



# **The Report Based On** **Blackboard-Virtual Education system**

**Software Quality & Testing**

**Submitted By: Group-8**

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# Blackboard-Virtual Education system

## Problem statement:

As a fast population growing nation with a limited resource this is very difficult to ensure quality education all over the country especially, to the remote area. On the other hand the lack of skilled teachers, this problem remains unsolved. As a capital-based country, everyone wants to stay here to keep up to date their selves. People who want to provide or share knowledge with others they do not get a good platform. Taking education resource from the internet are not that trustworthy all the time. For research or higher educational purpose, there are only a few websites or organization which are really out of hand because of cost.

## Solution:

A web application can play a suitable role as a platform where can users, teachers or content providers can stay connected with each other by registering with this site. Online classes, seminars, conferences, a tutorial can be shared via this site. For remote areas only one pc along with a projector with an internet connection, a whole class can take a lecture from this site. Teachers can give special lessons to the student at a specific time. For higher studies purposes, professors can organize seminars or conferences via meeting options. For business people, they can run their important meeting and promotion by this website.

There will be a super admin and a group of an admin who will verify all users and content providers however privileged professors and people get the highest respect and joining invitation.

**Problem Domain:** As this system solving education problem of remote area and others important features like knowledge and educational resource sharing that is why this project is in under Category A.

**Technology option:** Blackboard is a web application developed with Laravel, MySQL, JavaScript and html5 following MVC.

## **System Description:**

The system starts by registering and then logging into in for everyone accepts super admin. Admins will manage all managerial activities like verifying users, contents, and contents creators and control the rules and regulations of the system, but also they can organize meetings, seminars, and conferences by using specials tools Blackboard, which has writing, drawing, and recording and presentation tools like Contributors. They can ban user as well. Contributors can use specialized tools and have access control to their resources. They can generate unique link of any private or public rooms.

Authorized users can take resources, join classes, attends conferences, seminars, and meetings. They can also share files and notes via the link. This system mainly for this authorized user who is from the remote area; however, any students can register to get these facilities. Visitors no need to login to visit this site yet, they can only get the public resource and information.

This system also can use as commercial purpose where they can marketing their product just buying subscription. They can donate to educational purpose as a sponsors.

## **System Specifications:**

### **Functional Requirements:**

- Logging, Log out, Register module for super admin, admin, contributor, authorized users.
- Profile Modification Module.
- Users and Content Verification module.
- Live online classes, conferences, Seminar, meeting module.
- Special tools module.
- Link Generate module.
- Invitation sending module.
- Resource and Multimedia sharing module.
- Privacy control module.
- Sponsors transaction control module.

### **Non-Functional Requirements:**

- Performance
- Usability
- Efficiency
- Reliability.
- Recoverability
- Maintainability

## Test Plan:

**Test Plan Identifier: Blackboard-Virtual Education System.**

## Test Case for Functional requirements:

### Test Case 1: Registration Module

Project Name: Blackboard-Virtual Education System			Test Designed by: Sadia Farzana	
Test Case ID: FR_1			Test Designed date: 19-11-19	
Test Priority (Low, Medium, High): High			Test Executed by: Sadia Farzana	
Module Name:Registration			Test Execution date:25-11-19	
Test Title:Verify registration system with valid email address .			Testing level: Unit tasting & Integration testing.	
Description:Test the website’s registration page				
Precondition:Visitor has a valid gmail id				
Dependencies:N/A				
Test Steps:	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the site 2.Enter a valid gmail id 3.Enter a unique user name 4.Ente a 8 digit password 5.Click sign up.	Gmail id: <a href="mailto:something@gmail.com">something@gmail.com</a> Username:usr123 Password:qazpmk42	Visitor  Should register to the system.		
Post Condition: User is validated with database and successfully registered to the system.				

