

CM1202 – Developing Quality Software – Group 1

Task 1 - Functional Requirements and Assessment Criteria

Education Software Test System

- **Requirement 1. (must)**
 - **Requirement:** The system must allow the teacher the ability to create short assessments in the form of tests.
 - **Assessment Criteria:**
 - Demonstration of a user being able to create a short assessment using the software, without prior training.
 - Once the creation of the test is finalised, it should be pushed to the system and made available to students.
- **Requirement 2. (must)**
 - **Requirement:** Teachers should be able to choose whether they want the assessment to be formative or summative.
 - **Assessment Criteria:**
 - When creating a test, before publishing, but after assigning all questions, the acting teacher should be able to select whether the test is formative or summative with a simple selection tool.
 - That test should appear and behave as the assigned type to all students 100% of the time.
 - The system should only allow the lecturer to create two different types of tests, formative tests and summative tests.
- **Requirement 3. (must)**
 - **Requirement:** The software should record the number of times a student answered a question incorrectly and allow the user acting as a teacher to view this data for formative tests.
 - **Assessment Criteria:**
 - A teacher can view a completed test, and for each question will see the number of times that question was answered incorrectly.

- **Requirement 4. (should)**

- **Requirement:** The user acting as a student should get feedback after each attempt at a test, but only provided with answers following the final attempt.
- **Assessment Criteria:**
 - When taking a formative test, after each completion of a test, the student should be given feedback on their test answers.
 - After completing the final attempt of a test, the student must be able to view the completed test, and be shown which answers were correct, and which are incorrect, with the correct answers being given.

- **Requirement 5. (must)**

- **Requirement:** The teacher should be provided with statistics about the tests such as class score, questions most answered incorrectly for summative and formative tests.
- **Assessment Criteria:**
 - 100% of users acting as teachers should be able to access a statistics page based on a single test.
 - That page will contain and display statistics gathered from students who completed that test.

- **Requirement 6. (must)**

- **Requirement:** Teachers can request result reports from any student's completed summative test.
- **Assessment Criteria:**
 - Demonstration of a teacher account pulling up the results from different students.
 - Demonstration of a teacher looking at a particular student and then looking at results from their last tests

- **Requirement 7. (must)**
 - **Requirement:** Teachers can view result reports from any student's completed summative test.
 - **Assessment Criteria:**
 - Demonstration of a teacher account pulling up the results from 3 different students.
 - Demonstration of a teacher looking at a particular student and then looking at results from their last 2 tests
- **Requirement 8. (should)**
 - **Requirement:** The system should be stored on a server, to make sure that students cannot edit any source code, making the tests easier or finding answers.
 - Demonstration of opening the source code of the python file and showing the processing and validation is happening on an external server.
- **Requirement 9. (must)**
 - **Requirement:** There should be a teacher login and a student login (to allow for students to answer, teachers to create tests)
 - **Assessment Criteria:**
 - Users should be able to input a username and a password
 - If an invalid username/password is input
 - Upon entering a correct username and password – the system should add the features that the teacher can use.
- **Requirement 10. (should)**
 - **Requirement:** Each user must have a unique ID number and login to be used as a unique identifier (key) within the database.
 - **Assessment Criteria:**
 - Students should always be redirected to their “homepage”
 - Upon entering their details, users should only ever be able to access the account corresponding to their own details

- **Requirement 11. (must)**

- **Requirement:** When taking answers from students allow spelling mistakes or variations of the answer to be correct
- **Assessment Criteria:**
 - The system should be flexible and allow for spelling mistakes
 - Upon entering an answer to a test, any minor error should be overlooked, and the answer taken to be correct

- **Requirement 12. (must)**

- **Requirement:** Users should be taken to different home screens based on whether they are students or teachers
- **Assessment Criteria:**
 - Upon entering their correct details, the user should be taken to their home screen 99% of the time.

- **Requirement 13. (must)**

- **Requirement:** Students should only be allowed access to their personal results, and the tests they are able to take
- **Assessment Criteria:**
 - Each student should have a page unique to them based on their details.
 - Any two students should not be able to view each other's results, or the tests they have taken or awaiting tests.

- **Requirement 14. (must)**

- **Requirement:** Summative Tests – The mark for the test taken should be provided immediately after the test is finished.
- **Assessment Criteria:**
 - After finishing the summative test, the software will automatically show the student their marks. This should work 100% of the time

- **Requirement 15. (must)**

- **Requirement:** Summative Tests – lecturers should be able to view and retrieve results for all students after the test deadline.
- **Assessment Criteria:**
 - After the summative tests deadline, the lecturer will be able to view and retrieve student's results.

- **Requirement 16. (must)**

- **Requirement:** Teachers should be able to edit created tests.
- **Assessment Criteria:**
 - The system must show teachers all created tests.
 - The teacher must be able to navigate to the test they want to edit without guidance and edit it.
 - Upon editing teachers should be able to change all questions and all answers, as well as the title, the subject, and the students to publish the test to.

