

Online Examination Empowerment

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Abstract - Online examination preparation tools play a vital role in education. In the new era of computers traditional examination patterns are supplanted by the computer based tools. So as to keep pace with the rapidly changing environment education the tools should be made available to students for making them prepared in the direction of new era of online examination system. For an example we can take Gate (Graduate Aptitude Test in Engineering) examination, which is being conducted online, So a vital concern of students who are targeting to make a triumph in Gate, should be a fastidious approach in preparing for the exam in the same online format as it will be conducted. Moreover, it is being viewed that there are very less number of universities or colleges who actively participate in helping their students for such kind of competitive examination, and as result the students are approaching private organizations for guidelines. "Online examination Empowerment" is a proposed solution and framework to conquest the described toil.

1. INTRODUCTION

Online Examination Empowerment is a web application solution, which provides an environment or can be viewed as a tool for preparation of any online competitive examination.. The framework is developed and tested at "Uttkarsh Research Center- U.V.Patel College of Engineering (UVPCE), Ganpat University". At nascent stage, the framework is developed by targeting the Engineering and science stream's online competitive examination Gate, nevertheless it can be further extended for any stream with an ease. The framework designed in highly robust and flexible manner. It is being developed and tested in object oriented fashion using the programming language Java, in addition, apache struts 1.3 is used for development in MVC (model view and controller) manner, My SQL is used as a backend database, Hibernate 3.2 is used as an object relational mapping tool, and deployment of project is tested on apache tomcat 6. The framework basically deals with 3 entity:

- Administrator
- Coordinator
- Student

(Which are elaborated further with UML (Unified modeling language) Diagrams.)

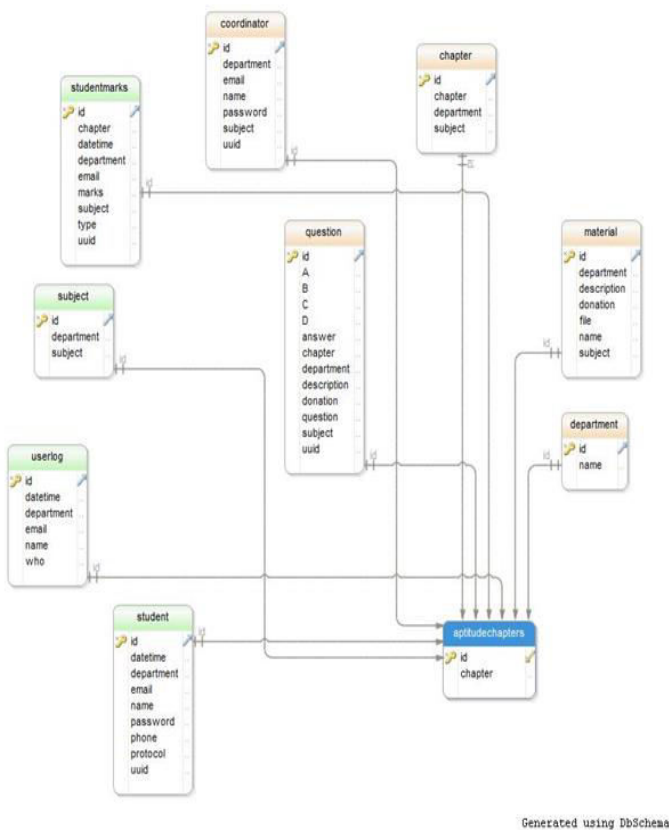
2. Purpose and Scope of Project

Currently, there are many organizations who provide best solution, material and tips in preparation of Gate, but most of them are private and paid organizations, and in addition, most of the information related to Gate is available in scattered manner on World Wide Web. For any online competitive examination, the awareness and strategies for tackling it should be provided to every student, currently there are very few universities who had made an effort for their students to guide and motivate them for preparing Gate and take a step forward in research field. Web application Gate-Empowerment is studied and prepared to address the mentioned point. Mainly the application is to provide instant guidance, motivation, direction, tips, materials, practice examinations and performance evaluations for students of U.V.Patel College of Engineering, who are well desired for making a serious attempt in qualifying Gate. At instance the web application is not created in ubiquitous manner targeting the whole student community, nevertheless it can be further expanded in catholic manner for whole student community. Initially the application is created and tested in the local network of Ganpat University, but further It can be made online for the purpose of digital branding or a contributory service to students. It is been predicted that the students will get number of eclectic benefits using this application, in addition scope of the project is very broad in field of contribution as well, the project is designed in such a way that, faculty or students can individually take a step forward and contribute the sources which they find relevant, which will further be review by the authoritative dignity of application for acceptance, hence it will help to build a countable repo with enhancement of technical & theoretical skills among the users of the application.