## Test Case 2: Login Module

Project Name: Blackboard-Virtual Education System			Test Designed by: Sadia Farzana	
Test Case ID: FR_2			Test Designed date: 19-11-19	
Test Priority (Low, Medium, High): High			Test Executed by: Sadia Farzana	
Module Name:Login session			Test Execution date: 25-11-19	
Test Title:Verify login with a valid username and password			Testing level: Unit tasting & Integration testing.	
Description:Test the website’s login page				
Precondition:User has a valid user name and password				
Dependencies:N/A				
Test Steps:	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
2. Go to the site 2.Enter username 3.Enter password 4.Click submit	Username:user123  Password:78542	User should login into the application		
Post Condition: User is validated with database and successfully login to account. The account session details are logged in the database				

## Test Case 3: Log out Module

Project Name: Blackboard-Virtual Education System			Test Designed by:Sadia Farzana	
Test Case ID: FR_3			Test Designed date:	
Test Priority (Low, Medium, High): High			Test Executed by: Sadia Farzana	
Module Name:Logout			Test Execution date:25-11-19	
Test Title:Verify logout page			Testing level: Unit tasting.	
Description:Test the website’s logout page				
Precondition:Visitor has to log in to the site				
Dependencies:N/A				
Test Steps:	Test Data	Expected Results	Actual Results	Status (Pass/Fail )
1. Go to the site 2.Follow login proccess 3.Click logout. 4.Destroy session and cookies.	Gmail id: <a href="mailto:something@gmail.com">something@gmail.com</a>  Username:usr123  Password:qazpmk42	Visitor  Should log out the system.		
Post Condition: The user must be logged out after the run, which means any stated that have set while user was logged in must be undone, such as authentication cookies for example.				

## Test Case 4: Profile Modification Module

Project Name: Blackboard-Virtual Education System			Test Designed by:Sadia Farzana	
Test Case ID: FR_4			Test Designed date: 19.11.19	
Test Priority (Low, Medium, High): High			Test Executed by: Sadia Farzana	
Module Name:Profile Modification Module			Test Execution date:25-11-19	
Test Title:Testing profile modifications			Testing level: Unit tasting & Integration testing.	
Description:Checking user profile modifications.				
Precondition:User should have a valid profile.				
Dependencies:N/A				
Test Steps:	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Data insert to profile. 2. Data update , modify and delete.	Users informations.	Profile should be modified successfully.		
Post Condition:N/A				



## Test Case 5: Users Verification module.

Project Name: Blackboard-Virtual Education System			Test Designed by:Sadia Farzana	
Test Case ID: FR_5			Test Designed date: 19.11.19	
Test Priority (Low, Medium, High): High			Test Executed by: Sadia Farzana	
Module Name:User verification module			Test Execution date: 25-11-19	
Test Title:Verify users.			Testing level: Unit tasting & Integration testing.	
Description:Test the website’s users verification				
Precondition:Visitor should have account.				
Dependencies:N/A				
Test Steps:	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1.matching user information from the database.	User information.	User should be verified.		
Post Condition:N/A				

## Test Case 6: Content Verification module.

Project Name: Blackboard-Virtual Education System			Test Designed by: Sadia Farzana	
Test Case ID: FR_6			Test Designed date: 19.11.19	
Test Priority (Low, Medium, High): High			Test Executed by:Sadia Farzana	
Module Name:Content verification			Test Execution date:25-11-19	
Test Title:Verify contents			Testing level: Unit testing, Integration testing, and System testing.	
Description:Test the website’s users verification				
Precondition:Visitor has a valid gmail id				
Dependencies:N/A				
Test Steps:	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1.Content creator creates content.  2.Admin and moderator will check the quality of a content.	1.Lecture, notes, slides,videos.	Good quality contents.		
Post Condition: Content is verified.				

## Test Case 7: Online classes Module

Project Name: Blackboard-Virtual Education System			Test Designed by:Sadia Farzana	
Test Case ID: FR_7			Test Designed date: 19.11.19	
Test Priority (Low, Medium, High): High			Test Executed by: Sadia Farzana	
Module Name:Online classes			Test Execution date:25-11-19	
Test Title:Online classes module			Testing level: Unit testing, Integration testing, and System testing.	
Description:Test online classes which are taken by professors and lecturers.				
Precondition:The Professors and lecturers who will take the class have to be qualified and contents should be verified.				
Dependencies:N/A				
Test Steps:	Test Data	Expected Results	Actual Results	Status (Pass/Fail )
1. Check the subject on which the class will be taken.  2. Check the available teachers.  3. Check the devices, internet connection and procedure of live classes.	1. Contents of classes.  2.Specialized tools.	Good to go.		
Post Condition: N/A				

