test results and attendances.
- Online attendance marking system through Smartphone.
- Displaying results directly from M.I.S (Management Information System)
- Separate student and teachers account.
- Portal for uploading books, notes, and various study reference materials.

The application is widely distributed in modular server client entities; the framework is specially designed to handle information dissemination on a large scale faculty. Thus user touch based interface, PC and Smartphone play a vital role.

II. LITERATURE REVIEW

There are several online notice boards available. However, this section presents an overview of some of the existing online notice boards. The Digital Notice Board (DNB) [12] is an application program which can be installed on various computer systems connected by local area network (LAN). Users use DNB as a platform to get notified about the university updates. It decreases the paper use and improves dissemination of any announcements. DNB is developed using Java 2 and MS access. The limitations of DNB are it's a desktop application and it don't have efficient database. Some of the limitations of this digital NB are noticeable such as; DNB is only accessible when user is connected via LAN. Users can't get any notice or announcements outside the university. The officers can only post any update on DNB if they are connected via LAN. In case of emergency, announcements will remain waiting until and unless they have LAN connection.

This paper [2] presents a new procedure for the University of Murcia called TOUM (The Official Electronic Notice board of the University of Murcia), which replaces the traditional notice boards with the electronic official website of the University, in the terms of the Spanish LAE. The main objectives of TOUM are security, access control, authentication and automation of each publication procedure. To access the application, authentication is done via email and associated password. Electronic signature processes are accomplished during the notice publication request. This transformation has improved many areas of the University such as political and administrative but the main problem for TOUM is its development in Spanish which can only be understandable for them.

The paper [1] represents another way to present student data via network. Student Record Management System (SRMS) provides a clear interface for students to access college or university update without any delay. It manages all types of students' record from starting of the course work to the end. This clear interface system shows and keeps record of detailed information of student's fee, attendance and all results. Students must be registered to view their records via network.

III. METHODS AND MATERIALS

In our case study (M.U.E.T), there is a manual system of passing information via notice boards located at specific key locations. The facts that notice board program would run on personal computers and can be viewed at touch screens or home computers using conventional hardware items (e.g. Keyboards, mouse).

3.1 The Manual Wooden System

The manual wooden boards are located at key locations in various departments residing within the university. The notice boards in these departments contain vague paper based information that needs to be changed and replaced frequently because if not, this creates abundance and redundant information.

The wooden notice board is basically a wooden object, used as a source of information dissemination within the vicinity. This object serves to display information regarding competitions, seminars, test results, test announcements or any other important announcement that needs to be placed publically.

This method creates problems and is less efficient because of lack of information processing such as maintaining notices, timely updates and removals, addition of paper. Following figure 1 show a notice board located in a university department.

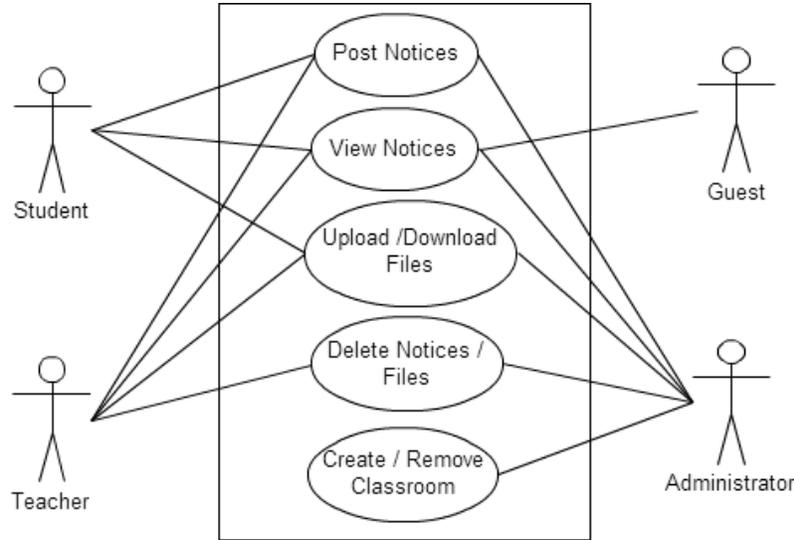


Figure 1: Wooden notice board showing posters and student marks



3.2 Proposed DNB Framework

Using the MVC control architecture [10], the system can be connected in one server entity to multiple thin layer client entities. The UML use case figure 2 depicts the working of the complete application.



Use Case Diagram

Figure 2: Use case diagram of DNB system

Figure 3 shows the business logic of the server side script. The server side script contains logical queries that help fetch data from the database. The tables in the database are connected together to perform optimized queries.