3. Data Dictionary and Entity Architecture of the Framework.

3.1 Data dictionary

MySQL is a relational database which is being used in development of proposed solution. Schema of all the tables participating in the framework is as below.



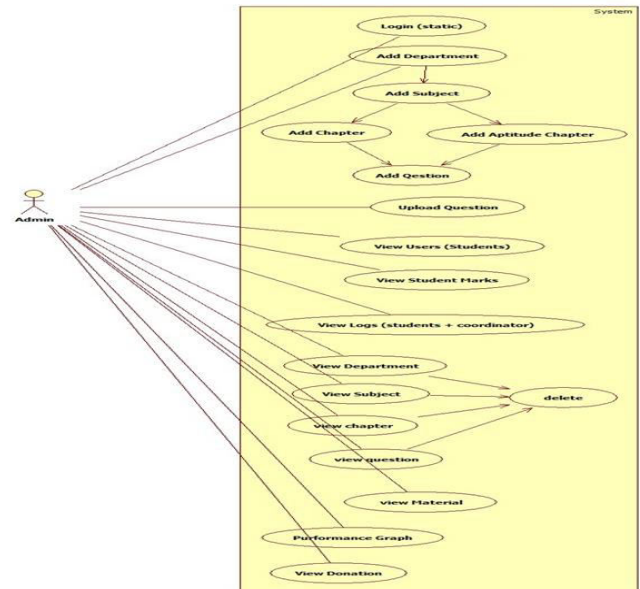
3.1 Entity Architecture

As stated earlier, there are three entities who directly deal with the framework:

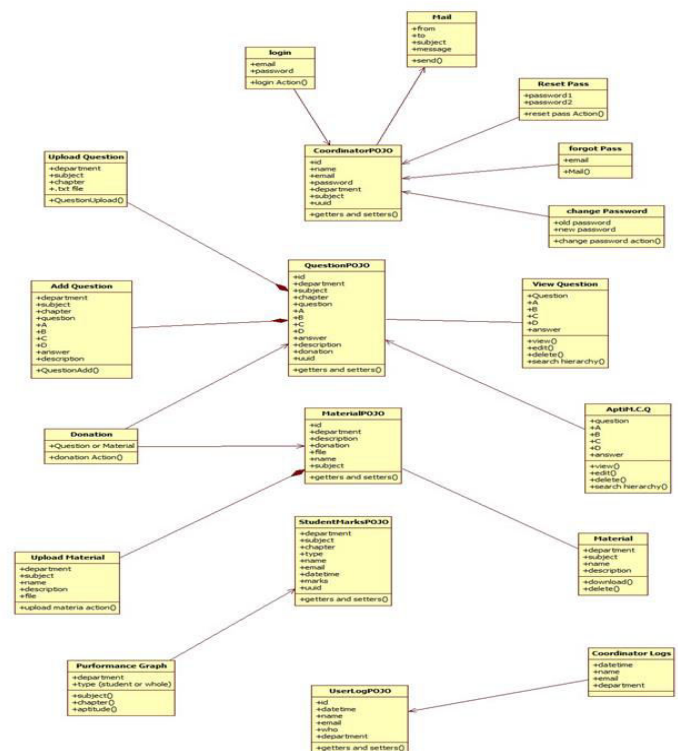
- Administrator: who is a highest authority of the framework, and deals with the most of task related to management of flow.
- Coordinator: Authentication for coordinator is given by the administrator, for flow management of particular area.
- Student: They are the beneficiary entity of the framework, who will use the framework as a tool for preparation of the online examination.

