

LP/ALP ASSESSMENT SYSTEM IN ETTC

(South Central Railway, Vijayawada)



ISSN: 2455-1910

K.Sudhakar¹, V.Priyanka², R.Pranathi³, M.Manikanta⁴, K.Venkat⁵

¹Associate Professor, ^{2,3,4,5} Project Team

Department of Computer Science & Engineering,

PSCMR College of Engineering & Technology, AP, India,

E-mail: ksudhakar@pscmr.ac.in, priyankavakkalagadda96@gmail.com,

rachakonda.pranathi@gmail.com, m.manikanta096@gmail.com, kunapulivenkat1996@gmail.com

Abstract: Electric Traction Training Centre is a centre which is used to give trainings for the Loco Pilot, Assistant Loco Pilot¹, etc. In the training, the Loco Pilot, etc are used to participate in examination to improve their knowledge. The main aim of the project is “For Examinations which is helpful to Loco Pilots, Assistant Loco Pilots and Guards at Electric Traction Training Centre (ETTC)² of the Vijayawada Division through online.” This project includes the question bank related to Electrical Department in English, Hindi and Telugu. Using this project, the employees can arrange the number of questions for the examination. The question limit is from 5 to 50. For each question the time is arranged as one minute. While taking exam they can skip the queries which they felt difficult and they can use that time to solve next questions. After the completion of the exam, the final report which includes the number of correct and wrong answers and at last total marks obtained. This project is also useful to the admin because he can check the reports of the student performance.

Key Terms: *Loco Pilot, ETTC, Online, Assessments, Authentication*

1. INTRODUCTION: "Indian Railways.... the golden Era" - "South Central Railway was formed on 2nd October, 1966 as the 9th zone of the Indian Railways. In its forty two years of committed service and path breaking progress, South Central Railway has grown to a modern system of mass transportation fulfilling the aspirations of the passengers/customers and carved a niche for itself in Indian Railways system³. On formation of the South Central Railway Vijayawada Division is a part of it. The Vijayawada Division forms a vital link in the network of Indian Railways; it is the threshold

to South India and connects East, South, West and North".

1.1 Existing System: There is no existing system at present only the paper work is maintained.

Drawbacks: 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.

1.2 Proposed System: In the proposed system all the employee details and questions are maintained by the database Administrator

only. The accessing rights are given to him. The administrator gives the questions to answer according to the time, language and subject provided by the user. If the employee skips any question he can skip and answer it at the end. The administrator provides him the result. 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.

1.3 Advantages: It is easy to any stream of people who are of various languages. It saves the time as there is an option of time setter. Faster and accurate result generation.

2. SCOPE OF THE SYSTEM: The project must be run in a web server so that the employees can access it through browsers. The website must be accessed based on the IP-Addresses. Through this project the employee could be able to take the test on the respective category and have a right to choose no. of questions also. He could view his profile information, performance reports and log reports as well. Admin would be able to see the log reports of the employees based on the date and number as well, he could be able to insert, delete and update the questions, language and category as well. He could change the passwords of any employee. He has to register the employees in order to use the system. He can check the employee's performance reports graphically. He has right to restrict any computer from accessing the website based on the IP Address. Each and every computer installed must have the local database and the system installed in it so that anyone could use the system probably when there is a problem with the internet, whenever the internet is established the local database will update the information of the employees to the central database so that the CE can check the performance reports of each and every employee. Master Database is also provided so that updates in master could also be reflected in all of the slaves.

3. SYSTEM DESIGN: The design phase begins with the requirements specification for the software to be developed. Design is the first step to moving from the problem domain toward the solution domain. Design is essentially the bridge between the requirement specification and the final solution for satisfying the requirements. It is the most critical factor affecting the quality of the software.

