AUTOMATION OF COLLEGE PROCESSES

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Abstract: Unified campus is an application that enables students to access the information about the admission, academics, placements, transport as well as the cultural activities. This application will help notify the students whenever there is shortage of attendance/internal marks, also notifies them about the updates from placement cell or any other activities that is being held at the college. The main goal of our project is to add mobility and automation to the process of managing student information in an institute. In the traditional system, all the information is viewed in a hard file or in website. At the same time while searching any information it is too difficult to access and takes a lot of time to search from a particular website. Today it is the essence to not only use the predictable forms of the statement, but also new forms such as cell phone technology, for faster and easier communication among the students. The approach of communication is Android, the core idea of this project is to implement Android based mobile campus application for advancement of institution and educational system. The application will be used by students and management. In real world scenario such as college campus the information is in the form of notice, hand written manual, verbal message is being spread among the students. Hence in order to overcome this problem a smart phone based Android application can be used to make this process easier, secure and less error prone.

Index Terms - E-R Diagram, Architectural design Logical design, Physical design, HTML, CSS, Java script, JSP.

1. INTRODUCTION

Unified campus is an application that enables students to access the information about the admission, academics, placements, transport as well as the cultural activities. This application will help notify the students whenever there is shortage of attendance/internal marks, also notifies them about the updates from placement cell, sports or any other activities that is being held at the college. The main objective of our project is to add mobility and automation to the process of managing student information in an institute. In the traditional system, all the information is viewed in a hard file or in website. At the same time while searching any information it is too difficult to access and takes a lot of time to search from a particular website. Today it is the essence to not only use the predictable forms of the statement, but also new forms such as cell phone technology, for faster and easier communication among the students. The approach of communication is Android, the core idea of this project is to implement Android based mobile campus application for advancement of institution and educational system. The application will be used by students and management. In real world scenario such as college campus the information is in the form of notice, hand written manual, verbal message is being spread among the students. Hence in order to overcome this problem a smart phone based Android application can be used to make this process easier, secure and less error prone.

2. LITERATURE REVIEW

“The development and design of the student management system based on the network environment” [1].
1. Zhi -gang YUE ,2. You-wei JIN, Analyse the characteristics of the information management in higher education, and elaborate the methods to solve the difficulties confronting in the student management of the higher education. This college has rapidly expanded, along with the scale of student’s recruitment in domestic college enlarging gradually. It is a new task ahead of us how to manage such a huge information data in an instant, effective and efficient way and meet with numerous and complicated work of student management in the college. In addition, a large number of excellent resources cannot be shared efficiently, because student’s information cannot be transformed through the Internet. The mode of efficient student work management is characterized by using the information technology in student management work in the college. The integration of student’s basic information and management information will turn student management work in the college into an organic whole, which could deal with student information effectively and timely and even track student information. Finally, a comprehensive information management will come into being. The exploitation and utilization of information resources are the weak links of student management information in the college; however, standardization of information resources plays a vital role in the process of the development and utilization of information resources. University students are diversiform, so that the academic management and daily management are different, which will result in the independence and disunity of data in different departments and the diversification of students’ physical properties. In addition, some departments are customized the relevant work of application software which will present a state of “Tokto” without considering the standardization of information resources, making the subsequent resource integration extremely rough and the cost of reconstruction exorbitant. Solving this problem is a complex task that cannot be done overnight. The complete process is a difficult and significant task that requires a long and complicated process. With the development of information technology, we can infer that the standardization of information resources plays an indispensable role in the process of college information.
“Android-based Attendance Management System” [2]. 1. Siti Aisah Mohd Noor 2. Norliza Zaini 3. Mohd Fuad Abdul Latip 4. Nabilah Hamzah. An RFID based system is developed to record student’s attendance during class hour as the students enter the class. This system requires each classroom to be installed with an RFID reader that is connected to a computer. The RFID reader will be used to capture the student information through the student’s card. To view the overall student attendance, the lecturer may later connect their phone via Bluetooth to the computer. Another project is also using RFID technology. However, this system requires an RFID reader to be mounted at the central of each classroom. The mounted RFID reader will track all RFID tags in the classroom at once and an object counter will update the number of students in the classroom based on the successfully traced tags. Both systems described earlier have the same limitation, which is the additional hardware cost to install the RFID devices. Even though RFID devices have become cheaper over the time, one whole RFID system does not just include readers and tags. Computer, cables, network or even a server might be needed in order to setup the whole infrastructure. The cost to setup the system from scratch can easily outweigh the cost of the RFID devices used in the system. An alternative approach was introduced in, where the system promotes fingerprint based students’ attendance recording system with GSM utilization. By using this system, each student attendance is validated once the student’s fingerprint is verified by the reader. In addition to the strict attendance verification and recording, the system will send weekly attendance report to the students’ guardians via GSM. In another biometric-based system, presents a remote iris acknowledgment attendance administration system, which is plaactualized using the Daugman’s calculation.