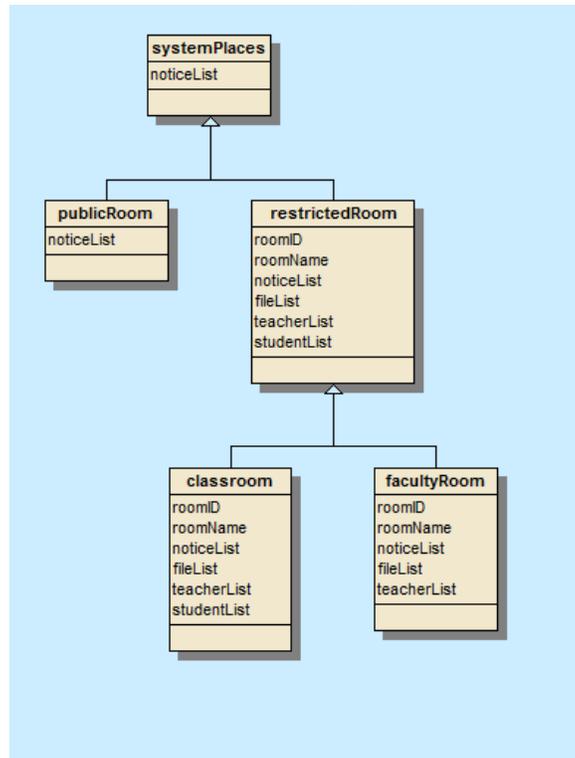


Figure 3: MUET E – Noticeboard Relational Diagram

Figure 4 UML activity diagram shows interaction of different set of users with the system.

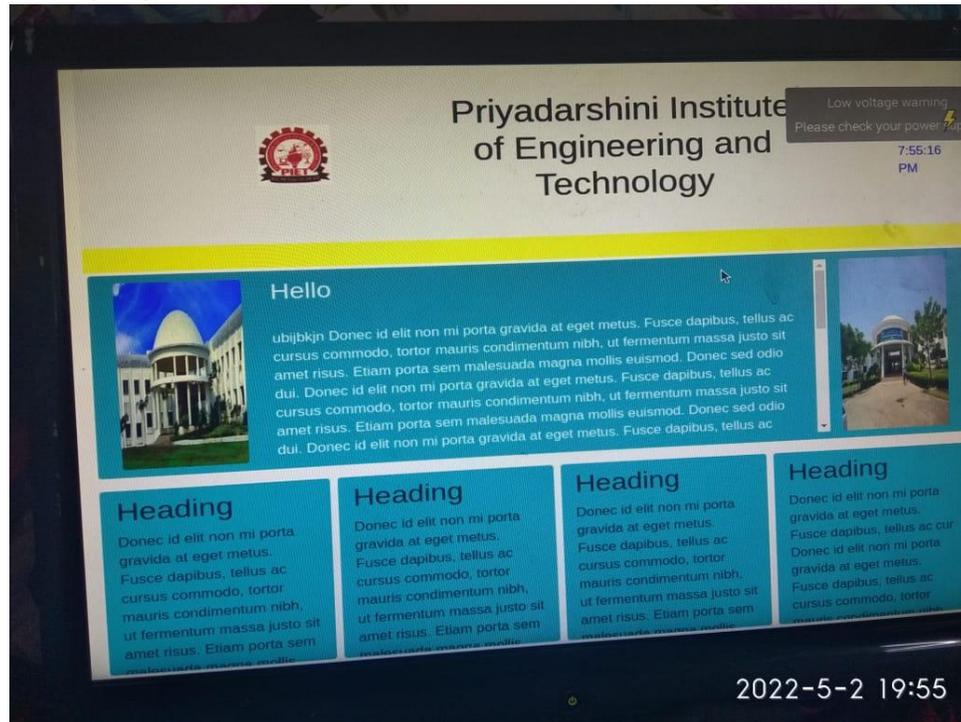


Figure 4: Activity diagram showing user interaction with the system

A student user takes the following steps, according to the given UML diagrams

1. User logs in the DNB interface.
2. Once connection has been established, the user can then view his/her account details.
3. User can upload or view current general announcements on the notice board.
4. Once user leaves the DNB the application automatically logs out the users' account
5. Exit.

3.3 Languages and Platforms

The application is a combination of software and hardware aspects. All the languages and platforms which are used for the development of this application are discussed in this section.

- The application focuses on eye candy user interaction approach, i.e. high-end user interface with pre-rendered animations. HTML 5 [5] has that cutting edge support for canvas as well as timeline animation that one can put on web page interfaces. Since the application is focused on web browsers, HTML 5 can easily be integrated with all the modern web browsers.
- HTML 5 is a markup language; JavaScript is a logic based language. The language is integrated in web browsers, which can work hand to hand with HTML 5 Web pages [14].
- Php [1] is a server side scripting language, build for managing client side requests.
- Ajax [7] is basically not a separate programming language, but actually a new way of writing standards. Ajax is basically an art of exchanging data between server and client to show dynamic information on Web pages [13].
- Where HTML 5 was designed to show data, XML [3] was designed to transport and store data. XML itself doesn't have any effect on the layout or the logic of the Webpage, but can transport data from multiple cross platform data usage.
- MySQL [11] [8] is open source database management software, which is highly used over the internet because of its ease of use, workbench and multi-cross platform support. It supports all the standard SQL queries for data manipulation and transfer.

