Software Requirements Specification

for

<EXAMINATION CELL>

Version 1.0 approved

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1. Introduction

We are planned to develop a web application to help the examination cell of our college.

1.1 Purpose

The purpose of this document is to present a detailed overview about the examination cell System. It highlights the functions and features of the system, what the system will do and the constrains under which it must operate. The document describes the project's target audience and its user interface, hardware and software requirements.

1.2 Document Conventions

Some of the conventions used in the document are as follows:

1. IEEE - Institute of Electrical and Electronics Engineers
2. CGI – Common Gateway Interface
3. HTML – Hyper Text Markup Language
4. OS – Operating System
5. CSS – Cascading Style Sheets

1.3 Intended Audience and Reading Suggestions

The intended audiences of this document are the software engineers, who would like to get an insight of how the software has been prepared and modified. The document should be read step wise understanding each step as without it reading ahead will not make much sense. The whole document has relation with something in the previous sections and thus our advice to the people will be to read the whole document systematically.

1.4 Product Scope

The examination cell system will allow the examination cell to easily create the invigilation chart, seating allotment and exam schedule by just entering the basic details. It would greatly save the time of the department as till now they have been doing it manually which increases the chances of errors in the work. Furthermore,

the program provides details to the students and faculty members their individual details and not the whole chart which helps them. The goal is basically to provide the exam cell with an easy, portable solution for preparing the charts and the students and faculty the ease to access their individual details. This software will facilitate the smooth functioning of the department, reduce the errors and increase the efficiency of the system.

1.5 References

The reference used was the IEEE Std 830-1998 IEEE Recommended Practice for Software Requirements Specifications.

2. Overall Description

2.1 Product Perspective

- Manual model that we are presently using in our university includes that the examination chart, invigilation chart and the seating allotment be prepared manually by keeping in mind all the bounds. All this manual work will be replaced by a one-click system which would be using a shuffling algorithm so that the teachers are shuffled in class-rooms and lecture-rooms equally to lessen their burden and the examination chart is prepared in a way that the online –exams are later than the offline exams. The examination department will be able to get the attendance sheet chart prepared in the correct format according to the way the students have been distributed in the class rooms. The features expressed in this Software Requirements Specification document are intended to be fully implemented in version 1.0. The system will be developed in such a way to provide easy addition of the features which may be required in the further versions of the software.

2.2 Product Functions

- Our web application consists of 3 models which include invigilation chart, seating allotment and examination chart. Each model has functions which are managed by the admin. The software can be accessed by the admin of our university.

- The invigilation chart function includes the creation of an invigilation chart for the various exams.
- The seating allotment function will generate an allotment of rooms for all students and will give the result in a proper format.
- The examination chart function will take into account all the subjects and the time slots and the various students who are enrolled in various subjects and create a proper chart so that there is no clashing f subjects for individuals.
- The attendance chart function which will be a sub part of the seating allotment will first generate an attendance sheet and then will create a sheet where the proper seating of the individuals will be there.

2.3 User Classes and Characteristics

Our product is having 4 user classes:

- **Admin**: There will be just 1 admin who will be responsible for maintaining the data on the app. The major access will be on his hands. He will be required to give the input of the subjects which are there for the examination chart preparation. The faculty who will be there in campus for the invigilation chart preparation. The list of all the students for the other functions will be a input from his side. All the data can be stored in a database and will be fetched from there, but addition of a new faculty or other such factors will have to be maintained by the admin

2.4 Operating Environment

The operating environment will include the following things:

1. The software will work on all the operating systems. We plan to use visual studio and azure as the platforms. The basic version ie 1.0 will have all the features as mentioned in this srs and more features will be added once it is made functional.

2. We need to link it to the nucleus to fetch the database details.

3. The software can open on all the web browsers which support CGI, Web app, JavaScript, HTML5, Asp.net and will have an easy interface.

4. Most of the features will be accessed by the admin for creating the various schedules.

2.5 Design and Implementation Constraints

We will be having the following constrains

1. The time allotted for the project is limited. We have to complete the project before the end of this semester.

2. The app can be used just by our university. The login uses details from another already running application of our university, nucleus. Thus we can only run this only for our university.