## Test Case 8: Live Online Conferences and Seminar Module

Project Name: Blackboard-Virtual Education System			Test Designed by:Sadia Farzana	
Test Case ID: FR_8			Test Designed date: 19.11.19	
Test Priority (Low, Medium, High): High			Test Executed by: Sadia Farzana	
Module Name: Online conferences and seminar module			Test Execution date:25-11-19	
Test Title: Testing online conferences and seminars			Testing level: Unit testing, Integration testing, and System testing.	
Description: Testing online conferences and seminar which will be organized by admin.				
Precondition: Specialized tool which will be used for conferences and seminars has to be verified.				
Dependencies: N/A				
Test Steps:	Test Data	Expected Results	Actual Results	Status (Pass/Fail )
1. Checking connection establishment. 2. API working status. 3. Status of privacy control module. 4. Status of special tools module.	1. Contents of conferences and seminars. 2. Specialized tools.	1.Conferences and seminars has been taken well.		
Post Condition: N/A				

## Test Case 9: Live Online meeting Module

Project Name: Blackboard-Virtual Education System			Test Designed by:Sadia Farzana	
Test Case ID: FR_9			Test Designed date: 19.11.19	
Test Priority (Low, Medium, High): High			Test Executed by: Sadia Farzana	
Module Name:Online meeting module			Test Execution date:25-11-19	
Test Title:Testing online meeting			Testing level: Unit testing, Integration testing, and System testing.	
Description: Testing online meetings which will be organized by admin using specialized tool.				
Precondition:				
Dependencies:N/A				
Test Steps:	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1.Checking connection establishment. 2. API working status. 3. Status of privacy control module. 4. Status of special tools module.	1.Contents of meeting. 2.Specialized tools.	1.Meeting held well.		
Post Condition: N/A				

## Test Case 10: Link generation module

Project Name: Blackboard-Virtual Education System			Test Designed by:Nafis Mustafa	
Test Case ID: FR_5			Test Designed date: 19-11-19	
Test Priority (Low, Medium, High): High			Test Executed by: Nafis	
Module Name:Link generation module			Test Execution date:25-11-19	
Test Title:Testing link generation module.			Testing level: Unit testing, Integration testing, and System testing.	
Description:generation link				
Precondition:N/A				
Dependencies:N/A				
Test Steps:	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Unique random link code generating or not  2. Link privacy control  3. Registered link control.	1. Unique id number.  2.Unique private or public address.			
Post Condition: N/A.				

## Test Case 11: Special tool module

Project Name: Blackboard-Virtual Education System			Test Designed by:Nafis Mustafa	
Test Case ID: FR_6			Test Designed date:19-2-19	
Test Priority (Low, Medium, High): High			Test Executed by: Nafis	
Module Name:Special tool module			Test date:19-2-19	
Test Title:Test special tools.			Testing level: Unit testing, Integration testing, and System testing.	
Description:Verify tool which will be used in online classes				
Precondition:N/A				
Dependencies:N/A				
Test Steps:	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Drawing tools 2. Recording 2d and 3d sketch 2. All multimedia are working correctly	Check all the recording apps and drawing tools			
Post Condition: N/A				

## Test Case NF12: Multimedia sharing module

Project Name: Blackboard-Virtual Education System			Test Designed by: Sr Shuvo	
Test Case ID: NFR_12			Test Designed date: 19-11-19	
Test Priority (Low, Medium, High): High			Test Executed by: Sr Shuvo	
Module Name: Multimedia Sharing module			Test Execution date: 25-11-19	
Test Title: Testing multimedia and resource sharing +9807			Testing level: Unit testing, Integration testing, System Testing & Acceptance testing	
Description: Checking multimedia and resource sharing				
Precondition: System should be ready				
Dependencies: NA				
Test Steps:	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Checking connection between users.  2. Successful and desired resource sharing.  3. Checking resource sharing by drag and drop.  4. Sharing through upload files and download from url.  5. Checking Database file system.	NA	Visitor must able to share resources seamlessly.		
Post Condition:N/A				