- **Requirement 17. (must)**

- **Requirement:** Teachers using the system can monitor a single student's progress and results
- **Assessment Criteria:**
 - Teachers can select any student, and the system must show the user that student's previous test results and statistics.
 - This must show data for the correct student 99% of the time.

- **Requirement 18. (won't)**

- **Requirement:** Formative tests won't be able to record the individual student performance.
- **Assessment Criteria:**
 - 100% of completed formative tests should not be available for post completion viewing by a teacher.
 - Only summative tests should be able to be individually viewed post completion by a teacher

- **Requirement 19. (must)**

- **Requirement:** During a formative test, students should be provided feedback after submitting their answer for one question.
- **Assessment Criteria:**
 - After entering an answer for a question, a user acting as a student should receive instant feedback 9/10 times.

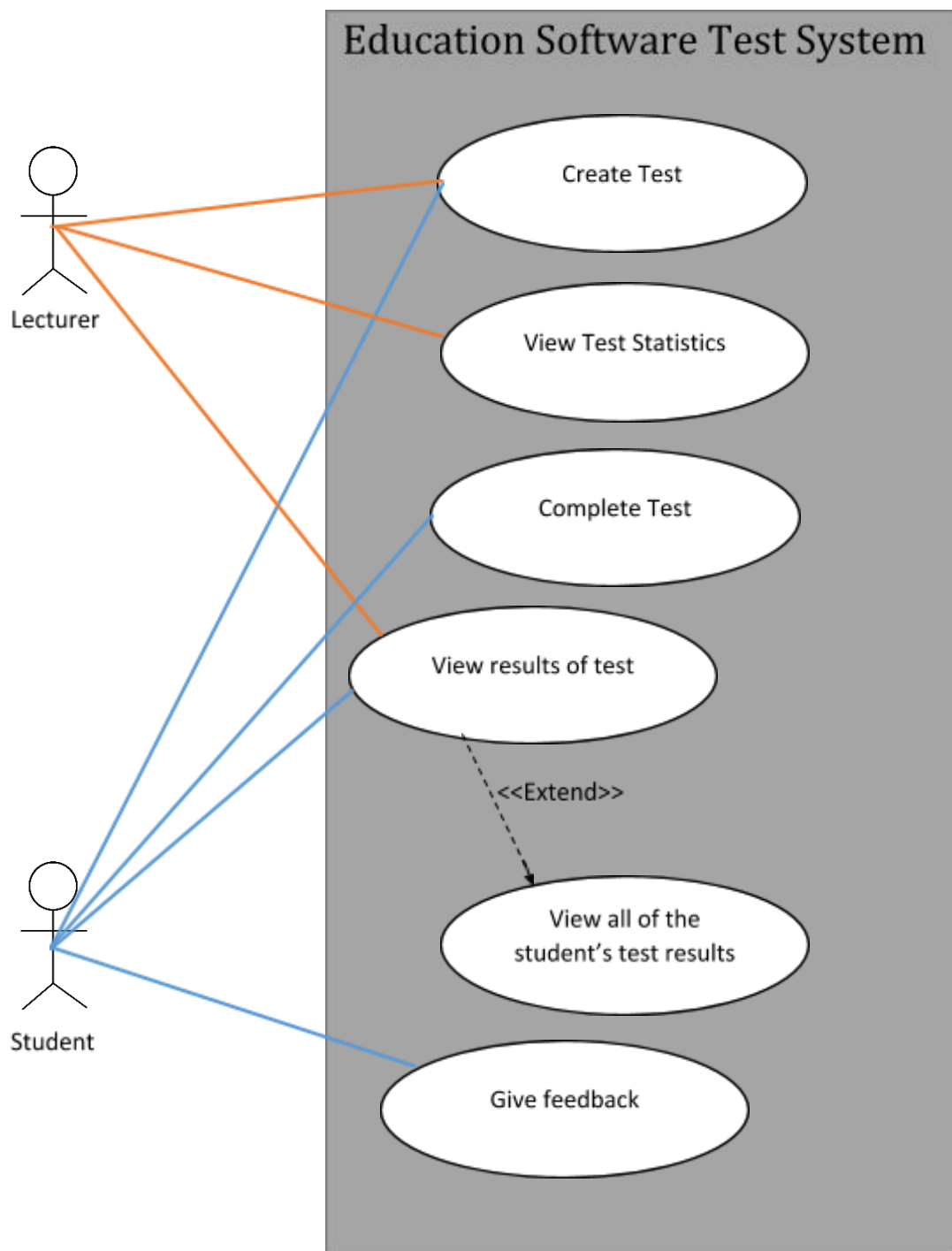
- **Requirement 20. (should)**

- **Requirement:** Whilst taking a formative test, students should be limited to attempting the test a maximum of 3 times.
- **Assessment Criteria:**
 - 100% of all attempts to answer a single question for the 4th time should result in error and not count another attempt
 - The user acting as a student should be informed that no more attempts are allowed.