3. EXISTING SYSTEM

In traditional educational system, students face several problems in admission procedure and in accessing various college information. In traditional educational system, everything is done manually. In this the students used to stand in a long queue to collect the admission form and to submit it. This process is time consuming. Similarly, if any placement drives are to be held in the near future, then the information is sent through notice to all the classes. Also if a notice is displayed, the student should keep eye on a notice board to regularly. This leads to inconvenience and lot of paper work. Moreover, in order to know their attendance and marks the students have to meet the faculties which is time consuming as well as creates chaos. There might be several solutions to the above problems stated but not all the problems are solved through a single application. A number of applications need to be used in order to overcome these problems. The best solution could be to unite all the problems and build up a single solution to all of them.

Drawbacks of the existing traditional system are as follows:

- Paper work is done manually.
- System possesses greater risk of redundant data.
- Various department in our institution provide circular by means of physical labour and collect enrolment form for various workshops.
- Paper based processes blows the applicants chances of admission.
- Staff workload is heavy and resources are not optimised well to find the best students.
- Educational Institutions have to incur huge costs in maintaining academics records and hard trouble in tracking bills and financial information.

3.1 PROPOSED SYSTEM

The problems in the existing system can be overwhelmed through our project to some extent. In our project we have designed a web page for the admin and an android mobile application for the students. To access the college information, the student must first install our app then register using the same username and password. The student can login only after the admin has accepted his profile. If the admin finds that the registered student is unreliable then he can deactivate the student id. Through admin web page, admin can add the updates as well as view them. The updates include the placement updates and the upcoming events which might be conducted through the various departments in the college. Admin can also update the attendance and the internal marks which can be accessed by the particular student. Some of the key features include the following:

- It is unified, digitized system that would bridge the gap between various fields of college.
- It provides central platform for the users to access various aspects of our institution.
- It also reduces the manual overhead and paper work.
- It is automated system for synchronizing and sequencing different processes of Academics and Establishments that are isolated apart.

The advantages of our project are as follows:

- Mobility and automation is added to the process of managing student information in and institute.
- The application will greatly simplify and speed up the result preparation and management process.
- The system is easy to deploy, safe with convenient operations.
- Access to authorized personnel only.

PROBLEM STATEMENT AND SCOPE

Problem Statement:

To develop a mobile application that allows access to college activities and notifies the students with the upcoming events.
Scope: Can be used in various colleges to access the information regarding various fields such as admission, sports and transportation. It can also be used to access student information. It provides notifications of the recent upcoming events and activities to help students.

3.2 VISION, MISSION AND OBJECTIVES

Mission

“Unified Campus” provides an ease of access to college Notifications, Academic information and updates to respective students.

Vision “Unified Campus” aims to extend the ease of fetching the information at college level to students.

3.2.1 Objectives

- To automate the admission, academic performance, Department notices, Placement updates and cultural activities of the student.
- To notify student about various events like admission, academic performance, Department notices, Placement updates and cultural activities through the mobile application.
- To utilize the automated system for synchronizing and sequencing different processes of Academics and Establishments that are isolated apart.

3.2.3 REQUIREMENTS

FUNCTIONAL and NON FUNCTIONAL REQUIREMENTS:

Functional Requirements:
- Admission Module: It takes student data as input and provides reference ID.
- Transportation Module: It provides the transport form along with the bus fees payment details.
- Academics Module: The updated student marks are displayed along with the attendance.
- Placements Module: Admin posts updates about upcoming campus drives. Registered students will receive the updates.
- Cultural Module: Event organizer posts an update about the various events. Users start receiving the notifications about the activities.

