Chapter 1

Introduction

In the current scenario there lags an efficient system for the blind candidates to take an examination which ultimately leads to their absence in many sectors of the service. This software helps to bridge the gap between blind candidates and normal candidates by creating an atmosphere where the blind can compete with the others without any disadvantage. In the long run this would eradicate poverty from the weaker sections of the society and improve the socio-economic conditions of the blind people. The project entitled “Exam simulator for Blind Candidates” will prove to be a solution to this problem. Blind candidates will register through a website with the help of his/her guardian and a unique ID will be generated after the registration process. This unique ID will be entered by the blind candidate in the examination hall through voice commands. All the questions will be communicated to the candidate through audio channel. At the end of the examination his/her score will be displayed on the screen.

Chapter 2

Request for proposal

2.1 Problem statement

To build a software solution to help blind candidates. An exam simulator to help the blind people to give certification examination and other exams. Blind candidates will register through a website with the help of his/her guardian and a unique ID will be generated after the registration process. This unique ID will be entered by the blind candidate in the examination hall through voice commands. All the questions will be communicated to the candidate through audio channel. At the end of the examination his/her score will be displayed on the screen.

In the current scenario there lags an efficient system for the blind candidates to take an examination which ultimately leads to their absence in many sectors of the service. This software helps to bridge the gap between blind candidates and normal candidates by creating an atmosphere where the blind can compete with the others without any disadvantage. In the long run this would eradicate poverty from the weaker sections of the society and improve the socio-economic conditions of the blind people.
In this way blind candidates will get the confidence to make their career and they will be able to contribute in the GDP of country and get themselves developed.

2.2 Target Audience

Following are the users of the system:

1. Blind candidates
2. Administrators
3. Group members

4. Government and Non-government agencies.

2.3 Functional Requirements

- To bridge the gap between blind candidates and normal people.
- Means to spread education to everyone.
- Giving chance to blind people to get qualified.
- A means to eradicate poverty from weaker sections of the society.
- Help to family members.
- Making blind candidates self dependent.
- Giving the blind community chance to build their career and get developed.

2.4 Non-Functional Requirements

- Secure access of confidential data by the use of encryption.
- 24*7 availability
- Better component design to get better performance at peak time.
- Flexible service based architecture, highly desirable for future extension.

Chapter 3

Feasibility Study and Reports

3.1 Technical feasibility

Technical feasibility is centred around the existing manual system of the test management process and to what extent it can support the system. According to feasibility analysis procedure the technical feasibility of the system is analyzed and the technical requirements such as software facilities, procedure, inputs are identified. It is also one of the important phases of the system development activities. The system offers greater levels of user friendliness combined with greater processing speed.

Before starting the development of this project we first study the technical feasibility and efforts required for this project. After studying and analysing the system requirements necessary for the development of this project, we matched them with the available technical assets owned by our team.
These are the requirements for the project.

3.1.1 System requirements

Hardware:
Laptop/Desktop Computer with at least 500 MB RAM and Hard Drive.

Mouse, Keyboard and Soundcard.

MIC for sound input.

Speakers or Headphones for voice outputs.

Software:

Windows Xp and above.
Tomcat Server 7.0 to run JSP and Servlets
MYSQL database to store the database of users.
Java software development kit (SDK).
Eclipse Java Editor.
Brackets Editor for HTML,CSS and javascript.
Text -to-speech API
Speech -to -text API

After full study of software and hardware requirements essential for developing this project we reached the conclusion that we have all the resources available to develop this software. Since we have intel core i5 processors with 2GB RAM and windows 8.1 operating system the hardware requirement would not be an issue for our team. We also have speakers ,soundcard and MIC recorder installed in our respective systems.So looking at hardware perspective this project is perfectly feasible to be developed by our team.
Looking at software requirements we have Java SDK 6 ,Tomcat server 7.0 and Eclipse editor. For storing the user information we have MYSQL database integrated with XAMPP server. Voice recognition API like Text-to -Speech and Speech -to-Text API is available to us as a open source software without any copyright issues. So we have all the software and hardware assets required to develop this project.

3.1.2 Human factor

The skills required for this project are :

- Thorough knowledge of Java, JSP and Servlets and prior programming experience.
- Expertise in Tomcat server, MYSQL, XAMPP installation and integration with the other components of this project
- Experience in designing webpages using HTML,CSS and Javascript.

- Prior hands of experience in AJAX for user authentication and validating credentials.
- Knowledge of SQL for data manipulation and retrieval.
- Knowledge of voice API to be used in the project.

Man-hours required for this project would be approximately 100 which includes planning, designing , coding and testing. This estimation is based on the previous projects done by our team members in the past and our efficiency.
On the account of our skills and technical experience we assume that team size of three would be sufficient to complete this project on time. So we assume that time of one and half month would be sufficient to develop this project.

3.2 Economic feasibility

Economic analysis is most frequently used for evaluation of the effectiveness of the system. More commonly known as cost/benefit analysis the procedure is to determine the benefit and saving that are expected from the system and compare them with costs, decisions is made to design and implement the system.

This part of feasibility study gives the top management the economic justification for the new system. This is an important input to the management , because very often the top management does not like to get confounded by the various technicalities that bound to be associated with a project of this kind. A simple economic analysis that gives the actual comparison of costs and benefits is much more meaningful in such cases.

3.3 Behavioral feasibility

People are inherently resistant to change and computer has been known to facilitate changes. An estimate should be made of how strong the user is likely to move towards

the development of computerized system. There are various levels of users in order to ensure proper authentication and authorization and security of sensitive data of the organization. Since we are heading towards a technological era we are pretty convinced that blind candidates and government agencies will be very keen in adapting this system for their examination and evaluation process. So it is completely feasible to develop this system looking at the technological awareness of users. Further no special training is required to operate this system.

3.4 Legal feasibility

This feasibility study deals with the legal permissions required to develop and use this software in such a way that no law of land is violated. These laws except that no user confidential data be kept available to unauthorized person.This data should not be leaked to anybody at any cost. Since we are going to store the user data in MYSQL database protected with unique password for each user, data is completely in safe hands.

Encryption and Decryption techniques are used to keep the data safe if it is intruded in middle of data transmission.

So legally it is perfectly feasible to develop and deploy this software solution

3.5 Schedule feasibility

Man-hours required for this project would be approximately 100 which includes planning ,designing ,coding and testing. This estimation is based on the previous projects done by our team members in the past and our efficiency. On the account of our skills and technical experience we assume that team size of three would be sufficient to complete this project on time. So we assume that time of one and half month would be sufficient to develop this project..