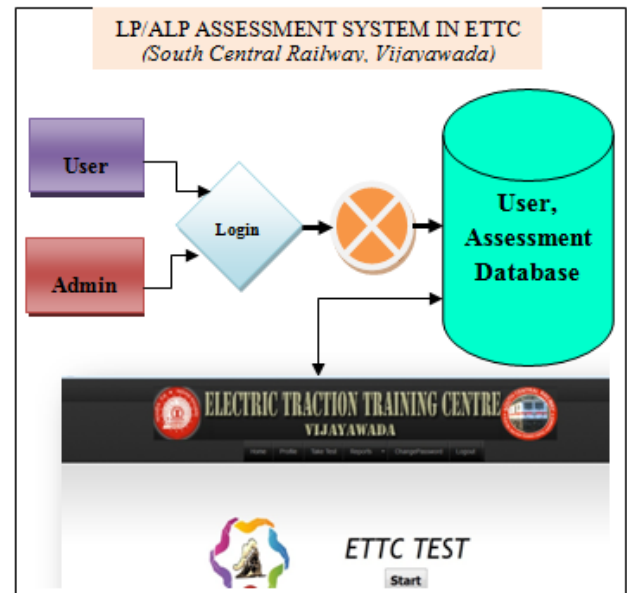


Figure 3.1: Design Diagram of LP/ALP ASSESSMENT SYSTEM IN ETTC

4. IMPLEMENTATION & TESTING: We have used Java Script- Client Side Programming, HTML⁴, and CSS⁵ for front end support for clear and understandable interface to the user. The J2EE⁶ provides an API⁷ where XML⁸ can also be applicable to override annotations or to deviate from defaults. The database connectivity includes JDBC⁹ with MySQL. Software testing is a critical element of software quality assurance and represents the ultimate review of specification, design and coding. During testing, the program is executed with a set of test cases and the output of the program for the program is evaluated to determine if the program is performing as it is expected to perform.

5. TESTING¹⁰: In order to make sure that the system does not have errors, different levels of testing strategies that are applied at differing phases of software development are:

5.1 Unit Testing: Unit testing is usually conducted as part of a combined code. Test strategy and approach: Field testing will be performed manually and functional tests will be written in detail.

Test objectives:

- All field entries must work properly.
- Pages must be activated from the identified link.
- The entry screen, messages and responses must not be delayed.

Features to be tested:

- Verify that the entries are of the correct format
- No duplicate entries should be allowed

All links should take the user to the correct page.

TEST CASE ID	TESTCASE OBJECTIVE	TEST STEPS	EXPECTED OUTPUT	ACTUAL OUTPUT	STATUS
1	Successful login	Enter valid login credentials	User is able to login to respective page	As expected	Pass
2	Unsuccessful login	Enter invalid credentials	Invalid username/ password	As expected	Pass
3	Login button	Click login button	Respective home page will be displayed	As expected	Pass
4	Reset button	Click reset button	All the entered credentials will be reset	As expected	Pass

Fig: 5.1 Unit Testing on Login Page

TEST CASE ID	TESTCASE OBJECTIVE	TEST STEPS	EXPECTED OUTPUT	ACTUAL OUTPUT	STATUS
1	Login to home page	Click on menu to view the pages	Main navigation menu and dropdown links take user to the sections	As expected	Pass
2	Click on registration	-	Registration page is displayed on the screen	As expected	Pass
3	Click on take test	Select require credentials	Test page is displayed	As expected	Pass
4	Click on report	-	Report graph will be displayed	As expected	Pass

Fig: 5.2 Unit Testing on HOME page

5.2 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. The task of the integration test is to check that components or software applications are without error.

TEST CASE ID	TESTCASE OBJECTIVE	TEST STEPS	EXPECTED OUTPUT	ACTUAL OUTPUT	STATUS
1	Check the interface link between the login and home pages	Enter the login credentials and click on the LOGIN button	To be directed to the respective home page	As expected	Pass
2	Registration details	Register the user and click on submit button	Registered details of user must be displayed	User details are displayed in the new page	Pass
3	Logout button	Click on the logout	Login page should be	Login page is	Pass

		button	displayed	displayed	
4	IP address	Click on the IP address	IP address page must be displayed	IP address page is displayed	Pass

Fig: 5.3 Integration Testing

5.3 Acceptance Testing: Test cases should be selected so that the largest number of test cases of equivalence class is exercised at once. It is the process of finding the errors and missing operations and also a complete verification to determine whether the objectives are met and the user requirements are satisfied.

TEST CASE ID	TESTCASE OBJECTIVE	TEST STEPS	EXPECTED OUTPUT	ACTUAL OUTPUT	STATUS
1	Username	Valid	Credential can be entered	As expected	Pass
		Invalid	Incorrect Username: It must be in alphanumeric characters	As expected	Pass
2	Password	Valid	Credential can be entered	As expected	Pass
		Invalid	6 or more characters needed	As expected	Pass
3	Language	-	Choose the respective language from the drop down option	As expected	Pass
4	Number of questions	-	Choose the respective number of questions from the drop down option	As expected	Pass
5	Category	-	Choose the respective category from the drop down option	As expected	Pass

Fig: 5.4 Acceptance Testing

5.4 Test Cases¹¹: Test cases that tell us something about the presence or absence of classes of errors, rather than an error associated only with the specific test at hand.

1. First we have performed UI¹² testing whether all the links specified are working accurately or not.
2. We have tested the profile page whether the information retrieved and stored correctly.
3. We have checked the manage group of employees test taking cases with different categories and different languages.
4. We have checked the manage group of employeestest reports and login reports cases with different categories and languages.
5. Similarly for each and every module the required cases are tested and checked whether the required content is displayed or not. This gives the ending of testing.
6. Then after the Unit testing all the modules are integrated and are seen as single unit. Then

again integration testing is again performed to check the overall performance of the app. This can ensure the user whether the same functionality is seen as a single unit or not.

7. Then finally black box testing is performed by the third party people to ensure the complete functionality as a whole which can further be useful in evaluating the quality of the system. So by the end test cases we can correct the errors that are generally arisen and can be further processed to achieve a complete functional working unit.