- **Requirement 21. (could)**

- **Requirement:** During a formative test, when answering a question incorrectly the user could be prompted information about where they could learn more about the subject or given a hint.
- **Assessment Criteria:**
 - After entering an incorrect answer to a question, a user acting as a student should, on 9/10 attempts, be prompted with a hint or a link.
 - This link should give relevant information about the question topic.

Task 2 – Use Case Diagrams



Task 3 – Use Case Descriptions

Use Case No: 1	Use Case Name: View test Statistics	Rating: should have
Purpose: Allow the teacher to view class statistics for an individual test		
Main Actor: Teacher		
Description: The teacher should be able to select a given test and be shown all submissions for that test. It should also allow the teacher to view statistics in different forms including highest score, minimum score and average score.		
Non-Functional Requirements: <ul style="list-style-type: none"> • The teacher should be able to view the results as both a table and as a graph. • The data should be correct and reliable and been shown correctly in 99% of cases • The data should load quickly and reliably, loading within 1 minute of the teacher selecting the format and with 99% reliability. • Only teachers should be allowed to view this data. 		

Use Case No: 2	Use Case Name: Create Test	Rating: Must Have
Purpose: The teacher should be able to create a specified type of test and add questions for the students to answer		
Main Actor: Lecturer		Secondary Actors:
Description: Upon choosing to start a new test, the teacher must be prompted to select a type of test from formative or summative. The teacher must then add a title to the test. The teacher must then be prompted to add at least 1 question to at most 10 questions. The accepted answers must also be added. The lecturer must then post the test. The system will then notify the students that they have a new test for completion and it will appear on their own screens		
Non-functional requirements: <ul style="list-style-type: none"> • Ease of use: the lecturer should be able to select the type of test and add questions to create the test without challenges • Accuracy: Upon selecting the type of test, the features of formative/summative must apply 100% of the time. Each test must always only contain the questions added by the lecturer, and their corresponding answers. The system can be more flexible and accept answers with misprints • Security: only lecturers must be able to post tests • Response: the system should carry out all operations individually, within 30 seconds 		

Use Case No: 3	Use Case Name: Complete test	Rating must have
Purpose: The student should be able to answer the assigned questions on a test then submit the test.		
Main Actor: Student	Secondary Actors:	
<p>Description:</p> <p>The customer acting as a student must have the chosen quiz ready to fill out displayed to them. They will then proceed to answer the questions they wish. For formative assessments, as the student enters the answers to each question the system will notify them if their answer is correct/incorrect. If their answer is incorrect they will have two more attempts at the question (max. 3 attempts) and a hint could be displayed. For summative tests, the student must submit their test and are only allowed one attempt. The system will give them their marks after submission.</p> <p>Non-Functional Requirements:</p> <ul style="list-style-type: none">• Ease of use: The student should be able to answer the test without instruction or training.• Consistency: The final answers submitted by the students should be the answers taken for the final mark and comparison against correct solutions 100% of the time. For summative tests the final answer is the first attempt.• Security: The student should only be able to submit tests for their own account. Any errors regarding student scores being mixed should be avoided 100% of the time.• Response: The student should be notified when they have either submitted or saved a test 10 seconds after completing the test.		

Use Case No:4	Use Case Name: View student test Results	Rating: Must Have
Purpose: Teacher should be able to view the statistics and results of any one test that has been completed.		
Main Actor: Teacher	Secondary Actors:	
Description: The customer acting as a teacher should only be provided with the option of viewing summative tests results that have had their due date passed. Once the teacher has selected the student, they should have the option as to how they want to view the individual's test results e.g. Chronological, Alphabetical. The teacher should also be provided with an option to view the test statistics in several different ways. The teacher shouldn't be able to view the individual test results of formative tests, they should only be able to view the test statistics of formative tests.		
Non-Functional requirements <ul style="list-style-type: none">Security: The customer must be logged into the system in order to view the results of testsResponse: The system should provide the correct statistics and results of the system within 1 minute of the statics/results being requested.Accuracy: The system should provide the correct statistics to the customer.Consistency: The system should work 100% of the time.		

Use Case No: 5	Use Case Name: Giving feedback on tests	Rating: should have
Purpose: after the student submits the test the system will provide feedback from the teacher to the student.		
Main Actor: Teacher		Secondary Actors: Student
<p>Description:</p> <p>After finishing every attempt for the formative assessment students should be provided with pre-set feedback, written in by the teacher when creating the test, on their performance (the answered that they got correctly or incorrectly). However, in summative assessment the feedback will be available to student after the deadline.</p> <p>Non-Functional requirements:</p> <ul style="list-style-type: none"> ● Security: student shouldn't be able to modify anything from the feedback. ● Ease of use: the user will be able to use the system without needing any training. ● Response: the time between the user finishing the test and giving the feedback should be less than 30 second. 		

A very good set of non functional requirements in the use case descriptions. Overall a good draft indicating you have understood the scenario.