Non-Functional Requirements:
- Availability: Our application enables the students to get the recent activities notices and also allows to access the academic information.
- Reliability: Our application provides accurate and fast results thereby preventing mishaps.
- Scalability: Our application can be extended to various levels like collage.
- Supportability: Our application is cost effective to maintain.
- Performance: Our system gives correct response at any point under any circumstances.

3.3 HARDWARE and SOFTWARE REQUIREMENTS:

Hardware Requirements:
- RAM : 4GB
- Processor : Intel i3 and above
- Hard disk : 40GB

Software Requirements:
- System : Windows XP & above
- Programming Language : Java
4. SYSTEM DESIGN

Software design sits at the technical kernel of the software engineering process and is applied regardless of the development paradigm and area of application. Design is first step in development phase for any engineered product or system.

System design is process of defining architecture, components, module, interfaces and data for system to satisfy specified requirements. System design could be seen as application of system theory to product development. There exists overlap between disciplines system analysis, system architecture and system engineering.

Design is act of taking marketing information and creating the design of product to be manufactured. System design is therefore a process of defining and developing the system to satisfy specified requirements of the user.

There exist many kind designs

- Architectural design
- Logical design
- Physical design

Architectural design:

Architectural design of the system emphasis on the design of system architecture which describes structure, behavior, and more views of that system and analysis.

Logical design:

Logical design pertains to abstract representation to data flows, inputs and outputs of the system. This is often conducted via modeling, using an over-abstract model of the actual system. In the context of systems, designs is included. Logical design includes Entity Relationship diagram.

Physical design:

Physical design relates to actual inputs with output that are processed by the system. This is explained in terms of how the data inputs to the system, how they are verified/authenticated, how it is processed, how it is displayed. In physical design requirement about the system is required which includes input and output requirements, storage and processing requirements.

4.1 E-R Diagram

Entity relationship model represent inter related of interest in specific domain of knowledge. Entity model composed of entity types and specific relationship that can exist between instances of those entity types. ER model becomes abstraction of data model that defines data or information structure that can be implemented in database typically in relational database.

Entity relationship is result of systematic analysis to define and describe what is important to processes in area of business. It does not define business processes, it only present business data scheme in graphical manner. It is usually drawn in graphical fashion includes boxes (entities) and lines (relationships) which expresses relationship and dependencies between entities.

Entities not only characterized by relationships but also by additional properties (attributes) which include identifier called primary keys. Diagrams created to represent entities, attributes, and relationship can also be called as entity-attribute-relationship diagram.
ER model is typically implemented as a database. In relational database implementation, each row of a table represents an instance of an entity type, and each field in a table represents an attribute type. In relational database, a relation between entities is implemented by storing the primary key of one entity as a pointer or foreign key in the table of another entity.

4.2 Class Diagram:

In software engineering, a class diagram is a type of static structure diagram that describes the structure of a system by showing the system’s classes, their attributes, operations (methods), and relationships among objects. A class diagram is a main building block of Object-Oriented modeling. It is used both for conceptual modeling of the systematic application, and for detailed modeling translating models into programming code. Class diagrams can also be used for data modeling. Classes in class diagrams represent main elements, interaction in the application, and the classes to be programmed.

Classes are represented in boxes that contain three compartments:

1. Top compartment contains name of the class. It is printed in bold and centered, first letter is capitalized.
2. Middle compartment contains the attributes of the classes. They are left aligned and first letter is lower case.
3. Bottom compartment contains the operations the classes can execute. They are also left aligned and first letter is lower case.

In design of the system, the number of classes are identified and grouped together in a class diagram that helps to determine the static relationship between them. Classes of conceptual design often split into number of sub classes.
4.3 Use Case Diagram: A use case diagram is a type of behavioral diagram created from a use case analysis. Its purpose is to present a graphical overview of the functionality provided by a system in terms of actors, their goals (represented as use cases), and any dependencies between those use cases. Use case diagram is representation of user interaction with the system that shows relationship between the user and different use cases in which user is involved. A use case diagram identify different types of users of the system and different use cases. In software and software engineering, use case is list of actions or event steps, typically defining interactions between roles and system, to achieve goal. Actor can be person or external system. Use case analysis is valuable and useful requirement analysis technique that has been widely used in modern software engineering.