This project is expected to complete before May 30,2017.

Since we have a team size of three we are perfectly capable to develop this project in the given schedule. So looking at the schedule of this project it is completely feasible to develop this project and deliver it on time.

Chapter 4

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Software Requirement Specification

This document has been written to apply a new version of SRS Software Requirements Specification which depends on IEEE-STD-830-1998 standard. So, we must compare this document with this standard.

This is the first version for *Exam simulator for blind candidates* system.

This document is the basic intended for any individual user, developer, tester, project manager or documentation writer that needs to understand the basic system architecture and its specifications.

The purpose of this SRS document is to write the functional and nonfunctional user or system requirements that represent the characteristics of ***Online Exam System***.

4.1 Functional Requirements

This software consists of three components:

1. A web application where blind candidates could register with the help of their guardian to generate a unique id.
2. A database to store all the information of candidate efficiently.
3. A desktop application where blind candidate could enter his unique id through voice command to give the examination.

4.1.1 Functionalities in web application

- In this web application user must be able to register himself with the help of his guardian easily.
- A unique id must be generated after completing the registration process.
- All the information about organization and organizing committee should be displayed on the website

4.1.2 Functionalities in database

- It must be able to store the information of at least 10000 students.
- Data stored in the database must be secured by the encryption
- It should be able to store all the information of user.
- After the examination the marks obtained by the candidate should be stored in the database

4.1.3 Functionalities in desktop application

- Candidate must be able to enter his unique id through voice commands.
- All the questions should be presented to the candidate in the voice format along with the options.
- Answers should be given by the candidate by predefined keystrokes.
- Interface should be such that it could be easily operated by the blind candidates.
- Result should be displayed on the screen and stored in the database at the end of examination

4.2 Functional requirements of complete system

- To bridge the gap between blind candidates and normal people.
- Means to spread education to everyone.
- Giving chance to blind people to get qualified.
- A means to eradicate poverty from weaker sections of the society.
- Help to family members.

- Making blind candidates self dependent.
- Giving the blind community chance to build their career and get developed.

4.2.1 The features that are available to the Administrator are:

- The administrator has the full fledged rights over the OES.
- Can create/delete an account.
- Can view the accounts.
- Can change the password.
- Can hide any kind of features from the both of users.
- Insert/delete/edit the information of available on OES.
- Can access all the accounts of the faculty members/students.

4.2.2 The features available to the Students are:

- Can view their marks.
- Can view the various reading materials and could know about format of examination.

4.3 System Requirements

Hardware:

Laptop/Desktop Computer with at least 500 MB RAM and Hard Drive.

Mouse, Keyboard and Soundcard.

MIC for sound input.

Speakers or Headphones for voice outputs.

Software:

Minimum Windows Xp operating system

Tomcat Server 7.0 to run JSP and Servlets

MYSQL database to store the information of user.

Java software development kit (SDK)

Netbeans Java Editor.

Editor for HTML,CSS and javascript.

Text -to-speech converting API

Speech -to -text converting API

4.4 Non-Functional Requirements

4.4.1 Performance Requirements

Some Performance requirements identified is listed below:

- The database shall be able to accommodate a minimum of 10,000 records of students.
- The software shall support use of multiple users at a time.
- There are no other specific performance requirements that will affect development.

4.4.2 Safety Requirements

The database may get crashed at any certain time due to virus or operating system failure. Therefore, it is required to take the database backup.

4.4.3 Security Requirements

Some of the factors that are identified to protect the software from accidental or malicious access, use, modification, destruction, or disclosure are described below. Keep specific log or history data sets

- Assign certain functions to different modules
- Restrict communications between some areas of the program
- Check data integrity for critical variables
- Later version of the software will incorporate encryption techniques in the user/license authentication process.

Communication needs to be restricted when the application is validating the user or license. (i.e., using https).

4.5 Software Quality Attributes

The Quality of the System is maintained in such a way so that it can be very user friendly to all the users.

The software quality attributes are assumed as under:

- Accurate and hence reliable.
- Secured.
- Fast speed.
- Compatibility.

4.6 System Interfaces

This section describes how the software interfaces with other software products or users for input or output.

4.6.1 User Interface

Application will be accessed through a Browser Interface. The interface would be viewed best using 1024 x 768 and 800 x 600 pixels resolution setting. The software would be fully compatible with Microsoft Internet Explorer for version 6 and above. No user would be able to access any part of the application without logging on to the system.

4.6.2 Hardware Interfaces

Server Side:

- Operating System: Windows 9x/xp ,Windows ME
- Processor: Pentium 3.0 GHz or higher
- RAM: 256 Mb or more
- Hard Drive: 10 GB or more.

Client side:

- Operating System: Windows 9x or above, MAC or UNIX.
- Processor: Pentium III or 2.0 GHz or higher.
- RAM: 256 Mb or more

4.6.3 Software Interfaces

- Client Side: .HTML, Web Browser, Windows XP/2000/Vista
- Web Server: .HTML, Windows XP/2000/Vista

4.6.4 Communications Interfaces

The Customer must connect to the Internet to access the Website:

- ·Dialup Modem of 52 kbps
- ·Broadband Internet
- Dialup or Broadband Connection with a Internet Provider.

4.7 Software Model Used

In this system we will use waterfall model to apply these ideas. Which is help us to separate each step and when we finish a one phase the output of it is the input to the next phase. Also, we can backwards if there is a new requirement or to apply any update. After the end of each phase we produce a deliverable physical entity either code or document so that we can review the steps taken in each respective phase of software development life cycle.

