



## **Online Assessment And IP Authentication Server System**

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### ***Abstract:***

*This Journal describes about a new technology that is to be implemented in South Central Railways Vijayawada division i.e., to create online quiz exam for Loco Pilots and Assistant Loco Pilots. This is useful for LP and ALP to develop their grades and also to improve their knowledge. Railways are planning to implement this system because it has many advantages and using this conducting exams in Railways all over India was easy and posting by railways can be faster than before system. This journal describes about the usage of this software and construction of this software.*

## **1.Introduction**

For writing the exam candidates have to first register into this website and enter into it using their login id and password. Then he has to select the Category, their grade, subject and number of questions that they are willing to answer. Here based on their grade number of questions selecting option changes. It has Timing system i.e., based on the no of questions selected time have to be allotted for him. One of the main advantage is IP authentication i.e., we know that for all LPs it is difficult to conduct the exam at one center so different centers are allotted at different places now we have to develop a software which tells the info of the employee whenever he login into the site that information must contain the IP address from where he login into the site, his name, his Id, center of examination and availability status until he logout/completed the exam.

## **2.Why This Software Is Needed?**

### *2.1.Existing System*

There is no existing system at present only the paper work is maintained.

- There is no standard database.
- It is difficult to keep track of updates.
- In case of missing of exam papers/reports there is no backup of the data on whose basis the reports can be reconstructed.
- Every employee gets similar paper in exam.

### *2.2.Proposed System*

The proposed system is providing the previously specified functionalities. It maintains the following information.

- Category names, Language names.
- Questions based on the category and language.
- Test reports.
- IP Addresses of the authorized systems.
- Master, central and slave configurations of the databases.

### **3. User Requirements & Functional Requirements**

- The project must be run in a web server so that the employees can access it through browsers with their unique ID.
- System has to give a chance to select number of questions based on category and language and to support modifications.
- System has to generate statistical reports and test reports of employee's performance compatible with all versions of PDF document processors. Authenticate the computers based on IP Address.
- System has to maintain the database accurately and to provide security to database.
- System must have the local database and the software installed in it to take quiz in offline conditions and to update the data in local database to central database periodically.
- Updates in master database should reflect in all its slaves.

### **4. Minimum Hardware And Software Requirements**

- RAM :256 MB
- CACHE :256 KB
- PROCESSOR :Pentium4
- HARD DISK :40 GB
- OPERATING SYSTEM:WINDOWS XP
- USER INTERFACE : HTML, CSS
- PROGRAMMING LANGUAGE:J2EE
- DATABASE :MYSQL

### **5. Software Design**

The software is designed in such a way that it has 2 platforms they are

#### *5.1. Employers/Clients Platform*

Employee has to login into the system with his unique ID that can be obtained by registering himself and thereby he sends IP request to the server, server validates the request and grant permission to the client and displays login page. The user login into the system using his/her login id and passwords. Server validates the request and displays home page to the user. If he/ she is not an authorized user then error message would be

displayed. After home page appears he can take his test, view the test reports of his/her test, performance reports by category base or by date. He can change his/her password. In order to take the test after login into the website and should select the corresponding category, language and number of questions. After completion of test the score could be stored into the local database. The slave system/local database updates into central database/master system.

NOTE: - The questions for the test would be picks randomly. After completion of test the score would be submitted automatically into the database and sends acknowledgment to the user.

## **6. Administrators Platform**

In order to access the system the administrator has to login into the system. Only administrator has the permission to register the users and set the IP Address. He can view the performance reports of employee by category or by PF Number. He can view test reports and log reports based on category or by date. He add/update/delete questions, category and language. He can change his/her password. He can see the availability of the client through authentication as only prescribed IP addresses have permission to conduct the exam, Admin knows from which IP clients are writing and which employee is at present writing the exam.

## **7. Implementation**

### *7.1. Main Operation*

- Login & registration info.
- Test application.
- Reports.
- IP based authentication.
- Database replications.

### *7.1. Operations Description*

#### 7.1.1. Login & Registration Info

This module is where the user and administrator can perform login activity. In order to access the system one should login into the system using his/her user id and password.

Login and Registration forms are created using HTML language and thereby they are connected to the database using java code. In order to manipulate the data that was entered through registration and login forms they have to be stored in the tables created in the database (Ex: - Oracle, SQL etc.)

#### 7.1.2. Test Application

This module is important because it is the module in which the user can take the test. This could be only accessible to the user. After taking the test the score could be automatically stores into the database and send acknowledgement to the user. Usually coding is done in JAVA and HTML languages and main concept here is while writing test there important things have to be there they are:-

- Code is written in such a way that one has to get random questions i.e., every employees question paper is different from other either in order or in data.
- Timing module is very important such that each question has allotted 1 min and here no of questions selected by client is directly proportional to no of minutes allotted to him and if one minute for a particular question is completed it should automatically skip that question and had to go next question and thereby employee cannot go to previous if he couldn't answer the question in his given time. If total time is completed the test should automatically end and marks scored by him will be displayed.

