

E-testing system

Specification of E-testing system.

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E-testing system

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General outline

This section refers to the exercise number 1 and will provide general information about E-testing system.

Audience

E-testing system is aimed at any educational institutions that carry out written or online tests. The system is able to be used successfully used for example in school, universities, or private educational facilities.

Purpose and basic functionalities

The E-testing system will be able to conduct different types of online tests and provide corresponding statistics. Tests will be able to consist of the following tasks: structured / close-end questions, open-end questions. Each test will be assigned to a course that will allow you to easily assess the student's skills.

Benefits of using E-testing system

Thanks to this solution, teachers will no longer have to carry out tests on paper, thanks to which they will not only save time that they had to spend on checking students' work but also save money that they would have to spend on paper copies. Moreover it is not only saves time and money but also a nod to the environment because there will no longer need to waste huge amounts of paper.

Another benefit of E-testing system will be set off tools designed to help teachers in giving students their marks.

Specification

This section refers to the exercise number 1 and will provide technical specification of E-testing system.

1. Definitions

1.1. Decimal - constant precision floating point number.

2. Administration panel

Administration panel is being used for maintaining order in E-testing system.

2.1. Administrator account properties

Administrator is a super user who has read access to everything in the E-testing system. Administrator accounts cannot be created and have passwords restarted in normal manner due to security considerations.

2.1.1. Login - username used for authorisation. E.g. steve123

2.1.1.a. Login is unique in scope of Administrator's accounts.

2.1.2. Password - password used for authorisation. E.g. AllMenLikeBigApplesAndBananas

2.1.2.a. Password must be secured by one-way function with user specific salt.

2.1.3. Email - administrator's email. E.g. steve.wozniak@example.com

2.1.3.a. Email is unique in scope of Administrator's accounts.

2.1.3.b. Email must fulfil following standard: RFC 5322 section 3.4

2.1.4. Full name - administrator's full name. E.g. Steve Wozniak

2.1.5. Short name - administrator's short name. E.g. Steve

2.2. Anonymous user can

2.2.1. Login using to Administrator account Login and Password

2.3. Administrator can

2.3.1. Change password

2.3.2. See list of registered Teachers.

2.3.3. See Teacher's informations.

2.3.4. Block Teacher's account.

2.3.5. See Teacher's courses.

2.3.6. See Teacher's course.

2.3.7. See Course Members.

2.3.8. See Course Tests.

2.3.9. See Test Questions.

2.3.10. See Question Answers.

2.3.11. See Member Answers.

2.3.12. Hide course from Students and inform about this fact corresponding Teacher.

- 2.3.13. See registered Students.
- 2.3.14. See Student's informations.
- 2.3.15. Block Student's account.

3. Techer's panel

Teachers panel is being available for teachers or any other person who wants to organise any kind of course using E-testing system. Teacher is able to create new courses which can contain multiple tests. Each test can contain multiple questions. Teacher can also enable or disable ability of answering to the questions by students.

3.1. Teacher account properties

- 3.1.1. Login - username used for authorisation. E.g. steve123
 - 3.1.1.a. Login is unique in scope of Teacher's accounts.
- 3.1.2. Password - password used for authorisation. E.g. AllMenLikeBigApplesAndBananas
 - 3.1.2.a. Password must be secured by one-way function with user specific salt.
- 3.1.3. Email - administrator's email. E.g. steve.wozniak@example.com
 - 3.1.3.a. Email is unique in scope of Teacher's accounts.
 - 3.1.3.b. Email must fulfil following standard: RFC 5322 section 3.4
- 3.1.4. Full name - administrator's full name. E.g. Steve Wozniak
- 3.1.5. Short name - administrator's short name. E.g. Steve
- 3.1.6. Courses - collection of Teacher's Courses.

3.2. Course properties

- 3.2.1. Name - course's name. E.g. Calculus II
- 3.2.2. Creator - Teacher account that created this course.
- 3.2.3. Invitation Code - code used by Students to join the course.
- 3.2.4. Tests - collection of Course's Tests.

3.3. Course Member properties

- 3.3.1. Course - corresponding course.
- 3.3.2. Member - Student account.
- 3.3.3. Join Date - date and time of joining the course.
- 3.3.4. Grade - Members grade for given Course

3.4. Test properties

- 3.4.1. Name - course's name. E.g. Calculus II
- 3.4.2. Course - corresponding course.
- 3.4.3. Questions - collection of Test's questions.
- 3.4.4. Members Can Answer Questions - determines wether members can answer to the questions.