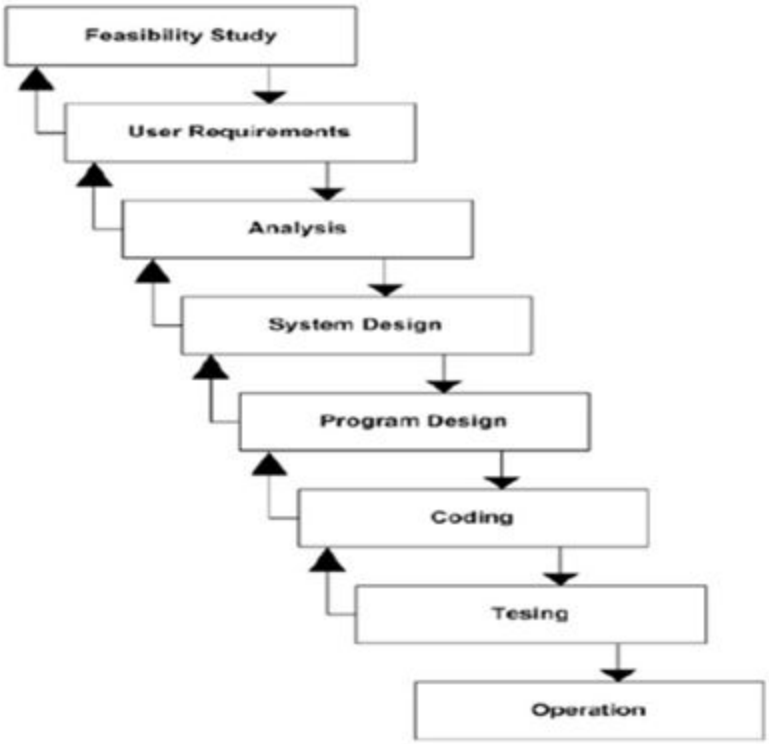

Fig. 3.1 Waterfall model

Chapter 5

Design and Analysis

Up to now, the project team and the client have focused on high-level questions regarding the project. These start with simple questions like "why is this solution important?, "what is the business value?" and "what are we going to deliver?" In the Design Phase, these questions are taken to a lower level of detail, and we start to ask the "how" questions. The big one is "how will we build this solution?"

At this point, the project team should have a complete set of requirements to work from, a set of direction-setting strategies and a Conceptual Systems Design. The design process comes next. Even if the project was small and the requirements were simple, there is still a mental design process that occurs in between understanding the requirements and starting to construct. Design becomes more and more important as the project becomes larger and more complex. Once we complete the requirements, we will typically see a myriad of alternatives for construction. These alternatives include the tools and technology we will utilize, the scalability of the solution, and the structure of the components we will build. The Design Phase is where we look at the many potential solutions and narrow down the choices to determine the most effective and efficient way to construct the solution. The Design Phase answers the questions about "how" we will build the best solution.

At the end of the Design Phase, we will have a logical solution defined. The solution is "logical" because it exists on paper or in a design tool. This logical solution is then passed to the Construct Phase, where the logical solution is turned into a physical solution. However, the people that specialize in constructing the solution will not have to worry about the myriad possibilities. That guidance will be provided to them through the work in the Design Phase. The people working to construct the solution can use their

talents to build the solution based on the deliverables produced during the Design Phase.

5.1 High Level Design

HLD -- High Level Design (HLD) is the overall system design - covering the system architecture and database design. It describes the relation between various modules and functions of the system. data flow, flow charts and data structures are covered under HLD.

High Level Design gives the overall System Design in terms of Functional Architecture details and Database design. This is very important for the ETL developers to understand the flow of the system with function and database design wise. In this phase the design team, testers and customers are plays a major role. Also it should have projects standards, the functional design documents and the database design document also.

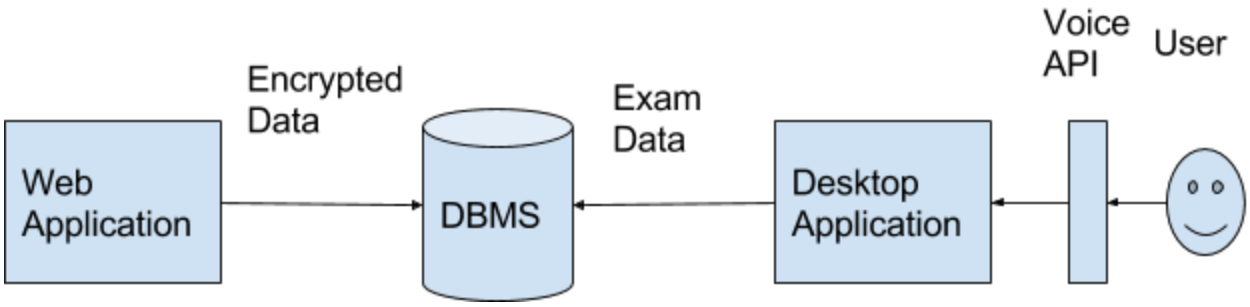

Fig. 5.1 High Level Design

5.2 Database Design

Database design is the process of producing a detailed data model of database. This data model contains all the needed logical and physical design choices and physical storage parameters needed to generate a design in a data definition language, which can then be used to create a database. A fully attributed data model contains detailed attributes for each entity. The term database design can be used to describe many different parts of the design of an overall database system. Principally, and most correctly, it can be thought of as the logical design of the base data structures used to store the data. In the relational model these are the tables and views. In an object database the entities and relationships map directly to object classes and named relationships. However, the term database design could also be used to apply to the overall process of designing, not just the base data structures, but also the forms and queries used as part of the overall database application within the database management system (DBMS).Following is the database design of our project:

5.2.1 Tables in Database

1. Table Register

UID	First Name	Last Name	Father Name	Mother Name	Category	Password	Phone	D.O.B	Category	Address1	Address Line 2	Address Line 3	State	City	Pincode

