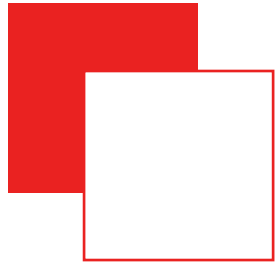


# EMS-Examination Management System



# Functional Overview

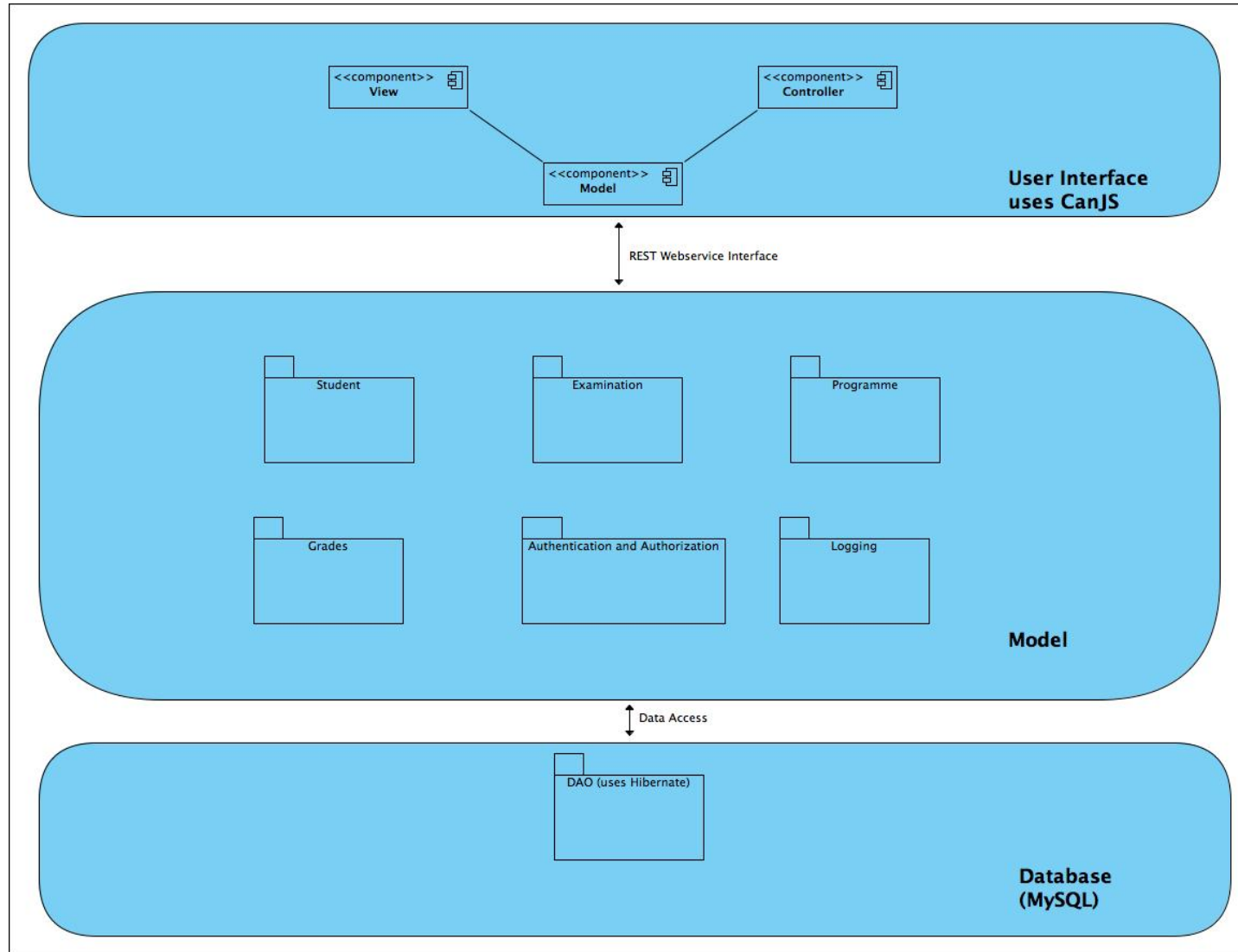
- **User and Role management.**
- **Import Data from ERP system.**
- **Examination Configurations.**
- **Examination Reporting:**
  - Attendance reports
  - Malpractice reports
- **Answer sheet count verification.**
- **Answer sheet coding and decoding.**
- **Mark entry and generation of tabulated mark sheet:**
  - Marks entry (including double entry)
  - Grace marks
  - Grading cut-offs configuration
- **Result verification and publication (Absolute/Relative grading).**
- **Archiving the results.**
- **Payment processing for the evaluators and paper setters.**