3. There are no memory constrains.

4. The language in which our app will function is English.

5. Our team will be responsible for maintaining the software.

2.6 User Documentation

We will be providing an online manual to our customer which will tell them how to use the software. For the users of this software the instructions will be self-explanatory so we will not need any manual for explaining them the working of this app.

Moreover, a hard copy of the user manual with tutorial on how to use it will be provided to the customer so that they can function it smoothly.

2.7 Assumptions and Dependencies

Assumptions:

1. We are taking an assumption that no teacher will be absent without informing prior to making the sheet.

2. If a debarred student gets his attendance corrected later on after preparation of the sheet we assume to put his name in the seating plan of each class. So that if the person is not there it will remain empty but if the person gets a clear certificate at the end then there will be no problem in the students seating.

Dependencies:

1. Our software depends on NU's nucleus for the login details. So this software should be hack free and should have high security so that nobody except for the required people are able to get into the system and make changes.

2. The details correctness will depend on correct updatation of the databases. As if a student leaves the college his credentials should be removed and this update should

be done to the database to tell the software not to include that person while creating the various charts.

3. External Interface Requirements

3.1 User Interfaces

1. The admin will have to login using their credentials.

2. They will have various functions which they can perform.

3. Each screen will have logout button on top except the login screen.

4. We plan to use the following for our software:

- For front end we plan to use Visual Studio 2015 enterprise version
- For back end we plan to use Azure Storage Explorer which is a Microsoft software.
- For achieving the desired result we plan to use shuffling algorithm which is efficient.

3.2 Hardware Interfaces

Minimum Requirements:
- Processor required 2Ghz
- RAM – 2 GB minimum,
- ROM- 2GB rest TBD

3.3 Software Interfaces

- We are creating software which would run best on windows 10 as a developer mode is available in it. Though our software will be compatible on all OS and would run perfectly on others too.
- Front End we are using Visual Studio 2015 enterprise as it is one of the most widely used and easy tool for creating web apps in asp.net. Moreover it is user friendly. Thus this is our IDE.
- We will be using a shuffling algorithm for obtaining the tasks we need to perform.
- For database we plan to use Microsoft azure as creating a database is simple and manageable in it.

- Moreover we are planning to create our software using Asp.net framework as it is a pen source framework and is user friendly.
- For designing and styling we plan to use HTML5 and CSS.

3.4 Communications Interfaces

- We will be following HTTP standards for communication.
- Our app will be supported by all the browsers.
- It will communicate with the users ie students and faculty using mails.
- There will be an encryption of passwords.
- The app will fetch data from various databases and will use that data for creating the various charts.