6. RESULTS: After successful completion of the project the following results are observed.

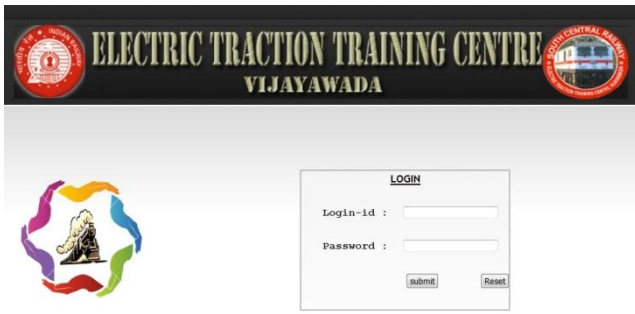


Fig: 6.1 LOGIN Page



Fig: 6.1.2 Admin Registration Page

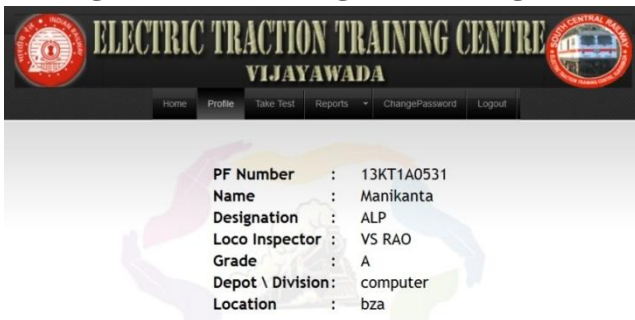


Fig: 6.2.2 Employee Profile

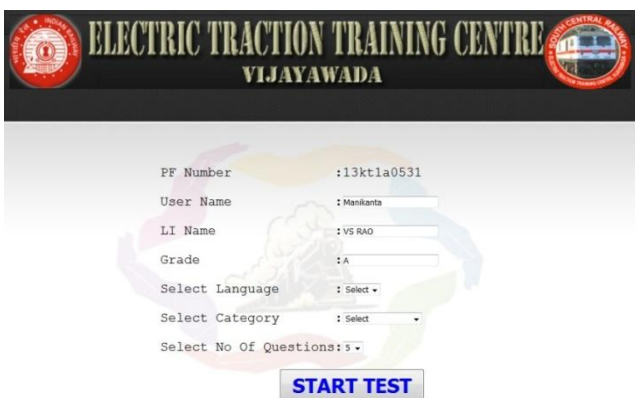


Fig: 6.2.4 Employee Test Details



Fig: 6.2.6 Right Answer

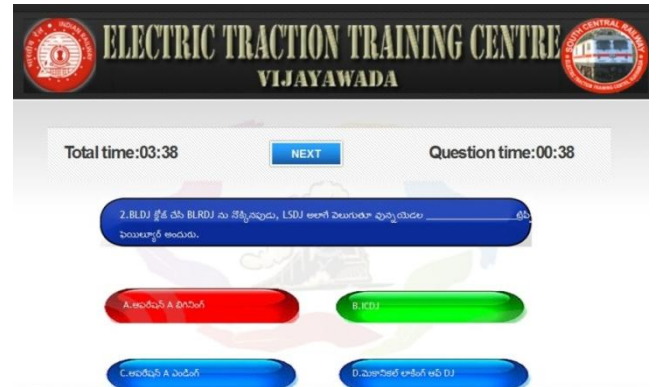


Fig: 6.2.7 Wrong Answer

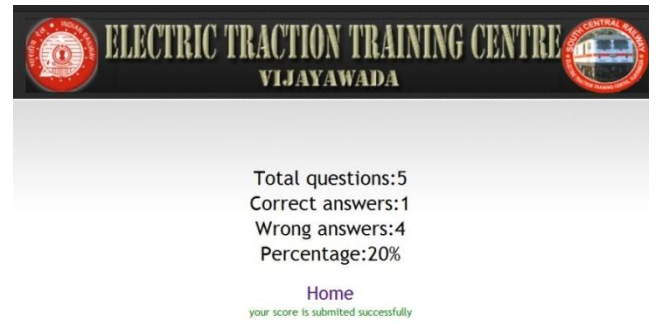


Fig: 6.2.8 End Test Report

7. CONCLUSION: 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. It maintains the 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. It reduces the man power and financial burden on the southern railway. It also reduces the work load on the officials, and helps the LP and ALP to get practiced for their exam.

8. REFERENCES:

1. https://en.wikipedia.org/wiki/Railway_crew_management_in_India
2. <http://www.kportal.indianrailways.gov.in/index.php/training-institutes>
3. <http://irctc.co.in>
4. <http://www.javatpoint.com/html-tutorial>
5. <http://www.htmldog.com/guides/css/beginner/>
6. <http://www.javaranch.com/journal/2002/10/J2EE.html>
7. <https://techterms.com/definition/api>
8. <http://www.javatpoint.com/xml-tutorial>
9. <https://docs.oracle.com/javase/tutorial/jdbc/basics/>
10. <http://softwaretestingfundamentals.com/>
11. <http://softwaretestingfundamentals.com/test-case/>
12. https://www.tutorialspoint.com/software_testing_dictionary/use_interface_testing.htm

ABOUT AUTHORS: PROJECT BATCH of CSE.



Mr.K.Sudhakar, Associate Professor of CSE, His Research Interests are Cloud Computing, BigData, Software Engineering



Ms.V.Priyanka, Project Student of CSE, Her interests are Java Script Programming, MySQL Databases.



Ms.R.Pranathi, Project Student of CSE, Her interests are Java Programming, MySQL Databases.



Mr.M.Manikanta, Project Student of CSE, Her interests are Software Engineering, Open source Databases.



Mr.K.Venkat, Project Student of CSE, His interests are Software Engineering, Databases.