2. Table User's Score

UID	Marks

5.2.2 Logical Design(E-R Diagram)

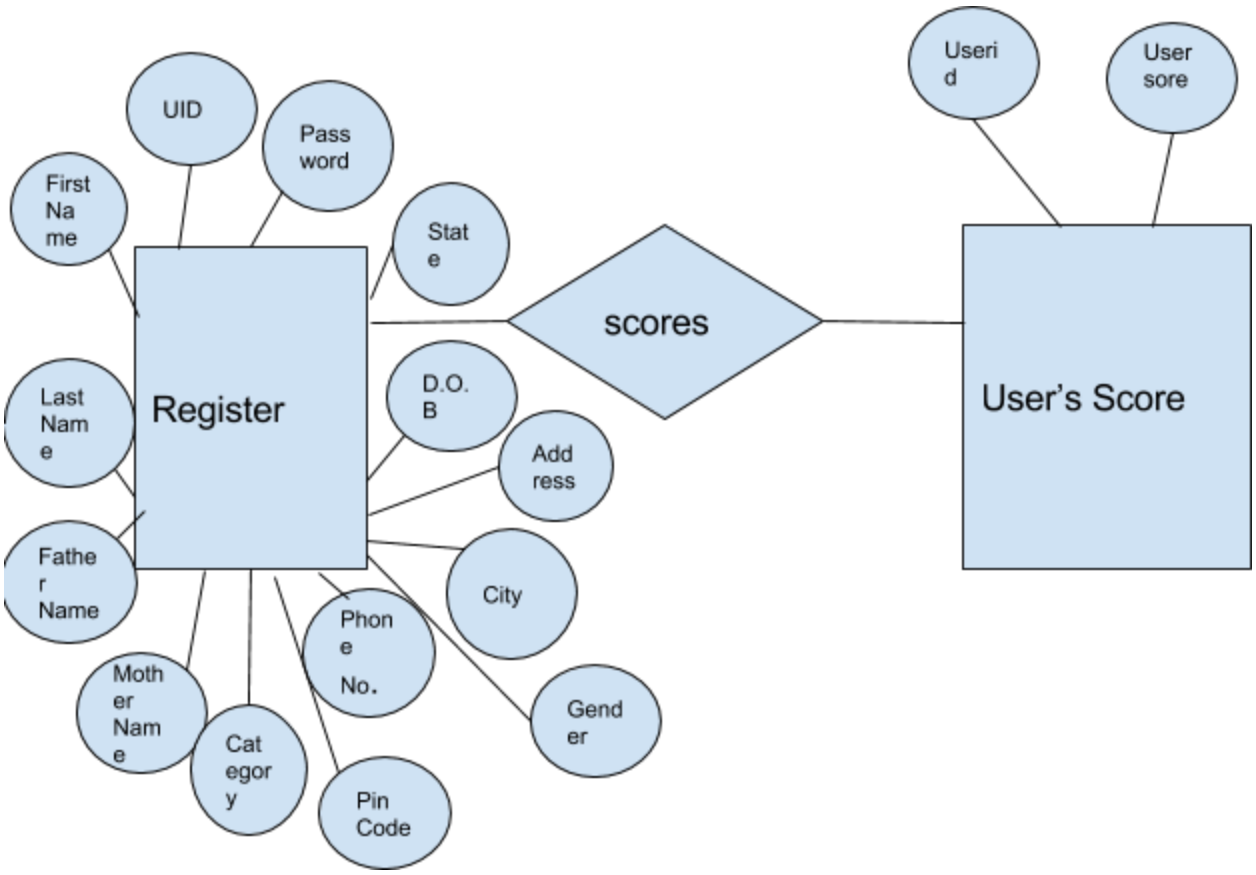

Fig. 5.1 E-R Diagram

5.3 Logic Design

5.3.1 Desktop Application

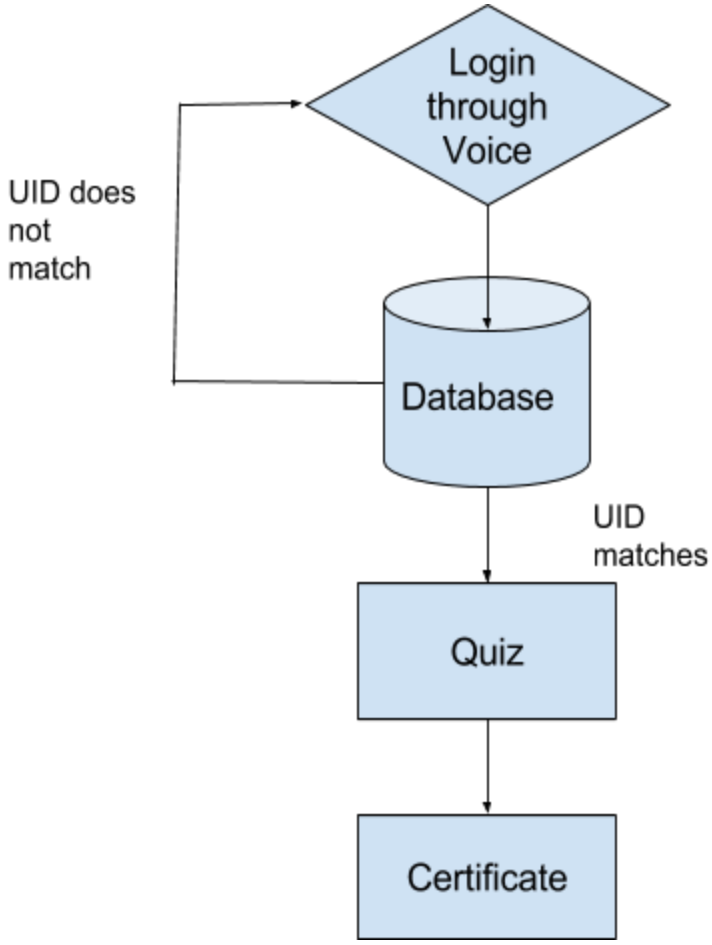

Fig. 5.2 Logic Design Of Desktop Application

5.3.2 Website Application

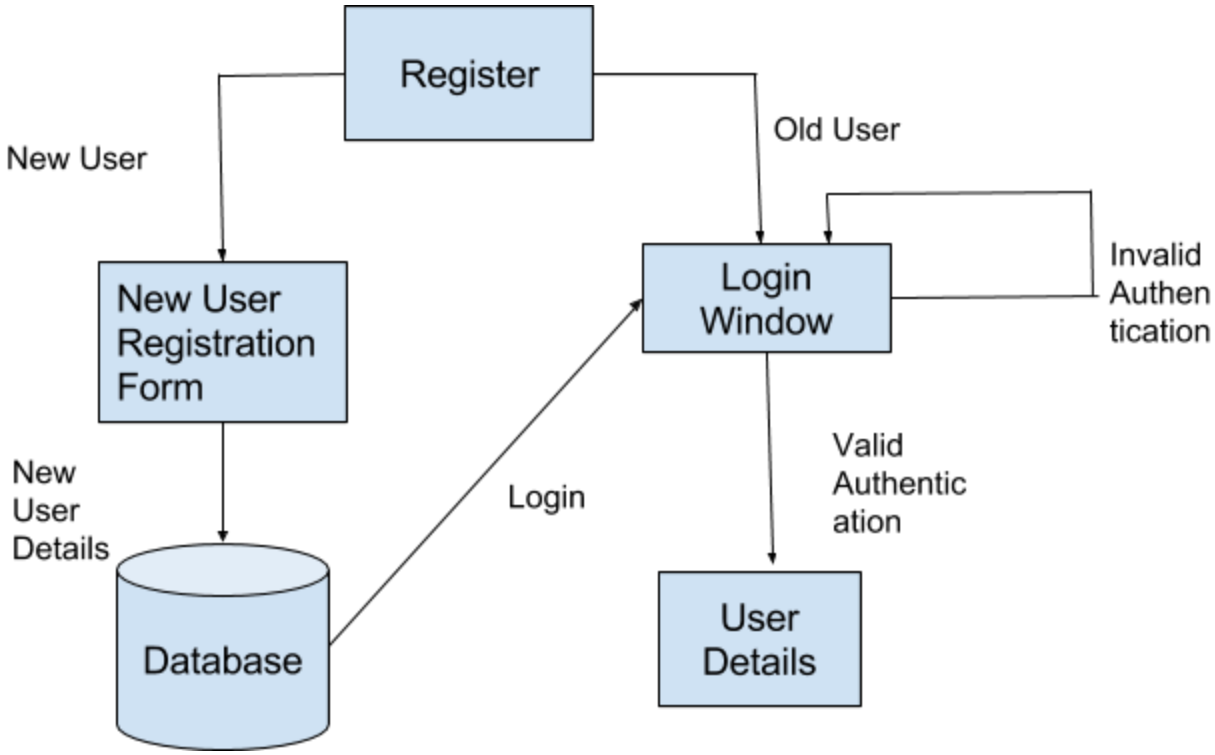

Fig. 5.3 Logic Design of Website Application

5.4 User Interface Design

5.4.1 Website Application

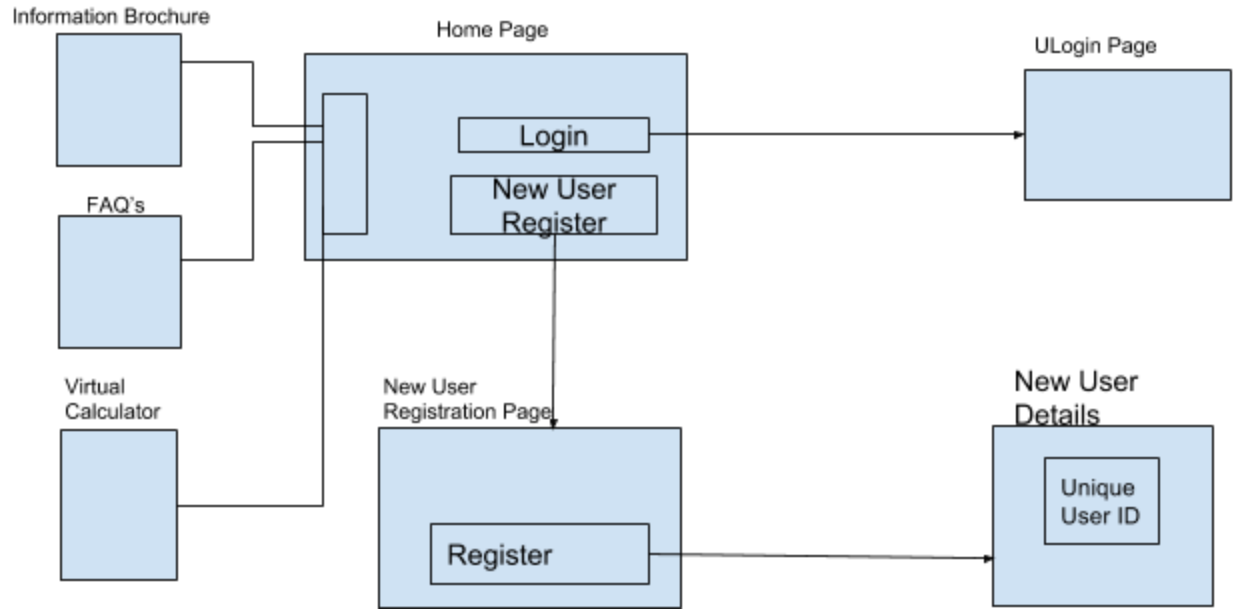

Fig. 5.4 User Interface Design of Website Application

5.4.2 Desktop Application

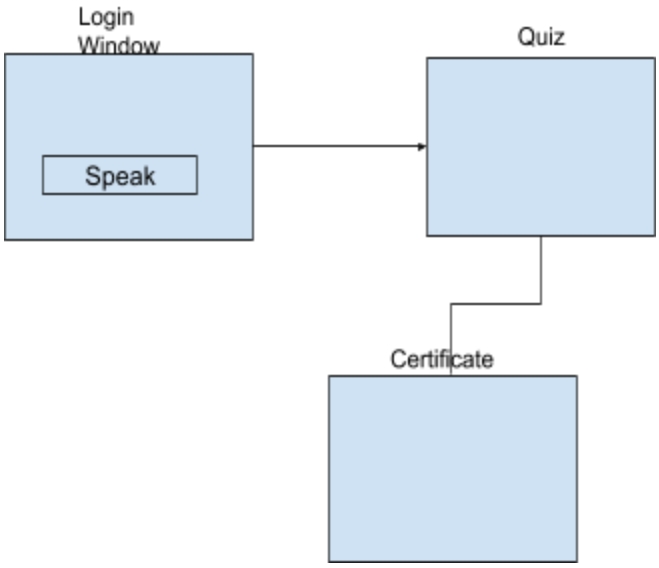

Fig. 5.4 User Interface Design of Desktop Application

Chapter 6

Coding Standards

6.1 Introduction

Coding standards are a set of guidelines for a specific programming language that recommend programming style,practices, and methods for each aspect of a program written in that language. These standards usually cover file organization, indentation, comments, declarations, statements, whitespace, naming conventions, programming practices, programming principles, programming rules of thumb, architectural best practices, etc. These are guidelines for software structural quality. Software programmers are highly recommended to follow these guidelines to help improve the readability of their source code and make software maintenance easier. Coding standards are only applicable to the human maintainers and peer reviewers of a software project. Standards may be formalized in a documented set of rules that an entire team or company follows, or may be as informal as the habitual coding practices of an individual. Coding standards are not enforced by compilers.

Code standards are important to programmers for a number of reasons:

- 40%–80% of the lifetime cost of a piece of software goes to maintenance.
- Hardly any software is maintained for its whole life by the original author.
- Code standards improve the readability of the software, allowing engineers to understand new code more quickly and thoroughly.
- If you ship your source code as a product, you need to make sure it is as well packaged and clean as any other product you create.

Our project is divided into three components. These are as follows:-

1. Web Application
2. Desktop Application

6.1.1 Web Application

It consists of two jsp pages and several html pages.

- Home_page.jsp-This is the front page of our website application. Here registered user can login and also a person can register himself/herself. Various information related to examination and registration process like important dates, information brochure, faq's, and contact us pages are displayed. Use can practice on virtual calculator that is similar to what is provided during examination.
- New_user_register.jsp- In this page a user can register himself by entering his personal details. Run time check is applied using on all the attributes by using ajax. There are several constraint checks.
- Information_brochure.html-Here detailed information about the registration and examination process is provided in pdf format.
- Important_dates.html- here important opening and closing dates of registration form as well as date of declaration of result are provided.

6.1.2 Desktop Application-

It consist of various java classes. Since this project is focused with the main objective of providing examination for blinds. So we have embedded a voice API. This api recognizes the human voice and converts the voice to text than that text i cs checked in database if an entry available for that text users gets logged in.

Classes used in this desktop application are-

SpeechInterface.java- This class acts as an interface. This class initializes voce. Modules used in this class are.

- **init()**- This module contains several arguments

  vocepath-The 'vocePath' String specifies the path where Voce classes and

config file can be found.

initSynthesis and initRecognition-initSynthesis' and 'initRecognition' enable these capabilities.

grammarPath-'grammarPath' is a relative or absolute path to one or more grammar files (all .gram files in 'grammarPath' will automatically be searched)

grammarName-If the 'grammarName' is empty, a simple default grammar will be used

- **destroy()-** This function destroys all the connections. All the recognizer and synthesizer objects gets destroyed. In other words the voice system gets Shutdown.

SpeechRecognizer.java- This class handles all speech recognition (i.e. speech-to-text) functions. Uses a separate thread for recognition. Maintains an internal queue of recognized strings.

- **SpeechRecognizer()-** Constructs and initializes the speech recognizer. 'grammarPath' can be a relative or absolute path. 'grammarName' is the name of a grammar within a .gram file in the 'grammarPath' (all .gram files in 'grammarPath' will automatically be searched). If the 'grammarName' is empty, no grammar will be used.
- **run()-**Contains the main processing to be done by the recognition thread. Called indirectly after 'start' is called.
- **isEnabled()-**Returns true if the recognizer is currently enabled.
- **destroy()-**Deallocates speech recognizer.

SpeechSynthesizer.java- Handles all speech synthesis (i.e. text-to-speech) functions.

- **SpeechSynthesizer()-** Constructs and initializes the speech synthesizer.
- **destroy()-** Deallocates voice synthesizer.
- **synthesize()-** Adds a message to the synthesizer's queue and synthesize it as soon as it reaches the front of the queue.

- **stopSynthesizing()-**Stops synthesizing the current message and removes all pending messages from the queue.

Utils.java- This class is used for debugging purpose.

- **log()-** A simple message logging function. The message type gets printed before the actual message.
- **setPrintDebug()-** Sets how much debug output to print ('true' prints debug and error messages; 'false' prints only error messages).

Impossible1.java- This is the main class of our desktop application. It consists of the main function which is the starting point of our application.

Game.java- In this class various events are handles. Action Listeners and key listeners are used. Now you can select a particular option using the keyboard keys. You don't have to use a mouse to select a particular option. All the questions and options will be communicated through voice using this class.

End.java- This class generates the result and shows the marks you obtained.

Chapter 7

Testing Plans And Test Data

7.1 Introduction

Software testing is an investigation conducted to provide stakeholders with information about the quality of the product or service under test. Software testing can also provide an objective, independent view of the software to allow the business to appreciate and understand the risks of software implementation. Test techniques include the process of executing a program or application with the intent of finding software bugs (errors or other defects), and verifying that the software product is fit for use.

Software testing involves the execution of a software component or system component to evaluate one or more properties of interest. In general, these properties indicate the extent to which the component or system under test:

- meets the requirements that guided its design and development,
- responds correctly to all kinds of inputs,
- performs its functions within an acceptable time,
- is sufficiently usable,
- can be installed and run in its intended environments, and
- achieves the general result its stakeholders desire.

As the number of possible tests for even simple software components is practically infinite, all software testing uses some strategy to select tests that are feasible for the available time and resources. As a result, software testing typically (but not exclusively) attempts to execute a program or application with the intent of finding software bugs (errors or other defects). The job of testing is an iterative process as when one bug is fixed, it can illuminate other, deeper bugs, or can even create new ones.

Software testing can provide objective, independent information about the quality of software and risk of its failure to users or sponsors.

Software testing can be conducted as soon as executable software (even if partially complete) exists. The overall approach to software development often determines when and how testing is conducted. For example, in a phased process, most testing occurs after system requirements have been defined and then implemented in testable programs. In contrast, under an Agile approach, requirements, programming, and testing are often done concurrently.

7.2 Test Data

In our website we have used AJAX for imposing dynamic constraints on the new user registration webpage.The constraints and testing on various fields are as follows:

7.2.1 Website Application

1.First Name,Last Name
Constraint:Cannot be empty.
Testing:

Condition	**Result**
First Name/Last Name Empty	Atleast type something
First Name/Last Name Not Empty	Test Successful

2. Mother's Name,Father's Name
Constraint:Cannot be empty

Condition	**Result**
Mother's Name/Father's Name Empty	Atleast type something
Mother's Name/Father's Name Not Empty	Test Successful

3.Category

Constraint:Cannot be empty

Condition	Result
Category Empty	Atleast select something
Category Not Empty	Test Successful

4.Password
Constraint:First Letter should be in Capital and password should be greater than 5 characters with at least one special character.

Condition	Result
Password Empty	Atleast type something
aditya123	Test Unsuccessful
Aditya123	Test Unsuccessful
Ad@1	Test Unsuccessful
Aditya@123	Test Successful

5. Phone Number
Constraint:Phone Number should be of at least 10 characters.

Condition	Result
Phone No. Empty	Atleast type something
98756	Test Unsuccessful
8319620250	Test Successful

6. D.O.B

Constraint:Cannot be Empty.

Condition	**Result**
D.O.B Empty	Atleast select something
D.O.B Not Empty	Test Successful

7.Gender

Condition	**Result**
Gender Empty	Atleast select something
Gender Not Empty	Test Successful

8. Address
Constraint:Cannot be Empty

Condition	**Result**
Address Empty	Atleast type something
Address Not Empty	Test Successful

9.State/City
Constraint:Cannot be Empty.

Condition	**Result**
State/City Empty	Atleast type something
State/City Not Empty	Test Successful

10.Pincode
Constraint:Should be of Exactly 6 characters.

Condition	Result
Pincode Empty	Atleast type something
56685	Test Unsuccessful
566854	Test Successful

7.2.2 Desktop Application

1.Login:
Constraint:User's Unique ID should match with the database.

Condition	Result
1817(Present in Database)	Login Successful
2016(Not Present in Database)	Login again

Chapter 8

Technologies Used

We have used several technologies in developing this project entitled “Exam simulation for blind candidates”. These technologies are as follows:

- HTML
- CSS
- J2EE
- Servlets
- AJAX
- MYSQL
- Javascript

The brief introduction of these technologies are presented here.

8.1 HTML

HTML stands for **H**yper **T**ext **M**arkup **L**anguage, which is the most widely used language on Web to develop web pages.

HTML was created by Berners-Lee in late 1991 but "HTML 2.0" was the first standard HTML specification which was published in 1995. HTML 4.01 was a major version of HTML and it was published in late 1999. Though HTML 4.01 version is widely used but currently we are having HTML-5 version which is an extension to HTML 4.01, and this version was published in 2012.

- **Hypertext** refers to the way in which Web pages (HTML documents) are linked together. Thus the link available on a webpage are called Hypertext.

- As its name suggests, HTML is a **Markup Language** which means you use HTML to simply "mark up" a text document with tags that tell a Web browser how to structure it to display.

Originally, HTML was developed with the intent of defining the structure of documents like headings, paragraphs, lists, and so forth to facilitate the sharing of scientific information between researchers.

Now, HTML is being widely used to format web pages with the help of different tags available in HTML language.

8.2 Cascading Style Sheet (CSS)

CSS is used to control the style of a web document in a simple and easy way. CSS is the acronym for "Cascading Style Sheet". This tutorial covers both the versions CSS1,CSS2 and CSS3, and gives a complete understanding of CSS, starting from its basics to advanced concepts.

Cascading **S**tyle **S**heets, fondly referred to as CSS, is a simple design language intended to simplify the process of making web pages presentable.

CSS handles the look and feel part of a web page. Using CSS, you can control the color of the text, the style of fonts, the spacing between paragraphs, how columns are sized and laid out, what background images or colors are used, layout designs,variations in display for different devices and screen sizes as well as a variety of other effects.

CSS is easy to learn and understand but it provides powerful control over the presentation of an HTML document. Most commonly, CSS is combined with the markup languages HTML or XHTML.

- **CSS saves time** − You can write CSS once and then reuse same sheet in multiple HTML pages. You can define a style for each HTML element and apply it to as many Web pages as you want.

- **Pages load faster** − If you are using CSS, you do not need to write HTML tag attributes every time. Just write one CSS rule of a tag and apply it to all the occurrences of that tag. So less code means faster download times.
- **Easy maintenance** − To make a global change, simply change the style, and all elements in all the web pages will be updated automatically.
- **Superior styles to HTML** − CSS has a much wider array of attributes than HTML, so you can give a far better look to your HTML page in comparison to HTML attributes.
- **Multiple Device Compatibility** − Style sheets allow content to be optimized for more than one type of device. By using the same HTML document, different versions of a website can be presented for handheld devices such as PDAs and cell phones or for printing.
- **Global web standards** − Now HTML attributes are being deprecated and it is being recommended to use CSS. So its a good idea to start using CSS in all the HTML pages to make them compatible to future browsers.
- **Offline Browsing** − CSS can store web applications locally with the help of an offline cache. Using of this, we can view offline websites.The cache also ensures faster loading and better overall performance of the website.
- **Platform Independence** − The Script offer consistent platform independence and can support latest browsers as well.

8.3 J2EE

Java Platform, Enterprise Edition or Java EE is a widely used computing platform for development and deployment of enterprise software (network and web services).[1] Java EE was formerly known as Java 2 Platform, Enterprise Edition or J2EE.

The platform uses the object-oriented Java programming language. It is part of the Java software-platform family. Java EE extends the Java Platform, Standard Edition (Java SE), providing an API for object-relational mapping, distributed and multitier architectures, and web services. The platform incorporates a design based largely on modular components running on an application server. The platform emphasizes convention over configuration and annotations for configuration. Optionally XML can be used to override annotations or to deviate from the platform defaults.

Java EE is developed under the Java Community Process.

Java EE is defined by its specification. As with other Java Community Process specifications, providers must meet certain conformance requirements in order to declare their products as *Java EE compliant*.

Java EE includes several API specifications, such as RMI, e-mail, JMS, web services, XML, etc., and defines how to coordinate them. Java EE also features some specifications unique to Java EE for components. These include Enterprise JavaBeans, connectors, servlets, JavaServer Pages and several web service technologies. This allows developers to create enterprise applications that are portable and scalable, and that integrate with legacy technologies. A Java EE application server can handle transactions, security, scalability, concurrency and management of the components it is deploying, in order to enable developers to concentrate more on the business logic of the components rather than on infrastructure and integration tasks.

8.4 Javascript

JavaScript often abbreviated as "JS", is a high-level, dynamic, untyped, interpreted run-time language. It has been standardized in the ECMAScript language specification. Alongside HTML and CSS, JavaScript is one of the three core technologies of World Wide Web content production; the majority of websites employ it, and all modern Web browsers support it without the need for plug-ins .JavaScript is a multi-paradigm language, since it supports prototype-based with first-class functions, imperative, and

functional programming paradigms. It has an API for working with text, arrays, dates, regular expressions, and basic manipulation of the DOM, but does not include network, storage, or sophisticated graphics APIs, relying instead upon APIs made available by its host environment.

Although there are strong outward similarities between JavaScript and Java, including language name, syntax, and respective standard libraries, the two languages are distinct and differ greatly in design; JavaScript was influenced by programming languages such as Self and Scheme.

JavaScript is also used in environments that are not Web-based, such as PDF documents, site-specific browsers, and desktop widgets. Newer and faster JavaScript virtual machines (VMs) and platforms built upon them have also increased the popularity of JavaScript for server-side Web applications. On the client side, developers have traditionally implemented JavaScript as an interpreted language, but more recent browsers perform just-in-time compilation. Programmers also use JavaScript in video-game development and in desktop and mobile applications.

8.5 AJAX

- AJAX, is a web development technique for creating interactive web applications.AJAX stands for Asynchronous JavaScript and XML. AJAX is a new technique for creating better, faster, and more interactive web applications with the help of XML, HTML, CSS, and Java Script.
- Ajax uses XHTML for content, CSS for presentation, along with Document Object Model and JavaScript for dynamic content display.
- Conventional web applications transmit information to and from the server using synchronous requests. It means you fill out a form, hit submit, and get directed to a new page with new information from the server.

- With AJAX, when you hit submit, JavaScript will make a request to the server, interpret the results, and update the current screen. In the purest sense, the user would never know that anything was even transmitted to the server.
- XML is commonly used as the format for receiving server data, although any format, including plain text, can be used.
- AJAX is a web browser technology independent of web server software.
- A user can continue to use the application while the client program requests information from the server in the background.
- Intuitive and natural user interaction. Clicking is not required, mouse movement is a sufficient event trigger.
- Data-driven as opposed to page-driven.

8.6 MYSQL

MySQL is the most popular Open Source Relational SQL Database Management System. MySQL is one of the best RDBMS being used for developing various web-based software applications. MySQL is developed, marketed and supported by MySQL AB, which is a Swedish company.

MySQL is a fast, easy-to-use RDBMS being used for many small and big businesses. MySQL is developed, marketed and supported by MySQL AB, which is a Swedish company. MySQL is becoming so popular because of many good reasons −

- MySQL is released under an open-source license. So you have nothing to pay to use it.
- MySQL is a very powerful program in its own right. It handles a large subset of the functionality of the most expensive and powerful database packages.
- MySQL uses a standard form of the well-known SQL data language.

- MySQL works on many operating systems and with many languages including PHP, PERL, C, C++, JAVA, etc.
- MySQL works very quickly and works well even with large data sets.
- MySQL is very friendly to PHP, the most appreciated language for web development.
- MySQL supports large databases, up to 50 million rows or more in a table. The default file size limit for a table is 4GB, but you can increase this (if your operating system can handle it) to a theoretical limit of 8 million terabytes (TB).
- MySQL is customizable. The open-source GPL license allows programmers to modify the MySQL software to fit their own specific environments.

Chapter 9

User Guide

The steps to be followed to successfully operate this project are as follows:

1. First register yourself in the web application by entering your details.
2. A unique id will be generated after the registration process. Note this unique id because this id will be used in the examination hall for candidate login.
3. In the examination hall enter this unique id through voice commands after system says “speak”.
4. When you have spoken the complete id say “zero” to login.
5. System will speak questions one by one along with options. Listen to them patiently.
6. To answer a questions follow this scheme:
    - To select first option: press ALT+D.
    - To select second option: press ALT+F.
    - To select third option: press ALT +C.
    - To select fourth option :press ALT+D.
    - To listen to a question again: press ALT+R.
7. After the examination is over your score will be displayed on the screen.

Chapter 10

Results

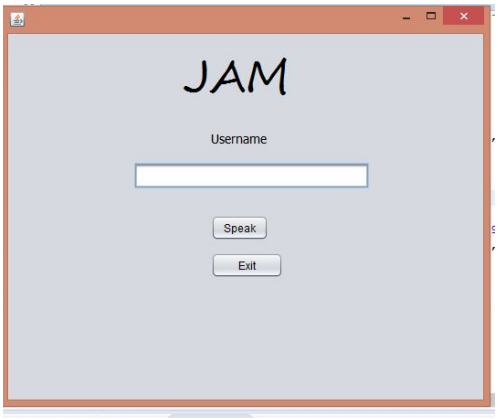

Fig. 10.1 Exam Interface

Fig. 10.2 Contact Us Page

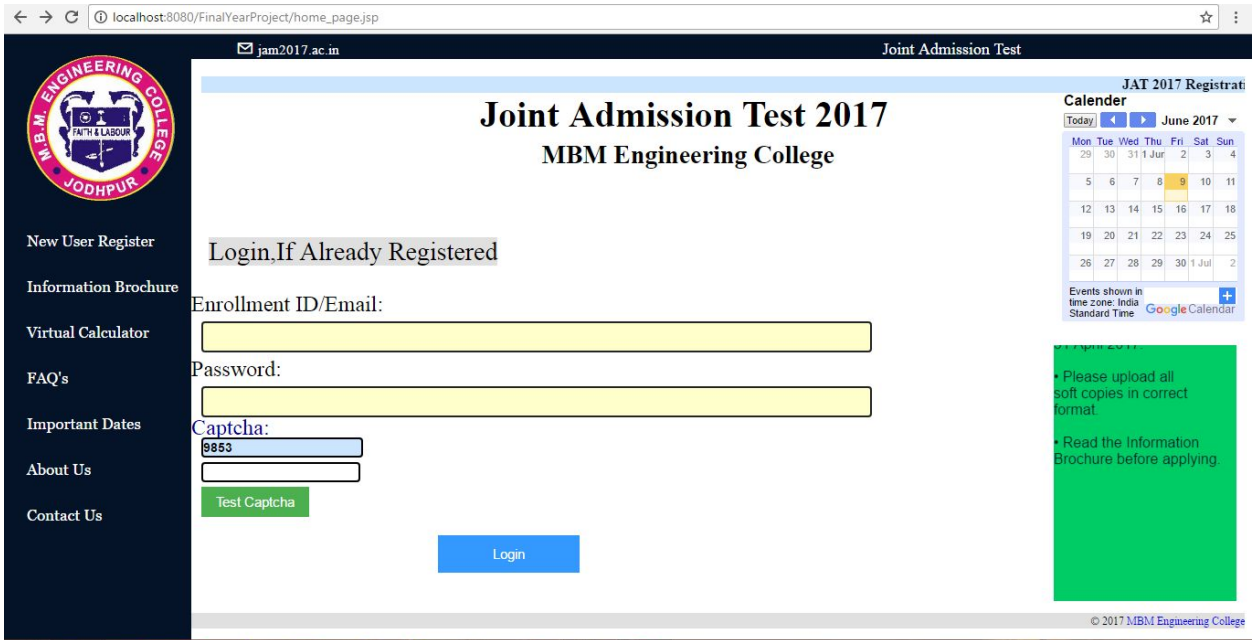

Fig. 10.3 Home Page

Chapter 11

Limitations, Applications and Future Enhancements

Currently the web application uses Affine Encryption while sending data from new user registration page to the database.The security can further be improved by using SSL encryption technique.Also, currently the application uses a fixed set of questions in the examination.Later this can be modified to include huge variety of questions from which any subset can be used for the examination.One of the limitations of this software is that it is expected that the candidates need to be little bit computer proficient.Later it can be enhanced to be more user friendly.

Chapter 12

Conclusion

The project entitled “Exam Simulator for Blind Candidates” developed by our team is tested in all robust conditions and proved to be very efficient. It has proved very useful for blind candidates to give their certification exam and attain their certificate.

This will be very helpful in boosting up the self confidence of this community and providing opportunities to build their career and get developed.

This software could be used by Government and Non-Government agencies in their policies for the upliftment of these weaker sections of society.

After certain improvements in reliability and efficiency this project could prove a very important technological asset for the society..

Chapter 13

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