#### 7.1.3. Reports

This module could be accessible to the administrator and user also. Administrator can view the employee log reports and performance reports based on category or date or PF Number. He can also view the online status of the employee and as well as employee will analyses his/her progress and can improve their knowledge.

#### 7.1.4. IP Based Authentication

In order to access the system, the user system must have registered by the administrator. Initially the user system sends request to the server system and server validates the request and grant access. IP address of certain computers have only authorized to write this examination and those IP address are maintained by the admin.

#### 7.1.5. Database Replications

MY SQL provides a powerful feature i.e., Replication.

### **8. Coding & Designing**

Mainly the coding is done in 3 languages they are HTML, JAVA, SQL these are used to create our needed webpages and to link them to databases. In HTML the coding is easy and important issue we have to kept in mind is to write code in such a way that we the names of functions , objects, attributes used in all 3 languages have to same and they have to be same in created tables also so that we can manipulate them. JAVA language is used here for connecting SQL and HTML through data base coding and SQL for Server side maintenance.

### **9. Testing**

#### *9.1. Testing's Performed*

- Unit Testing
- Integration testing
- Functional Testing

#### *9.2. Unit Testing*

Unit testing is usually conducted as part of a combined code.

#### *9.3. Test Objectives*

All field entries must work properly, should be in correct format, Eradicate duplicate entries, Links should take the user the correct page and should be activated from the identified link and the entry screen, messages and responses must not be delayed.

#### *9.4. Integration Testing*

Software integration testing is the incremental integration testing of two or more integrated software components on a single platform to produce failures caused by interface defects.

E.g. components in a software system or – one step up – software applications at the company level – interact without error.

### *9.5.Functional Testing*

Functional tests provide systematic demonstrations that functions tested are available as specified by the business and technical requirements, system documentation, and user manuals.

Functional testing is centered on the valid input, Functions, Output and Systems/Procedures.

Organization and preparation of functional tests is focused on requirements, key functions, or special test cases.

### *9.6.Criteria Satisfied By Test Cases*

#### 9.6.1.Test cases

First we have performed UI testing whether all the links specified are working accurately or not and to check browser compatibility with Dreamweaver software.

- We have tested the profile page whether the information retrieved and stored correctly.
- We have checked the manage group of employees test taking cases with categories ,languages, Test & Login reports and every module cases are tested and checked whether the required content is displayed or not.
- Modules are integrated and integration testing is again performed to check the overall performance finally black box testing is performed by the third party people to ensure the complete functionality and thereby we can correct the errors and finalize the app.
- CSE HTML VALIDATOR is one of the excellent testing tools to check the HTML validation, link processing etc.

## **10.Advantages And Important Concepts**

- Railways are one of the largest government sector so using man power for such a largest sector is not possible to complete the work with in prescribed time as there are lakhs of employees in railways. So issues like conducting exams, storing results, improving grades by analyzing all the reports for all the employees is very difficult

.so this software used by Vijayawada division in South Central Railways is very useful for government sector and can be extended to any industry by using the concept and changing small changes.

- Keeps Falcon-eye on every employee so that no kind of malpractice can take place during examination.
- Every employee IQ is tested based on their grade so that they can perform better and Random questions are generated for every employee.
- Conducting exam in different places now is not a difficult task just by adding IP address of the system and sending Database to them by online makes the test available in those places and information about the members writing the exam can be verified by the admin in central system through IP authentication. Results are stored by DB and also they can know the score instantly as it displays after the completion of exam.
- Report of each and every employee can be analyzed easily through Bar graphs, Charts by subject wise and date wise so that promotion to upper grade can be decided by the higher officials easily and fastly.
- Time is given so that he can concentrate more on exam and takes it seriously as he cannot check it once again if he loses chance to answer it within the prescribed time and there by he/she will be serious to complete his exam and it also reduces to copy from others as every person is in hurry to complete his exam.
- Exams are conducted in different places for different lingual and different board people so it also has a facility to write exam in their language and their professional background subject so no kind of injustice can be done to anyone.

### **11.Conclusion**

There is no existing system at present only the paper work is maintained. The exams are also conducted on the paper and calculating the marks, percentages and ranks are done manually. There is no standard database. It is difficult to keep track of updates. In case of missing the exam papers/reports all the data is lost as there is no backup of the data on whose basis the reports can be reconstructed .Every employee gets similar paper in exam.

Employee Skill Tester system provides the previously specified functionalities. It reduces the man power and financial burden on the southern railway.



**12.Future Scope**

- This system can be further enhanced by SMS alerts of test results, exam time and date reminders, It will satisfy all the future enhancements so that we can make this application useful to all.
- We can keep the Online Assistance panel for clarifying doubts of newly appointed Loco Pilots and Assistant Loco Pilots so that he can learn quickly and as their doubts are posted directly to admin he can answer regarding their professional career and any other issues .
- We can keep Bio metric options also such as finger prints, retina tracking etc. instead of writing user id and password so that we can avoid malpractice of duplicate entries.

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