# Technology

- **Java for the core Business Logic.**
- **Spring Framework for REST Webservices, Transaction Management, and some miscellaneous activities.**
- **MySQL Database.**
- **Hibernate for ORM.**
- **Javascript MVC using CanJS for the User Interface.**

# Architecture





# User Management

- EMS system will have set of Roles.
- Roles and their authorities are configurable.
- Each user may be allocated one or more Roles.
- To access EMS System the user need to [Login](#).
- Only an authorized user can access the EMS system.
- Based on Role the user will have access to different functions of EMS system.
- Every action of the user will be logged with reference to the applicable role.



# Screen Design Overview

- **There will be tabs to access different functions of EMS.**
- **These tabs will be available based on the user role.**
- **For each function there will be an interface screen (usually a web form).**
- **Using the UI Forms, the user can perform the CRUD operation on data.**
- **CRUD operation will be available to user based on his/her role.**
- **All the activities will be logged in EMS system.**
- **EMS system will provide a report to view the logged activities.**



# Roles in EMS System

- **There are two predefined roles in EMS:**
  - iCalibrator admin
  - QA Cell admin
- **All other roles are completely configurable**
- **The new roles can be created using the role creation screen.**
- **The new users for each role can be added using User-Role Management Screen.**



# Get Data from ERP

- **The EMS system needs to get some core data from the ERP system before the QA Cell can start using the system.**
- **The following data need to be imported from ERP system.**
  - a) Institutional Profile.
  - b) Student Profile.
  - c) Faculty Profile.
  - d) Students' subject registration information.
- **The data to and from the EMS will be done through Push operations, which are authorized by an appropriate role.**
- **The name of the person pushing the data into the ERP will be logged.**





# Syllabus for a Course

- EMS will provide a screen to [add syllabus](#) for a course.
- This information may change periodically.
- The Syllabus of the course will be verified by QA Cell Administrator.



# Examination Configurations

- Once the Colleges and Groups are configured into the system, QA Cell Administrator can create Exams for a course.
- Basic syllabus information is configured directly into the EMS.
- The QA Cell Administrator will have rights to create exams using exam configuration [screen](#).
- Weightages for the College and University Exam components will be configured by the QA Cell personnel.
- Type of grading (Absolute / Relative) is configured for each subject.
- QA Cell Administrator will push this data into ERP system.



# Examination Information from College

- **College ERP system will push following data to EMS system.**
  - Subject-wise Exam registration information
  - Attendance information for each conducted exam
  - College examination marks
  - Information about unregistered students who appeared for exams
  - Malpractice cases



# Backpapers

- **Backpaper cases will be handled by providing for data entry facility.**
- **The EMS system will not track older backpaper records. This will need to be done manually as the number of backpaper cases is expected to be too few for this additional complexity in the system.**



# Conducting Examination

- **Exam Conduction is a manual process.**
- **EMS system will provide**
  - Screen to change the status of exam as conducted or canceled  
Using this screen the college administrator can mark the exam as conducted or canceled in case the exam is canceled. Once the exam is conducted, all the students who opted college as center for exam will be marked present in attendance sheet. If a particular student is absent then college need to fill the attendance using Fill attendance screen.
  - Screen to fill attendance
  - Screen to report malpractices during the exam
  - Verification of College Exams Marks



# Conducting Examination ...

- **EMS system will provide**
  - Enter rechecking or rechecking with answer sheet requests
  - Enter improvement exam requests



# QA Cell Activity

- **Scanning of Bar Code and mapping that against student registration number.**
- **Entry of Semester Marks.**
  - First time Marks Entry.
  - Second (Double) Marks Entry.
  - Manage Rechecking requests (rechecking cannot reduce the grades/marks).
- **Ensuring that the attendance and malpractice information matches the answer sheets received.**
- **In case of any mismatch, send an alarm to the QA Cell administrator.**
- **Override College Exam marks in exception cases**



# Generation of tabulated mark sheet

- Once the marks are entered, and Conducting Board meeting is held, the relative grade scales are entered by the QA Cell Administrator for each subject.
- Grace marks entry.
- Tabular marks sheet for all student are generated.
- The Authorized Users(Exam Controller) can verify the marks.
- Provisional sheet, marks sheet, and graduation certificate need to be printed.
- Hardcopy report of all marks need to be generated.