4.4 Data Flow Diagram:
A graphical illustration of the flow of data through an information system, modeling its process aspects is known as data flow diagrams (DFD). Data flow diagram is graphical representation of flow of data through information system, modeling its processes aspects. It acts as preliminary step to create overview of the system, which can later be evaluated. DFD shows what kind of data can input and output from the system, where data come from and go to, and where the data will be stored. It does not show
information about timing of process. **Level 0 Diagram**: It shows the complete system as a single process, and does not give clue to its internal organization on the context diagram also known as the level 0 DFD the system’s interaction with the outside world are modeled purely in terms of data flows across the system boundary.

**Level 1 diagram**: It indicates how the system is divided into sub-section, each of which deals with one or more of the data flows to or from an external agent, and which together provide all of the functionality of the system as a whole. It identifies internal data stores that must be present in order for the system to do its job, and shows the flow of data between the various parts of the system.

### 4.5 Activity Diagram

Activity diagram is graphical representation of workflows of stepwise actions and activities with support of choice, iteration, concurrency. In Unified Modeling Languages activity diagrams are intended to model both computational and organizational process. Activity diagrams are constructed with limited number of shapes,

- Rounded rectangles represent actions
- Diamonds represent decisions
5. IMPLEMENTATION

5.1 Software features:

Eclipse IDE: In Computer Programming, Eclipse is an Integrated Development Environment. It contains base workspace and extensible plug-in system for customizing environment. Eclipse is mainly written in java and its primary use is for developing java applications. Development environment includes eclipse java development tools(JDT) for java and scala, Eclipse CDT for c/c++, Eclipse PDT for PHP, among others. Initial codebase originated from IBM Visual Age. Eclipse Software Development Kit(SDK), which include java development tools, meant for java developers. Released under the terms of Eclipse Public License, Eclipse SDK
is free and open source software. It was one of the first IDEs to run on GNU Class path and it runs without problems under Iced tea.

Creation of project using Eclipse

Eclipse provide integrated environment to write file and get output in same page without page movement. Console is feature available to get the output of defined code.

Apache Tomcat:

Apache Tomcat commonly referred as Tomcat, is open source web server developed by Apache Software Foundation (ASF). Tomcat implements several Java EE specifications includes Java servlets, Java Server Pages(JSP), Java EL and web Socket and provide “pure java” HTTP web server environment java code to run in. Tomcat is developed and maintained by open community of developers under the auspices of the Apache Software Foundation, released under Apache License 2.0 License, is open source.

5.2 Components:

Tomcat 4.x was released with Catalina (a servlet container), Coyote (HTTP connector) & Jasper ( a JSP engine). Apache is built as part of community process that involves user and developer. Developer list is where discussion on building and testing next release takes place, while the user list is where user can discuss about their problems with developers and other users.
Apache tomcat installation and downloading steps

My SQL:

My SQL is open source Relational Database Management System (RDBMS). It is popular choice of database to use in web application and it is central component of widely used LAMP open source web application software stack. LAMP is an acronym for Linux, Apache, Mysql, Perl/Python/PHP. It provides full-featured database management systems. Application that use Mysql includes: TYPO3, MODx, Joomla., WordPress, PhpBB, MyBB, Drupal, and other software.

Mysql workbench: Mysql workbench is official integrated environment for Mysql. It was developed by Mysql AB and enables user to graphically administer Mysql database and visually design database structures.

Adminer: Adminer is free Mysql front end for managing content in Mysql database. Adminer is distributed under the Apache license in the form of single PHP file, and is capable of managing multiple databases, with many CSS skins available.

5.3 Software tools:

HTML: Hyper Text Markup Languages is commonly abbreviated as HTML, is standard markup language used mainly to create web pages along with java scripts and css. It is also used to create user interfaces for mobile and web applications. HTML describe the website syntactically and before the advent of css, uses cues for the presentation and appearance of document (web pages), making it markup languages, rather than programming languages.

HTML element forms the building block of HTML pages. It allows images and other objects to embedded and also used to create interactive forms. It provides structured documents by using semantics for text such as headings, paragraph, division, lists, links, quotes. HTML is delineated by angular brackets. Tags such as <img />, <input /> introduce content into page directly.

CSS: Cascading Style Sheet is style sheet languages used for describing presentation of document written in markup language. CSS is cornerstone technology used by most web sites to create visually engaging web pages, user interfaces for mobile applications and web applications. CSS is mainly used introduce separation between document content and document presentation, including aspects such as layouts, colors, fonts. This separation can improve content accessibility, provides more flexibility, control in the specification of presentation characteristics, and enable specifying in separate file using extension .css and reduce complexity and repetition in structural content.