Functionality descriptions are given using use case diagram and architecture description are given using class diagram prepared in Star UML.

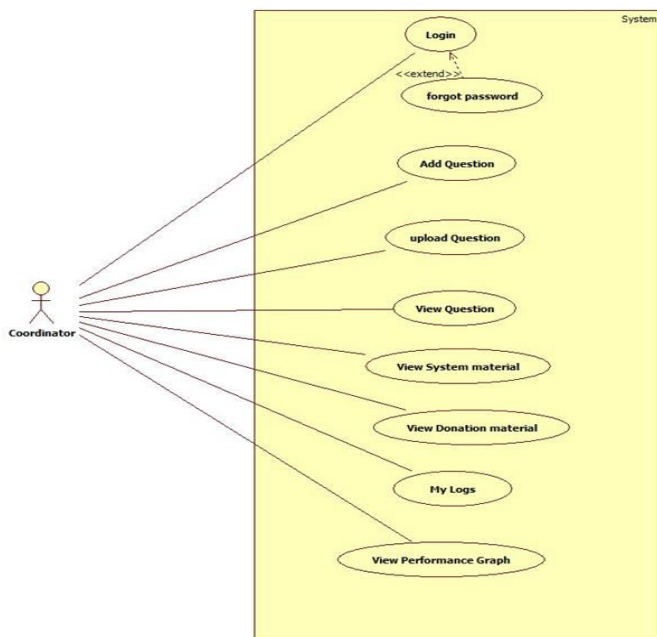
Administrator : (Use-case diagram)



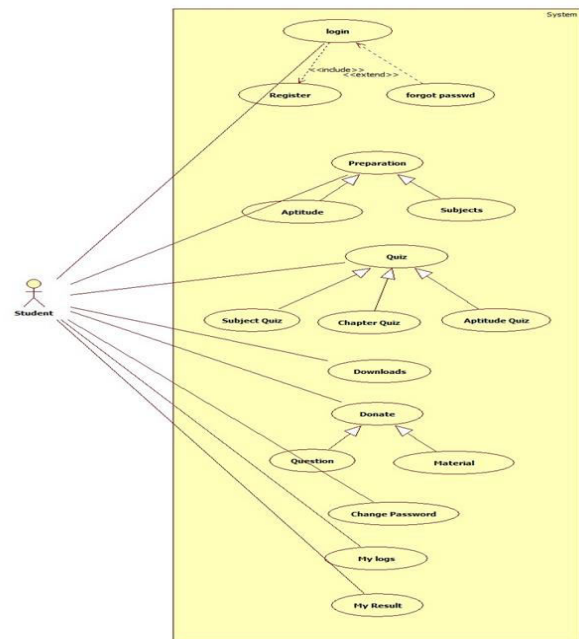
Administrator (class Diagram):



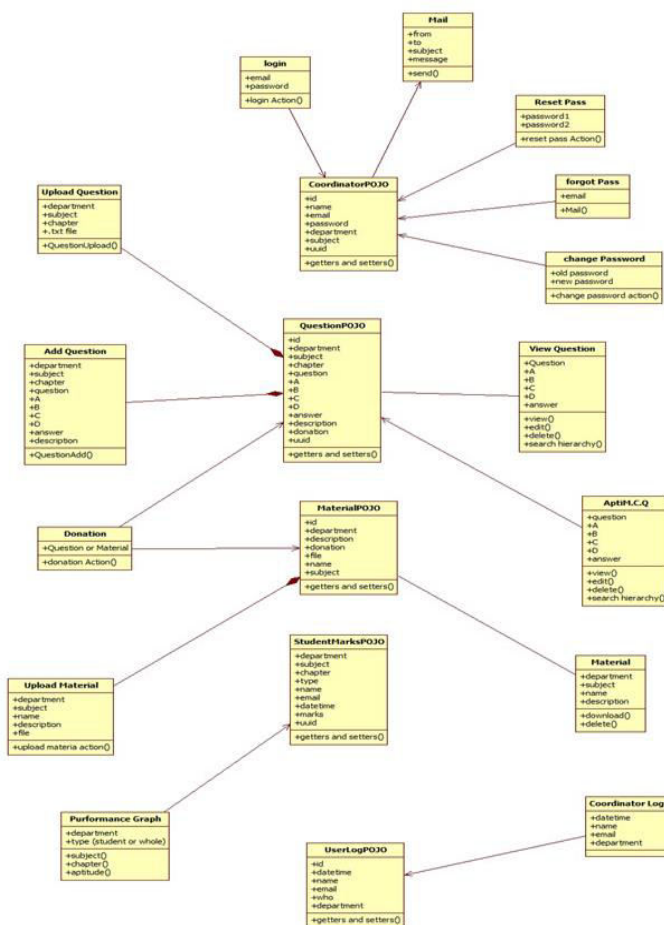
Coordinator (use-case diagram):