- The Android SDK [4] used for this application, is focused on Jelly Beans API. The Android SDK would provide a Smartphone interface for the application [5][6].

3.4 User Interface and System Workflow

As the program is launched the user is welcomed with a main screen, which provides the general view of the DNB. The main general view would contain all the general information regarding current announcements, test results, attendances and information regarding the department. The DNB search can be granulated in various ways, according to student percentages, marks or saturation on ranks.

The interface is completely touch base [9] supported via a touch screen. The icons, menus, buttons and tabs; all are emulated according to a user friendly easy to use touch environment. The figure 5 depicts the workflow of the overall system via modular approach and how a normal user would interact with the system.

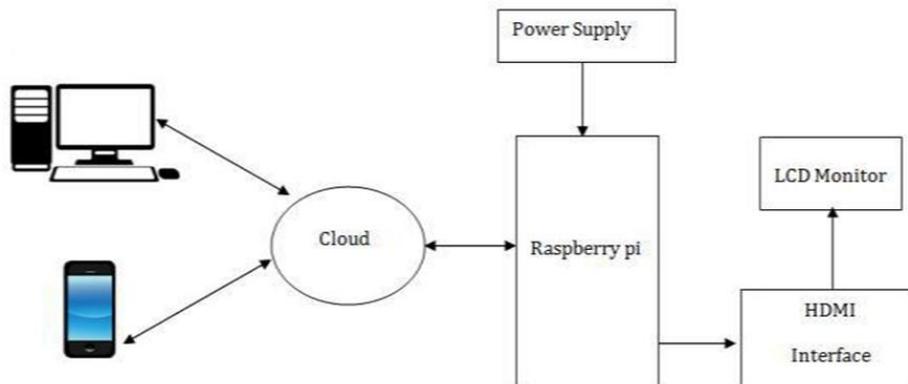


Figure 5: Component interaction diagram

IV. IMPLEMENTATION OF THE SYSTEM

For the application we have created three interfaces. Each interface serves a specific purpose and entertains specific users namely students, teachers and admin. A good validation mechanism is ensured and integration of the system is created to offer best user experience. The Application contains a touch user interface (TUI) that allows user to experience on a whole different level. Users don't require special training to interact with the system. Security is another matter for the project, same origin Ajax policy is applied on the system as well as, the system would be implemented in the local intranet to avoid outside interference.

Table 1: Checking the announcements feature if it is working or not

Test Case #: 1	Checking the announcements feature if it is working or not
System: MUET E-Notice board	Subsystem: checking the announcements
Designed by: Memoona	Design Date:- 1-2-2022
Executed by: Memoona	Execution Date: 6-2-2022
Short Description: login system for MUET E-Notice board	

Table 2: Checking the status of test case 1

Step	Action	Expected System Response	Pass / Fail
1	Write your announcement and submit it	Any faculty member who made announcement about his or her subject should be notified to his/her students	Pass

Table 3: Updating the student response

Test Case #: 2	Updating the students marks
System: MUET E-Notice board	Subsystem: checking the feature of adding marks in to database is working or not



Designed by: Memoona	Design Date:- 1-2-2022
Executed by: Memoona	Execution Date: 6-2-2022
Short Description: login system for MUET E-Notice board	

Table 4: Checking the status of test case 2

Step	Action	Expected System Response	Pass / Fail
1	Write your announcement and submit it	Marks should be uploaded to the database and a notification sent to the student	Pass

4.1 Test Cases

Following are the designed test cases for each module.