Java script: Java script is high level, dynamic, and interpreted programming language. It supports object oriented, imperative, functional programming styles. It has an API for working with text, arrays, dates, regular expressions. Despite naming, syntactic, standard library similarities, java script and java otherwise unrelated and have different semantics.

JSP: Java Server Pages is technology which helps software developers to create dynamically generated web pages based on HTML, XML. Other document types JSP is similar to PHP and ASP but uses java programming languages. To deploy and run JSP, compatible web server with servlet container such as Apache Tomcat or Jetty is required. It is viewed as high level abstraction of java servlets. JSPs are translated into servlets at runtime. Each JSP servlet can be cached and re-used until original JSP is modified. We have implemented our project using Spiral model. The reason why we have chosen spiral model is we can go to the previous stages/ remain back in the same stage and debug the error, it works in a iteration process.

The spiral model consists of following stages:

- Requirement plan: Gathered the problems faced by the department and students in the field of admissions, placements, events, attendance, marks and transportation. To overcome this problem a literature survey is conducted on few papers and finding out the solution according to that problem.

- Determining objectives, alternatives and constraints: In this stage we have defined our project objectives as follows:
To automate the admission, academic performance, Department notices, Placement updates and cultural activities of the student.
To notify student about various events like admission, academic performance, Department notices, Placement updates and cultural activities through the mobile application.
To utilize the automated system for synchronizing and sequencing different processes of Academics and Establishments that are isolated apart.

Constraints: The login page for the student indicates that the USN and password are mandatory fields and should be in the range and specified format. Once the constraints and objectives that are specified according to our project, the next step will be the evaluating these objectives, if these objectives are satisfied we can proceed with our next step else we have to change the objectives with an alternative.

- Design: The appearance of the admin web page has to be very simple so that there will be less conflicts in adding data such as attendance and marks of the student. The layouts of the mobile application should be very attractive so that user feels comfortable in viewing the various details and providing the admission details.

- Coding: Java and xml are programming languages that are used in developing front end where java is used for creating and identifying the objects and establishing connection between front end and back end. Xml is a programming language used for designing layouts. JSP (Java Server Page) is used for developing back end web page for administrator. MySQL is the database that is used to store from admin, student and retrieve the data efficiently.

- Testing: To validate our project we have included several testing modules like unit testing, integration testing performance and system testing.

6. MODULE DESCRIPTION

Admin: Admin is the one who regulates this application in secured way. Admin updates the database with the details students by providing authorization to them. He/She can also notify students regarding events conducted in and out of college. The sub modules in admin are:

i. Add Event: Admin adds the event and updates the database.
ii. Student Request: Students register by providing the details and the request is sent to the admin and admin must check the student details and accept/decline the student’s request.
iii. Add Placement: Admin adds the upcoming placements and updates the database.
iv. Add Marks: Admin adds the marks of the students of various departments and updates the database.
v. Add Bus: Admin adds the bus details and updates the database.
vi. Add attendance: Admin adds the attendance of an individual student and updates the database.
vii. Admission form: The details filled by the students will be visible to admin and will be stored in the database.

Student: Students can view all the notifications posted by admin and also can fill the admission form. The sub-modules in student are:

i. Attendance: Students can view his/her Attendance updated by Admin.
ii. Marks: Students can view his/her internal marks updated by Admin.
iii. Bus Details: Students can view the bus details updated by the Admin.
iv. Placements: Students can view the placement notifications updated by the Admin.
v. Events: Student can view the Event updates updated by the Admin.
vi. Admission form: Student can fill the admission form.

6.1 SYSTEM TESTING

System testing of hardware or software is testing conducted on complete, integrated system to evaluate system’s compliance with its specified requirements. System testing falls within scope of black-box testing, and as such require no knowledge of inner design of the code or logic.

System testing takes as its input, all of the integrated software components that have passed integration testing and also software system itself is integrated with any applicable hardware application(s). The purpose of integration testing is to detect inconsistencies between software units that are integrated together or between any of the assemblages and the hardware. It seeks to detect defects both within “inter assemblages” and also within system as whole.
Software commonly used in system testing are:

- IBM teleprocessing network simulator
- IBM workload simulator

Software testing: Software testing is process of evaluation of software item to detect differences between given input and expected output and also assess feature of software item. Software testing is process of testing during development process in other words it is verification and validation process.