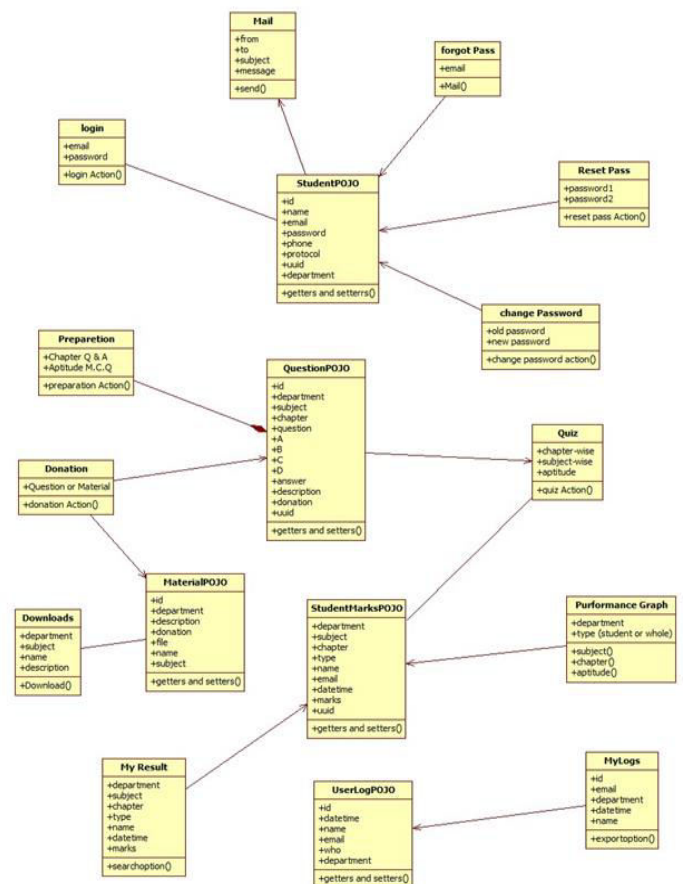
Student (use-case diagram):



Coordinator (class-diagram):



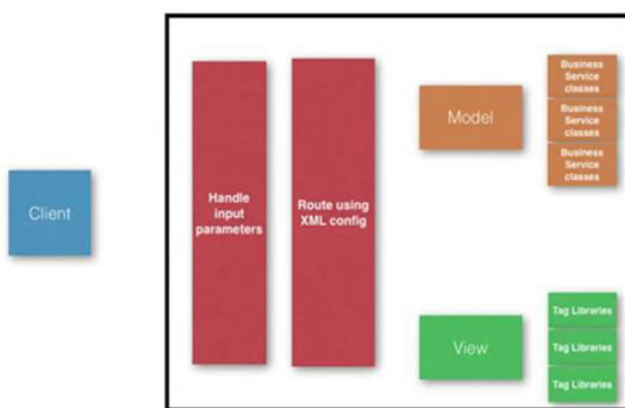
Student (class-diagram):



4. Benefits of using MVC and Object Relational framework

4.1 Struts

Proposed solution is designed in MVC pattern by using apache struts 1.3, which is an open source MVC-Framework for developing J2EE application. Architectural view of any MVC framework could be as following, which is also self descriptive to determine the system flow:



Few of the Potential benefit of using MVC-Struts in proposed system are as following.

Reliability: We are able to change the appearance of the application without recompiling the code of the Model or the Controller components due to they are visibly separated from the presentation and transaction layers.