4.2 Screenshots of DNB Interface

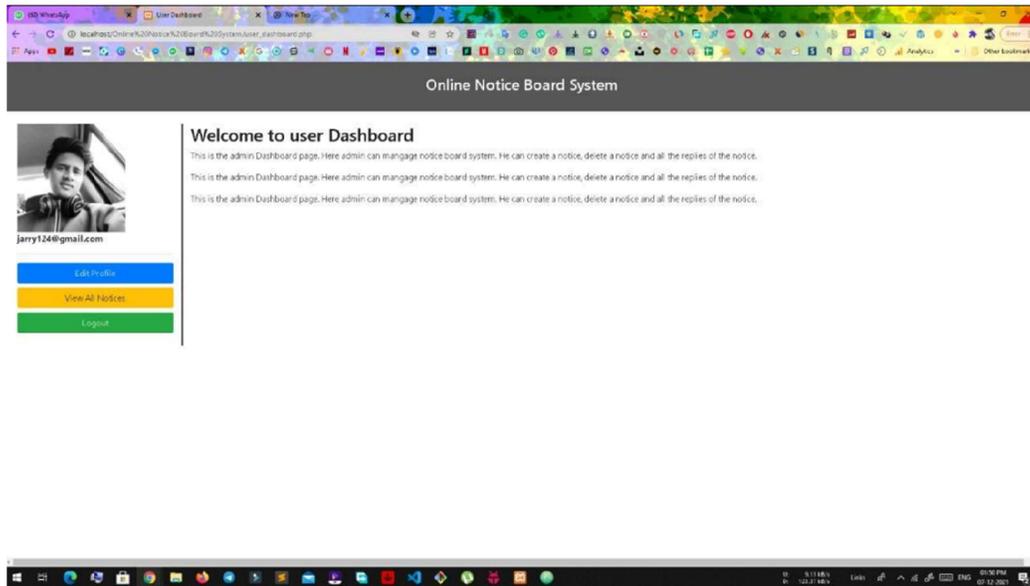


Figure 6: Student Account Interface

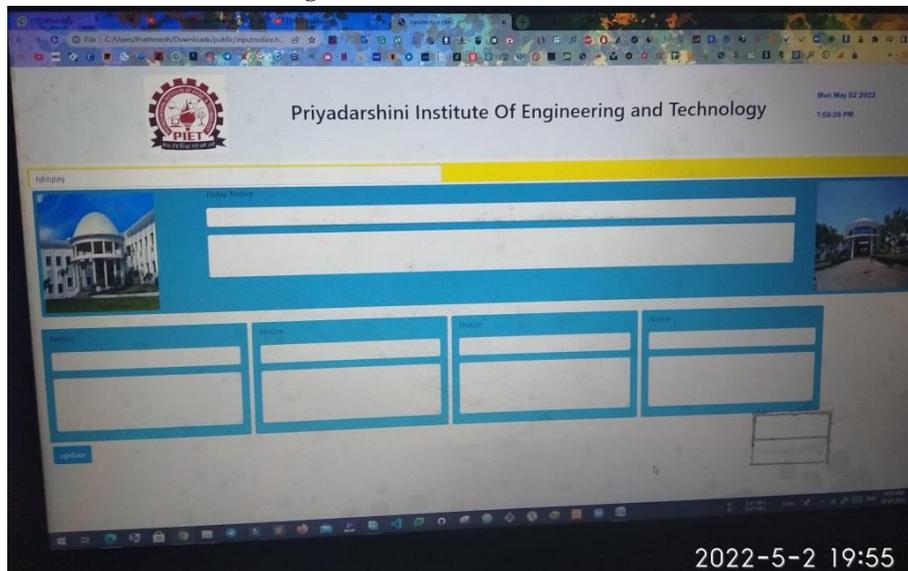


Figure 7: Student Noticeboard Interface (General Noticeboard)

V. REAL WORLD APPLICABILITY

DNBs original proposal is to act as an information dissipation unit for different academic institutes (e.g. schools, colleges, universities). The system doesn't limit itself to it, the system can also be used to create a communication channel between different franchises of any institute. The main head office can install different notice boards in their franchises, which can easily pass information and also efficiently stay connected with their head office or vice versa.

VI. RESULTS AND DISCUSSIONS

Since the Dynamic Information Processing Application works on three different platforms i.e. DNB, PCs, Smartphone, it plays a vital role on the network applicable in the given vicinity. Following results were obtained and were beneficial.

Students can now read any notification available on the DNB within the campus, prior that the DNB. The DNB mainly acts as a medium that fills a communication gap between the local offices and students, notices posted by officers can be automatically controlled by the DNB system. Officers can upload information on the DNB from anywhere through a PC via authorized accessibility. The program doesn't require any specific software installation but best performance can be attained on Google Chrome and a system with a nice GPU (Graphical Processing Unit).

The system can easily be managed by the admin because of its slick dynamic information display capability; the system can easily be modified and updated without the service being shutdown

VII. CONCLUSION

The deployment of the DNB system brings a unique way of displaying information around the campus dynamically. The system distributes the workflow of the official curriculum, by reducing paper based notification environment. The DNB has the capability of distributing announcements via granular categories i.e. priority, year or particular student. The panel created are platform independent, can run even on mobile phones. The student panel is completely animated that helps to determine important updates. The DNB's teacher and admin panel support CRUD (Create, Read, Update and Delete) tools. The application also has an archive data section where students can view their previous records. In general the DNB is a step forward in improving the current manual system and flow of information roaming at any academic institution.

The application is highly flexible for various future updates, such as it can contain a camera that would detect users and open their accounts automatically by facial recognition. It can also contain GSM subscription which will send text messages to particular students whenever an update has been made.

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