Verification: Verification deals with statement “are we building the right product”. It is process to make sure that product satisfies condition imposed at the start of the development phase.

Validation: Validation is process to make sure that product satisfies specified requirement at the end of the development phase. It deals with the statement “are we building the product right.

There are many types of testing:

- **Unit testing**: Unit testing refers to testing individual unit or group of related units. It falls under the class of white box testing. It is often tested by the programmer to ensure that the unit implemented is producing expected output against inputs.
  - **Placement**: The data entered by the admin about the placement updates has to be stored in the database.
  - **Event**: The data entered by the admin about the events has to be stored in the database.
  - **Marks**: The marks entered by the admin for every individual student should be stored in the database.
  - **Attendance**: The attendance updated by the admin for every individual student should be stored in the database.
  - **Bus**: The details of the bus updated by the admin should be stored in the database.
  - **Admission Form**: The student admission details filled by the student should be stored in the database.

- **Integration testing**: The data entered by the admin regarding placement updates, events, attendance marks and bus details should be viewed by the every student.

- **System testing**: System testing is testing to ensure that android application works perfectly when it is deployed in various version of android operating system.

- **Performance testing**: In the performance testing whenever the admin updates the information about the various modules how fast the details are updated in the student environment.

<table>
<thead>
<tr>
<th>Test id</th>
<th>Users</th>
<th>Test names</th>
<th>Inputs</th>
<th>Outputs</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Register</td>
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<tr>
<td>T₂</td>
<td>Admin</td>
<td>Accept request</td>
<td>Registered student information</td>
<td>If valid student accept request</td>
</tr>
<tr>
<td>T₃</td>
<td>Admin</td>
<td>Reject request</td>
<td>Registered student information</td>
<td>If invalid student no further action on it</td>
</tr>
<tr>
<td>T₄</td>
<td>Student</td>
<td>Login</td>
<td>USN, password</td>
<td>Successful login</td>
</tr>
</tbody>
</table>
Incorrect login USN, password If student is not registered “invalid user” on top of the login window

<table>
<thead>
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<th>Add Event</th>
<th>Event name, description, date</th>
<th>Successfully added to event database</th>
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</table>

<table>
<thead>
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<th>Admin</th>
<th>Add Event</th>
<th>Event name, description, date</th>
<th>Un successful, specify date within the range.</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>T7</th>
<th>Admin</th>
<th>Add Bus</th>
<th>Bus no, driver name, driver number.</th>
<th>Successfully added in the bus database</th>
</tr>
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</table>

7. RESULTS AND SNAPSHOTS

In this project, Admin uses the web page to add the various details about the placements, events, attendance, marks and transportation. The User(student) should first register through android mobile application and gets activated by the admin to access the details about the placement updates, events, attendance, marks and also he can be able to fill admission details in order to avoid last minute rush.

Having a system to capture and store student attendance records online promotes a paperless attendance record and a greener environment. The portability and mobility aspect of the application is also emphasized in the current system since each lecturer only requires an android device to run the application. The following snapshot shows the home page of our Admin web page and Student’s User Interface.

Above Figure indicates the Admin home page where admin can be able to proceed to login page.
Admin Login Page

This indicates the login page of the Admin where he is authenticated with valid username and password.

In this page the actions that can be performed by the admin.
In this page the admin can add Company name, description about the company and the Interview date of that company.

Here the admin can add the details about the Events that will be held in college
In this page the admin add the marks for every individual student according to the University Seat Number.
8. Conclusion:

The system offers reliability, time savings and easy control. Students can view results, attendance and curriculum details using this application. Also students can view details, notifications anywhere and anytime. The application will greatly simplify and speed up the result preparation and management process. It provides security and a system that reduces the work and resources required in traditional process. The proposed system provides the new way of computing and displaying an operation with responsive and attractive user interface. Thus, on the basis of literature survey and by analysing the existing system, we have come to a conclusion that the proposed system will not only aid the automation to the college, but will also help to digitize the system and in turn help to deploy resources efficiently. By following the design proposed in the previous section, the server side and the client side applications were successfully implemented. Having a system to capture and store student attendance records online promotes a paperless attendance record and a greener environment.
9. References:


