# Black box testing on the online quiz application using the Equivalence Partitions method

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## ARTICLE INFO

## ABSTRACT

The Quiz Online application is an android-based application that aims to help elementary school children learn and explore the material taught at school, this application can be used anywhere and anytime, parents and teachers can also monitor children's learning progress. To achieve the objectives of this application, it is necessary to test the online quiz application to ensure that the system functions according to user needs. This test is useful to ensure there are no errors that can later cause losses in the future. Testing on the online quiz application using the Equivalence Partitioning method. The steps taken are to make a test design, test limits, test scenarios and expected results. From the results of tests carried out using the Equivalence Partitioning method in the online quiz application, no errors were found and all system functions were running well.

## 1. Introduction

The development of technology is growing rapidly, all people, both young and old, are familiar with technology, especially smartphones. The development of smartphones today is easy to be accepted by the wider community, this is because it is easy to use. The Quiz Online application is an android application that aims to help elementary schools learn and explore the material taught at school, this application can be used anytime and anywhere, parents and teachers can also unite children's learning development.

In order to achieve the objectives of the application, it is necessary to test the online quiz application to ensure the correctness of the functional system and user needs. testing on an application is important to do which aims to check all errors that exist in the application so as not to cause losses in the future, therefore testing is very important to do [1]. The testing process is also carried out to identify parts of the application that are prone to errors, an application is said to fail if the application does not meet specifications [2].

The main purpose of software testing is to ensure that the software meets the specified requirements. When the needs of a system have been determined, there is already a test scenario that can be carried out [3]. When the final goal of the testing process has been achieved, the examiner can stop a test [4].

Tests must be well designed so that they can find errors and can be corrected in a short time. Equivalence Partitioning-based Black Box testing seeks to find faulty functions, such as interface design errors, data structure errors and performance errors.

Based on the tests carried out, it will be known the weaknesses in the information system after testing using the Black Box method based on Equivalence Partitioning and how to find out which results are considered valid.

## 2.      Proposed Method

The main purpose of software testing is to ensure that the software meets the specified requirements. When the requirements of a system have been determined, there is already a test scenario that can be carried out. When the final goal of the testing process has been achieved, the examiner can stop doing a test [4].

In the Equivalence Partitioning test, the steps taken are to make a test design based on the functions that exist in software testing. Then create a test constraint, test scenario and expected results.
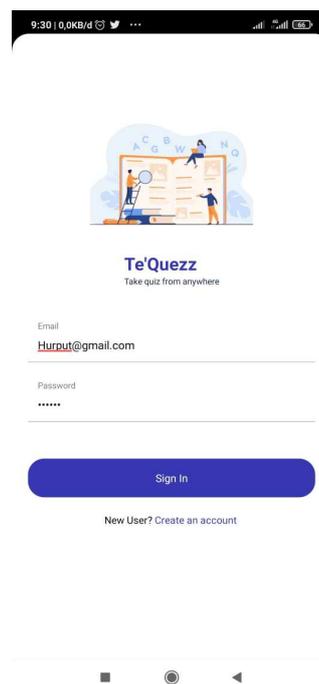


**Figure 1**. Login Form

Based on the login form in Figure 1, there are several test plans as follows:

**Table 1**. Test Plan Login Form

| No | Test Description | Expected results |
|---|---|---|
| A1. | Fill in the email with "huriatiputri@gmail.com" and password with "test123", then click the Sign In button | The system receives and displays a "Success" notification then goes to the home page |
| A2. | Fill in the email with "huriatiputri@gmail.com" and password with "123", then click the Sign In button | The system will reject and display a notification "email and password do not match" |
| A3. | Empty your email and password, then click the sign in button | The system will reject and display the message "Email and password cannot be empty" |

**Figure 2**. Registration Form

Based on the registration form in Figure 2, there are several test plans as follows:

**Table 2.** Test Plan Registration Form

| No | Test Description | Expected results |
|---|---|---|
| B1. | Fill in the name with "Putri Huriati", email with "huriatiputri@gmail.com" and password with "test123", then click the Sign up button | The system receives and displays a "Success" notification then is directed to the login form |
| B2. | Leave your name, email and password blank, then click the sign up button | The system will reject and display the message "All fields cannot be empty" |
| B3. | Leave your name blank, fill in your email and password, then click the sign up button | The system will reject and display the message "Name cannot be empty" |
| B4. | Empty the email, fill in the name and password, then click the sign up button | The system will reject and display the message "email cannot be empty" |
| B5. | Empty the password, fill in the name and email, then click the sign up button | The system will reject and display the message "Password cannot be empty" |
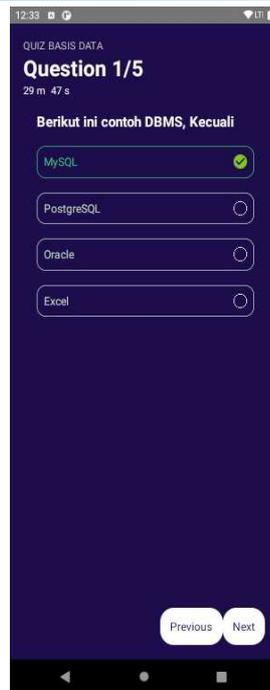
**Figure 3**. Quiz page

Based on Figure 3 for the quiz page there are several test plans as follows:

**Table 3**. Test Plan Quiz Page

| No | Test Description | Expected results |
|---|---|---|
| C1. | Choose the answer then click the next button | The system will direct to the next question, if the position of the question is the last one will appear an alert "You will end the exam" |
| C2. | Do not choose the answer, then click the next button | The system will give a message "you have not answered the question, are you sure to continue?" |
| C3. | Time has run out | The system will give a message "Time is up", then it will be redirected to the score page |

## 3.　　Results and Discussion

Testing on the online quiz application aims to find out the shortcomings that exist in the system before being used by users. The results of the test if a system weakness is found, the user can develop in that section. In the test results there is a test case table that serves to conclude the system is successful or not. The test will be carried out using the Black Box method based on Equivalence Partitioning.

**Table 4.** Test Result

| No | Test Description | Expected results | Test result | Conclusion |
|---|---|---|---|---|
| A1. | Fill in the email with "huriatiputri@gmail.com" and password with "test123", then click the Sign In button | The system receives and displays a "Success" notification then goes to the home page | The system displays a "Success" notification then redirects to the home page | Success |

| A2. | Fill in the email with "huriatiputri@gmail.com" and password with "123", then click the Sign In button | The system will reject and display a notification "email and password do not match" | The system displays a notification "email and password do not match" | Success |
|---|---|---|---|---|
| A3. | Empty your email and password, then click the sign in button | The system will reject and display the message "Email and password cannot be empty" | The system displays the message "Email and password cannot be empty" | Success |
| B1. | Fill in the name with "Putri Huriati", email with "huriatiputri@gmail.com" and password with "test123", then click the Sign up button | The system receives and displays a "Success" notification then is directed to the login form | The system displays a "Success" notification then redirects to the login page | Success |
| B2. | Leave your name, email and password blank, then click the sign up button | The system will reject and display the message "All fields cannot be empty" | The system displays a notification "all fields cannot be empty" | Success |
| B3. | Leave your name blank, fill in your email and password, then click the sign up button | The system will reject and display the message "Name cannot be empty" | The system displays a notification "Name cannot be empty" | Success |
| B4. | Empty the email, fill in the name and password, then click the sign up button | The system will reject and display the message "email cannot be empty" | The system displays a notification "Email cannot be empty" | Success |
| B5. | Empty the password, fill in the name and email, then click the sign up button | The system will reject and display the message "Password cannot be empty" | The system displays a notification "Password cannot be empty" | Success |
| C1. | Choose the answer then click the next button | The system will direct to the next question, if the position of the question is the last one will appear an alert "You will end the exam" | The system directs to the next question, when the position of the question is the last an alert appears "You will end the exam" | Success |
| C2. | Do not choose the answer, then click the next button | The system will give a message "you have not answered the question, are you sure to continue?" | The system gives a message "You have not answered the question, are you sure to continue"? | Success |
| C3. | Time has run out | The system will give a message "Time is up", then it will be redirected to the score page | The system displays the message "Time is up", then redirects to the score page | Success |

## 4.     Conclusion

Checks are carried out to ensure that the system functions properly and to check for errors. In determining related accuracy, such as the stages of confidentiality, data integrity, and data availability according to needs, it is necessary to process another method of testing as a standard value for information security, in addition to using the Equivalence Partitions method. After testing the Black Box based on the Equivalence Partitioning online quiz application, it can be concluded that in the test no errors were found.

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