4. System Features
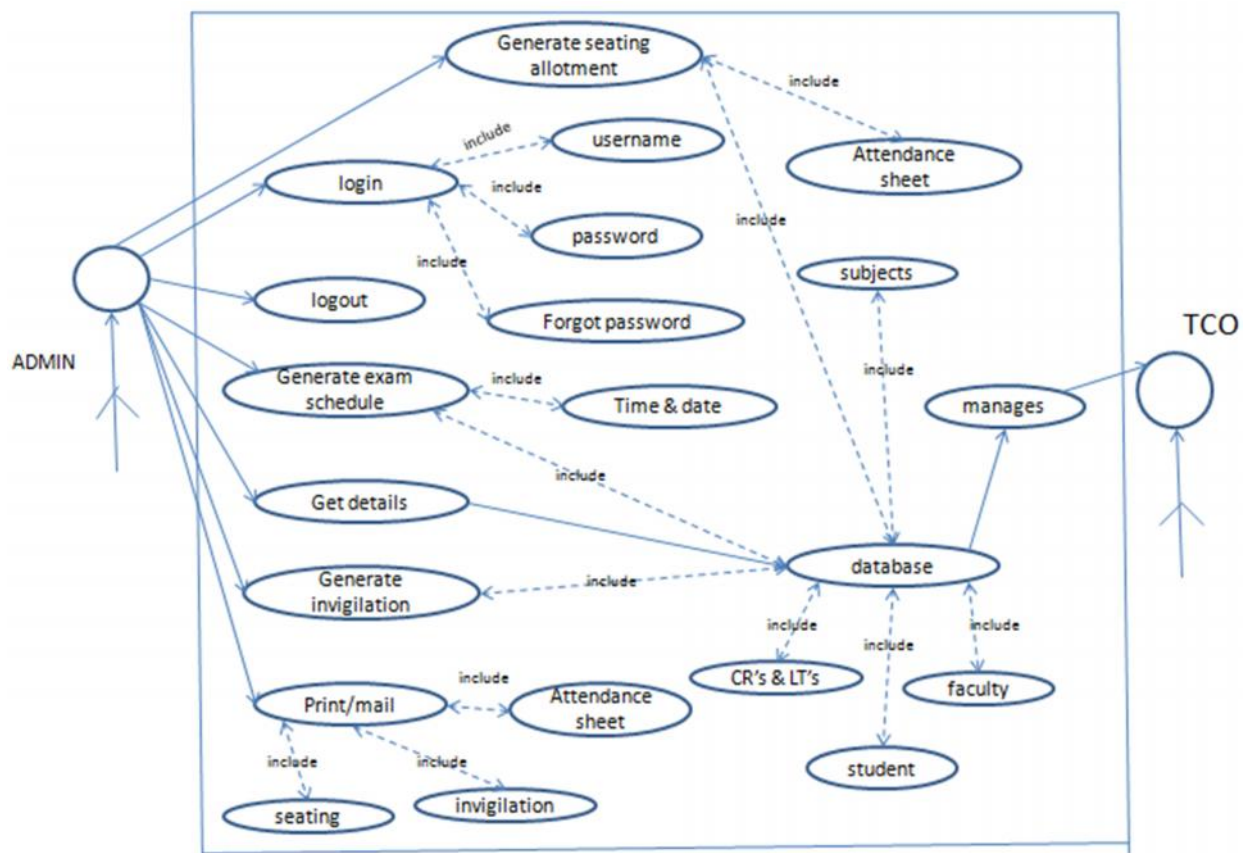
Id	Requirement
U1	Login
U2	User Name
U3	Password
U4	Forgot Password
U5	Generating Exam Schedule
U6	Time and date
U7	Generating Seating Allotment
U8	Attendance Sheet
U9	Generating invigilation duty
U10	Getting details
U11	Logout
U12	Database
U13	Cr's Lt's and labs
U14	Students
U15	Faculty
U16	Print/Mail
U17	Seating
U18	Invigilation
U19	Attendance
U20	Manages
U21	Subject

4.1 Exam Scheduling

4.1.1 Description and Priority

- The schedule of the exam will be generated using this function. It will be fetching details from database as to how many subjects are there. We will be providing the date between which we want to schedule our exams and this function will automatically generate an optimized form of the exam schedule not having any overlaps of students having 2 exams at same time in which they are enrolled.

- The priority of this function will be high as we need an optimized and highly efficient result for the same.

4.1.2   Stimulus

- Stimulus: The admin logins

   Response: A page showing various features is displayed.

   Stimulus: Examination scheduling selected

   Response: A page showing enter time and date appears

   Stimulus: Enter the details and click on create

   Response: An exam schedule is presented as the result.

4.1.3   Functional Requirements

- We will see a page wherein we have to enter time and date as we want of the exams and then when create button is pressed the algorithm ie shuffling algorithm is used and a result showing various subjects at various time schedules is produced.
- TBD further.

4.2 System Feature 2: Invigilation Scheduling

4.2.1   Description and Priority

- The schedule of the invigilators will be generated using this function. It will be fetching details from database as to how many invigilators are there and producing a result as to where there duty is.
- The priority of this function will be high as we need an optimized and highly efficient result for the same.

4.2.2   Stimulus

- Stimulus: The admin logins

   Response: A page showing various features is displayed.

   Stimulus: Invigilation scheduling selected

   Response: A page showing create button appears

   Stimulus: click on create

   Response: An invigilation duty chart is presented as the result. Can be printed or sent through mail to invigilators.

4.2.3   Functional Requirements

- We will see a page wherein we have click on create button for the creation of the invigilation chart. After creation 2 more buttons will be available. One will be print and the other one will be send.

4.3 System Feature 3 : Seating Allotment

4.2.1   Description and Priority

- The seating allotment of students will be generated using this function. It will be fetching details from database as to how many students are enrolled in a subject and then depending on the rooms and labs available their seating allotment chart is produced.
- The priority of this function will be high as we need an optimized and highly efficient result for the same.

4.2.2   Stimulus

- Stimulus: The admin logins

  Response: A page showing various features is displayed.

  Stimulus: Seating allotment selected

  Response: A page showing create button appears

  Stimulus: click on create

  Response: A seating allotment chart is presented as the result. Can be printed or sent through mail to students.

  Stimulus: Another option will be available called attendance sheet

  Response: Attendance sheet according to the seating allotment will be prepared.

4.2.3   Functional Requirements

- We will see a page wherein we have click on create button for the creation of the seating allotment chart. After creation 3 more buttons will be available. One will be print, other one will be send and the last one will be generate attendance sheet.

  The generate attendance sheet feature will prepare a seating allotment according to the students allotted in a room or lab.

Id	Requirement	Description
U1	Login	Used to access the app
U2	User Name	User name of the person who wants to login
U3	Password	Password of the person who wants to login
U4	Forgot Password	If password has been forgotten. Link will be send.
U5	Generating Exam Schedule	It generates the schedule of the exam by taking time and

		date.
U6	Time and date	It is used for generating exam schedule.
U7	Generating Seating Allotment	It generates the seating allotment.
U8	Attendance Sheet	It generates the attendance sheet.
U9	Generating invigilation duty	It generates the invigilation duty chart.
U10	Getting details	Used for accessing database.
U11	Logout	Leaving the app.
U12	Database	Contains all info
U13	Cr's Lt's and labs	Information about the rooms in campus.
U14	Students	Information about the students of various branches and department.
U15	Faculty	Details of faculty.
U16	Print/Mail	Will print and mail the info as per requirement
U17	Seating	Perform printing or mailing of seating plan
U18	Invigilation	Perform printing or mailing of invigilation plan
U19	Attendance	Perform printing or mailing of attendance sheet plan
U20	Manages	Manages the whole database
U21	Subject	Details of all subjects.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

1. The system will be showing only the names of the students who are not debarred in the seating allotment plan which will be sent to the students.

2. The software will help in organizing the exam schedule in such a way such that no students enrolled in different subjects have a clash in their time table. Moreover the pen paper exams will be scheduled before the online exams.

3. The invigilation chart will take care of the fact that there is even distribution of duties among the professors. At times they will have their duty in class rooms and at times in lecture halls.

4. The database shall take less than 8 seconds to process a query.

5.2 Safety Requirements

System should be updated from time to time so that the software remains up to date.

5.3 Security Requirements

Only the admin will be able to edit the database of the software. In order to enter the admin has to enter his credentials which will be unique and only the exam department will have access to most of the features of the software. Moreover, the passwords and login id's that we are using are same as the nucleus password and id so we will be accessing their database for validating the entered details.

5.4 Software Quality Attributes

Availability: The system will be made available to the admin of the exam cell department.

Reliability: We will achieve the reliability of the system by manipulation of the database. Though the system uses wireless system but still using this feature we can make the system reliable at all times.

Reusability: The system shall be able to be reused at all times whenever needed by the department.

Robustness: If the computer stops functioning while creating the various charts then we can restart it or open the app somewhere else and create it as it is just a "one-click" system work.

Updatability: The database used in the system can be updated. Delete and addition of new information can be done on it by the administrator.

Usability: The usability of the system shall be achieved by a user manual and other instructions provided will be self-explanatory.

5.5 Business Rules

The admin will perform the most vital role. He will be responsible for generating the various charts and then using them further. The students and faculty will use it for their own benefit.

6. Other Requirements

Database requirement:

1. The system shall include 4 databases – The student, faculty/staff, exam subjects and the list of rooms.

2. All the database will have various fields distinguishing them from each other.

Appendix A: Glossary

There are many terms used in our project which can be understood well by reading this.

1. IDE - Integrated development environment

2. OS – Operating system

3. System – The software that will be prepared has been termed as a system in our document.

Appendix B: Analysis Models

Appendix C: To Be Determined List

1. The format of the details available with the exam cell.
2. The functional requirements at various stages.