# Publish Result

- **The results will be available as reports from the system.**
- **The results can also be published on pre-defined templates for the University.**
- **All final results (absolute or relative grades) will be pushed back into the College ERP systems.**
- **The students will have no direct access to the EMS. They can view their results only through the College ERP systems, if the colleges provide that facility.**



# Payment Processing

- Payment Processing screens will allow college administrator to enter evaluation and question paper setting data for faculty members.
- It will also provide reports for payments due to the evaluators and question paper setters.



# Functions in EMS (for Role mapping)

- **Create EMS users and map roles for them.**
- **Add Syllabus information.**
- **Verify Syllabus information.**
- **Define Examination Components and weightages.**
- **Schedule University Exams.**
- **Verification of attendance and malpractice information.**
- **Bar coding answer sheets.**
- **Marks entry (and double entry).**
- **Scrutinizing marks.**
- **Addition of grading cut-offs and grace marks.**
- **Push marks and grades information into the ERP system.**
- **Printing marks sheets and certificates.**
- **Printing payment reports.**



# Login Screen

- Username
- Password

Login

Reset





# Role Creation Screen

- **Role name**
- **A matrix showing functions and for each function a set of permissions (read / modify)**

Save

Cancel



# User Creation Screen

- **First Name**
- **Last Name**
- **Email**
- **Password (with a confirmation password)**
- **Set of roles**

Save

Cancel



# Syllabus Entry Screen

- **Course Name**
- **Year**
- **Semester**
- **L-T-P (Lectures-Tutorial-Practical)**
- **Credits**

Save

Cancel



# Exam Creation Screen

- **Choose Year (current chosen by default)**
- **Choose Semester**
- **Choose Subject**
- **Exam Description**
- **Grading (Absolute / Relative)**
- **College Examination Marks**
- **University Examination Marks (College + University marks add to 100)**

Save

Cancel





# Schedule Exam (University Exams)

- Year
- Semester
- Subject
- Date of Exam

Save

Cancel



# Exam Closure Screen

- **Year**
- **Semester**
- **Subject**
- **Status (Completed / Cancelled)**
- **If cancelled then reason for the same**

Save

Cancel



# Exam Attendance Screen

- **Subject**
- **College**
- **Exam Date**
- **Mark Attendance screen will show all the students who had registered for that course in that college**
- **Attendance will be marked as present by default for all registered students**
- **Radio buttons in each row to mark absent or malpractice case**
- **In case of malpractice, a textbox to enter the remarks**

Save

Reset



# Fill Internal Marks Screen

- **Year**
- **Semester**
- **Subject**
- **College**
- **This will display a table of all students registered for that subject for that year and semester**
- **Marks for each student will be entered in a textbox against the student name/registration number**

Save

Cancel



# Scan BarCode Screen

- Student Registration No
- BarCode

Scan Barcode

- At the end of all scanning, the system will corroborate that the answer sheets scanned all match the attendance and malpractice reports from the college. In case of any mismatch, an alert will be sent to the QA Cell Administrator.



# Fill Semester Exam Marks Screen

- **Barcode**
- **Student Registration No**
- **Entry Type**
  - First entry
  - Second Entry (double entry)
  - Rechecked Marks
  - Grace Marks
- **Marks (if configured to enter question-wise marks, will display a table to do so)**



# Grade cut-offs Screen

Grade  
Cut off percentage

Save



# Verify Examination Marks

- **Year**
- **Semester**
- **Subject**
- **Prints out a report of all marks for the given subject**

Print





# Screen for Evaluation Payment

- Evaluator Name (select or search)
- Subject Name
- No of Copies Checked

Save



# Screen for Question Paper Setting Payment

- **Setter Name (select or search)**
- **Subject Name**
- **No of Question Paper Set**

Save



# Payment Report

- Year
- Semester
- Subject (can choose ALL)
- Evaluation / Paper Setting choice

Submit

**Prints a report showing all evaluators / paper setters, number of papers for them, rate, and amount due to them.**