3.5. Question properties

- 3.5.1. Question Number - unique in scope of Test. E.g. 1a
- 3.5.2. Test - corresponding Test.
- 3.5.3. Content - question content. E.g. How old was Newton when he died?
- 3.5.4. Type - question type. One of the following options:
 - 3.5.4.a. Close end single choice.
 - 3.5.4.b. Close and multiple choices.
 - 3.5.4.c. Open end.
- 3.5.5. Answers - collection of possible question answers
 - 3.5.5.a. Can elements only in when question type is Close end.
 - 3.5.5.b. When type is Close end single choice 1 and only 1 answer can be correct.
- 3.5.6. Max Points - decimal. Stored in constant precision floating point number.

3.6. Question Answer properties

- 3.6.1. Question - corresponding Question.
- 3.6.2. Content - answer content.
- 3.6.3. Correct - boolean value indicating whether this answer is correct.

3.7. Member Answer properties

- 3.7.1. Question - corresponding Question.
- 3.7.2. Member - corresponding Member.
- 3.7.3. Answers - provided answers.
- 3.7.4. Correctness - decimal with value between 0 and 1 where 1 is the most correct answer and 0 is incorrect answer.

3.8. Anonymous user can

- 3.8.1. Create new Teacher account.
- 3.8.2. Login to Teacher account using Login and Password.

3.9. Teacher can

- 3.9.1. Change password.
- 3.9.2. Reset password using Email.
- 3.9.3. See informations about himself / herself.
- 3.9.4. Edit informations about himself / herself.
- 3.9.5. Create new Course.
- 3.9.6. See own Courses.
- 3.9.7. See Course Members.
- 3.9.8. See Course Tests.
- 3.9.9. Remove Course Members.
- 3.9.10. Create Course Tests.

- 3.9.11. See Test informations.
- 3.9.12. Edit Test informations.
- 3.9.13. See Test Questions.
- 3.9.14. Create Test Questions.
- 3.9.15. Edit Test Questions.
- 3.9.16. Remove Test Questions.
- 3.9.17. See Question informations.
- 3.9.18. See Question Answers.
- 3.9.19. Create Question Answer.
- 3.9.20. Remove Question Answer.
- 3.9.21. See Question Member Answers statistics.
- 3.9.22. See Test Member Answers statistics.
- 3.9.23. See Course Member Answers statistics.
- 3.9.24. Give Course Member Grade.

4. Student's panel

Students panel is being used by students invited by teachers to participate in their courses. Students can also answer to the questions in tests which are available in courses.

4.1. Student account properties

- 4.1.1. Login - username used for authorisation. E.g. steve123
 - 4.1.1.a. Login is unique in scope of Teacher's accounts.
- 4.1.2. Password - password used for authorisation. E.g. AllMenLikeBigApplesAndBananas
 - 4.1.2.a. Password must be secured by one-way function with user specific salt.
- 4.1.3. Email - administrator's email. E.g. steve.wozniak@example.com
 - 4.1.3.a. Email is unique in scope of Teacher's accounts.
 - 4.1.3.b. Email must fulfil following standard: RFC 5322 section 3.4
- 4.1.4. Full name - administrator's full name. E.g. Steve Wozniak
- 4.1.5. Short name - administrator's short name. E.g. Steve
- 4.1.6. Members - collection of Student Member entities.

4.2. Anonymous user can

- 4.2.1. Create new Student account.
- 4.2.2. Login using Student account Login and Password.

4.3. Student can

- 4.3.1. Change password.
- 4.3.2. Reset password using Email.
- 4.3.3. Join to course using Invitation Code.
- 4.3.4. See list of Courses.

- 4.3.5. See list of Course Tests.
- 4.3.6. See course Questions.
- 4.3.7. See Question Answers.
- 4.3.8. Answer to a Question.
- 4.3.9. See Test results.
- 4.3.10. See Course results.

Password strength

This section refers to the exercise number 2 and will provide decision tables regarding password strength.

Definitions

1. Length - password has at least 6 characters.
2. Capitalised - password contains both small and capital letters.
3. Numeric - password contains at least one digit.
4. Special - password contains following special characters: !, @, #, \$, _.
5. T - true
6. F - false

Limited format

Conditions	R1	R2	R3	R4	R5
1. Length	F	T	T	T	T
2. Capitalised	-	F	T	T	T
3. Numeric	-	-	F	T	T
4. Special	-	-	-	F	T
Result	F	F	F	F	T

Extended format

Conditions	R1	R2	R3	R4	R5
1. Length	Length < 6	Length ≥ 6			
2. Capitalised	-	Not Capitalised	Capitalised		
3. Numeric	-	-	No Digits	Contains digits	
4. Special	-	-	-	No Special	Contains Special
Result	F	F	F	F	T