High reuse and adaptability: The MVC pattern allows us to present our application in different formats, all of them connecting to the same Model and Controller parts. I.e. Web browsers through HTTP protocol or mobile devices through WAP protocol.

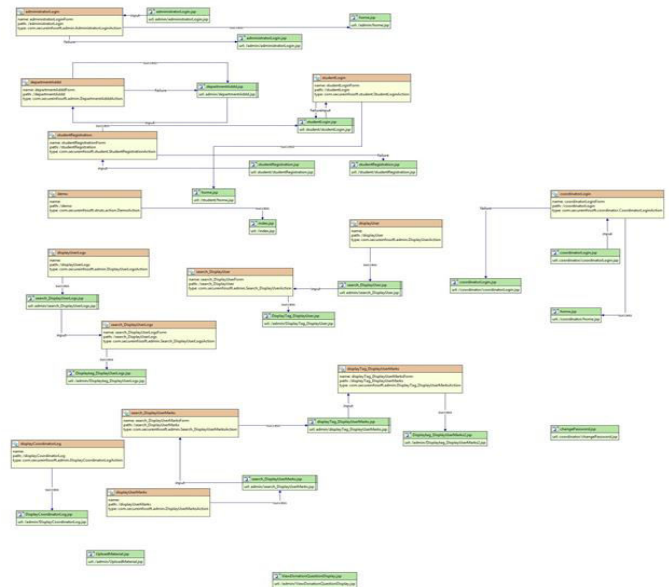
Very low development and lifecycle costs: We can distribute development effort, with the intention that implementation changes in one module of the application do not involve changes to another.

Rapid deployment: Deployment time can be significantly reduced, because programmers focused on the Controller module can work independently of the developers responsible for the View or Model components.

Maintainability: The clearly separation of presentation and business logic become easier to maintain and modify the application.

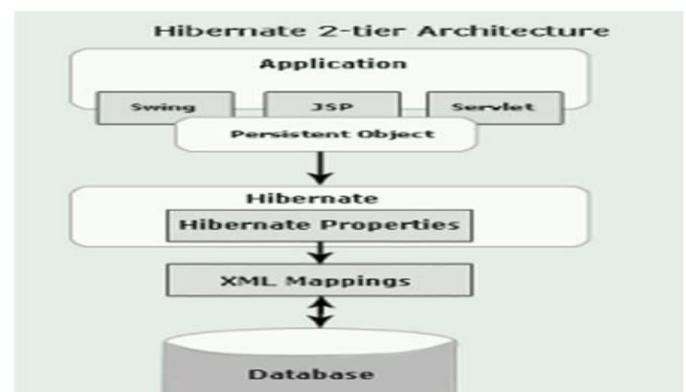
4.2 struts-config.xml file

Struts-config.xml file is mainly used to form bean selection, global forward definition selection, action mapping definition, controller configuration selection and application resource definition. In more generalize manner, it plays role of controller in MVC design as shown in previous figure.



4.3 Hibernate

Hibernate is an object/relational mapping that tries to resolve the mapping mismatch between the object-oriented paradigm of the today's programming languages and the relational databases. Hibernate recognizes typical tasks that developers are required to implement in every project which involves some sort of DBMS, and tries to benefit the developer by automating these by using POJO (plain old java object) class and hibernate annotations. This includes creating, reading, updating and deleting domain objects and handling their dependencies



5. Conclusion

Proposed online examination empowerment is potentially an innovative and cogent solution for described tool. Further, it would likely to be a helpful tool for students in enhancement of their knowledge and practice for online examination. Looking from perspective of University, it also adds values in digital branding and in field of technical contribution. Future enhancements can be performed on the proposed system due to its flexible design of MVC, for an instant example we can think of a mobile application connected to the framework using web service.

REFERENCES

Developed and tested the framework at Uttkarsh Research Centre – U.V.Patel College of Engineering, Ganpat University, under guidance of Prof. Rakesh D. Vanzara (rakesh.vanzara@ganpatuniversity.ac.in) and Prof. Ketan J. Sarvakar (ketan.sarvakar@ganpatuniversity.ac.in).

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