## Test Case F13: Sponsor transaction control module

Project Name: Blackboard-Virtual Education System			Test Designed by: Sr Shuvo	
Test Case ID: FR_13			Test Designed date: 19-11-19	
Test Priority (Low, Medium, High): Critical			Test Executed by: Sr Shuvo	
Module Name: Transaction control module			Test Execution date: 25-11-19	
Test Title: Testing secure and successful transaction			.Testing level: Unit testing, Integration testing & Acceptance testing.	
Description: Checking secure and successful transaction of sponsor and donator				
Precondition: System should be ready				
Dependencies: NA				
Test Steps:	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Checking the status of payment gateway.  2. Status of privacy control module.  3. Money transferring to accurate account or not.	Requesting by random account number.  Sending delete , update query.	All transaction must be safe and recorded.  Secured from hacker		
Post Condition: N/A				

## Test Case F14: Privacy module control

Project Name: Blackboard-Virtual Education System			Test Designed by: Sr Shuvo	
Test Case ID: NFR_15			Test Designed date: 19-11-19	
Test Priority (Low, Medium, High): High			Test Executed by: Sr Shuvo	
Module Name: Privacy module control			Test Execution date: 25-11-19	
Test Title: Testing privacy of users and resources			Testing level: Unit testing, Integration testing, System Testing & Acceptance testing	
Description: Checking privacy of users and resources				
Precondition: System should be ready				
Dependencies: NA				
Test Steps:	Test Data	Expected Results	Actual Results	Status (Pass/Fail )
1. Checking restriction and prevent an expected users.  2. Status of Session and cookie working.  3 .Securing by CSRF token working or not.  4.User control module working correctly or not	Requesting by random url to enter.  Random Sql statement.	All users can control their privacy.  Protecting most important files like journal and publications.		
Post Condition:N/A				

# Test Case for Non-functional Requirements:

## Test Case NF1: Performance

Project Name: Blackboard-Virtual Education System			Test Designed by: Sr Shuvo	
Test Case ID: NFR_1			Test Designed date: 19-11-19	
Test Priority (Low, Medium, High): High			Test Executed by: Sr Shuvo	
Module Name: Performance			Test Execution date: 25-11-19	
Test Title: Testing User experience, speed and response time			Testing level: Acceptance testing.	
Description: Checking User experience, speed and response time				
Precondition: System should be ready				
Dependencies: NA				
Test Steps:	Test Data	Expected Results	Actual Results	Status (Pass/Fail )
6. Checking response time  7. Checking fault tolerance rate.  8. Ensuring security.  9. Correct interconnection.  10. Insuring Complete and efficient UI	Current UMI And SRS documents.  Registered Information.  Random load	Visitor must satisfy with system performance		
Post Condition: Most Efficient and Improved performance.				

## Test Case NF2: Usability

Project Name: Blackboard-Virtual Education System			Test Designed by: Sr Shuvo	
Test Case ID: NFR_2			Test Designed date: 19-11-19	
Test Priority (Low, Medium, High): High			Test Executed by: Sr Shuvo	
Module Name: <b>Usability</b>			Test Execution date: 25-11-19	
Test Title: Testing User Friendliness			Testing level: Acceptance testing.	
Description: Checking UI design and Web Content				
Precondition: System should be ready				
Dependencies: NA				
Test Steps:	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
11.Checking Font, Button size and order. 12.Checking image. 13.Checking Response Time. 14.Checking correct redirection. 15.User getting information within 20 minutes or not 6.Stress testing, logging from multiple devices.	Current UMI And SRS documents.  Registered Information.	Visitor Should find desired information within 20mints from this site without any difficulties from the system.		
Post Condition: User friendly and eye catchy system.				

## Test Case NF3: Efficiency

Project Name: Blackboard-Virtual Education System			Test Designed by: Sr Shuvo	
Test Case ID: NFR_3			Test Designed date: 19-11-19	
Test Priority (Low, Medium, High): High			Test Executed by: Sr Shuvo	
Module Name: Efficiency			Test Execution date: 25-11-19	
Test Title: Testing Efficiency			Testing level: Regression & Acceptance testing.	
Description: Checking consumption rate of resource.				
Precondition: System should be ready				
Dependencies: NA				
Test Steps:	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Checking the consumption rate of resource. 2. Make free the resource or memory of unused features. 3. Remove too much dependencies. 4. Remove unused and not referenced variables. 5. Making System faster.	Use Class diagram Registered Information.	Resolving memory issue.  Proper Use of resource.  Faster Response than before.		
Post Condition: NA.				

## Test Case NF4: Reliability

Project Name: Blackboard-Virtual Education System			Test Designed by: Sr Shuvo	
Test Case ID: NFR_4			Test Designed date: 19-11-19	
Test Priority (Low, Medium, High): High			Test Executed by: Sr Shuvo	
Module Name: Reliability			Test Execution date: 25-11-19	
Test Title: Testing Reliability and fault tolerance.			Testing level: Acceptance testing	
Description: Finding Reliability and fault tolerance.				
Precondition: System should be ready				
Dependencies: NA				
Test Steps:	Test Data	Expected Results	Actual Results	Status (Pass/ Fail)
1. Finding system fault and defects.  2. Finding fault tolerance rate.  3. Checking correct form submission, date storage.  4. Prevent Sql injection.  5. Increase security.  6. Load testing.	Registered and possible input data set.  Random Sql statement.  Validation.	System cannot fall more than 5 times within 100 times		
Post Condition: NA				

## Test Case NF5: Recoverability

Project Name: Blackboard-Virtual Education System			Test Designed by:Sr Shuvo		
Test Case ID: NFR_5			Test Designed date: 19-11-19		
Test Priority (Low, Medium, High): High			Test Executed by: Sr Shuvo		
Module Name: Recoverability			Test Execution date: 25-11-19		
Test Title: Testing Recoverability and recovery time.			Testing level: System & Acceptance testing.		
Description: Finding Recoverability and recovery time.					
Precondition: System should be ready					
Dependencies: NA					
Test Steps:	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	
1. Finding the impact if system falls.  2. Finding the recovery time.  3. Securing personal data and accounts information.  4. Distract hackers.  5.Code Backup.	Registered and possible input data set.  Random Sql statement.  Random data.  Validation.	System must recover in 5mints for major fall			
Post Condition: NA					

## Test Case NF6: Maintainability

Project Name: Blackboard-Virtual Education System			Test Designed by:Sr Shuvo	
Test Case ID: NFR_6			Test Designed date: 19-11-19	
Test Priority (Low, Medium, High): High			Test Executed by: Sr Shuvo	
Module Name: Maintainability			Test Execution date: 25-11-19	
Test Title: Testing Maintainability.			Testing level: Acceptance testing.	
Description: Finding maintenance cost and time and supports.				
Precondition: System should be ready				
Dependencies: NA				
Test Steps:	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Finding the cost and time of maintenance. 2. Checking with backup. 3. Storing most recent changed.	Registered and possible input data set.  Random Sql statement.  Random data.  Validation.	System must recover in 5mins for major fall		
Post Condition: NA				



## Item Pass/Fail Criteria:

All the items should be tested against the defined test cases under different conditions and scenarios. If all the test cases are completed successfully then the items pass.

If repeated defects are found while testing an item and the defects cannot be removed even after a series of debugging activities, then the item can be considered as fail.

## Staffing and Training needs:

The usage of this system does not include any special kind of training but as the software is mainly focus on rural areas, that's why staffing and training must be included. Before delivering the software, there have some customer representative for rural areas who are trained. They can train those people. Also there will be a tutorial video of how to use the application and Produce accurate numbers of Training Documents and materials for the non-rural areas.

## Responsibilities:

**User-role:** Super admin, admin, Contributor, Authorized user and Visitor.

**Super Admin:** The owner of the systems has all the privileged and administrative power. Verify others admin, managing the system, sending invitation to teachers and professors, managing sponsors are the main activities of him.

**Admin:** They are the manager and helping hand of this systems. Verifying users, contents, contents creators and control the rules and regulation of the system. Highly educated, privileged teachers and professors can be admin at highest level.

**Contributor:** They are the mainly the content creator and who shares educational resource and knowledge with authorized user and visitors. They also can organize meetings, seminars and conferences by using special tools **Blackboard** which has writing, drawing, recording and presentation tools.

**Authorized Users:** They are the registered users who can take resources, join classes, attends conferences, seminars and meetings. They can also share files and notes via link.

**Visitors:** The visitors are who do not register yet to the system. They can get the public resource and information.

### **Software Possible Risk:**

1. Connection failure during online live classes, meeting, conference and seminar.
2. Payment gateway failure during transaction.
3. Resource and storage failure.
4. Database synchronization problem.
5. API failure.

### **Item not to be tested:**

There is no item that does not require testing. Every item needs to be tested.