**ONLINE TEST MANAGEMENT SYSTEM**

**Problem Statement:**

To develop an Online Test Management System with various defined roles for user as well as admin.

**Description:**

This project is aimed at developing Online Test Management System for user. This is a web based application that can be accessed throughout the web. This system can be used to add Test, add Questions, assign Test to user & user can give test . This is an integrated system that contains both the user component and the administration component.

**Scope:**

Using the Online Test Management System, a user can give a test and see questions whereas the admin can add and update test and also add questions to a specific test.

**Out of Scope:**

The System only involves Multiple Choice Questions and no other type of tests like coding and theory tests.

**Assumptions:**

1. It is assumed that the test is only a Multiple Choice Questions(MCQs) test.
2. It is assumed that every question has only four choices and only one of them is correct.

**Classes:**

**1.User**

**2.Test**

**3.Questions**

**Attributes:**

**1.User**

a. userId : Long

b.userName : String

c.userTest : Test

**2.Test**

a.testId : Long

b.testTitle : String

c.testDuration :

d.testQuestions : HashSet<Questions>

e.testUser : User

f.testTotalMarks : Double

**3.Questions**

a.questionId : Long

b.questionOptions : Array<String>

c.questionTitle : String

d.questionAnswer : Integer

e.questionMarks : Double

f.questionTest : Test

**Methods:**

**1.User**

a.getUserId() : Long

b.getUserName() : String

c.getUserTest() : Test

d.setUserId(Long) : void

e.setUserName(String) : void

f.setUserTest(Test) : void

g.addTest() : Test

h.updateTest() : Test

i.deleteTest() : Test

j.assignTest(User, Test) : boolean

k.getResult(): Double

**2.Test**

a.getTestId() : Long

b.getTestTitle() : String

c.getTestDuration() :

d.getTestQuestions : HashSet<Questions>

e.getTestUser() : User

f.getTestTotalMarks() : void

g.setTestId(Long) : void

h.setTestTitle(String) : void

i.setTestDuration() : void

j.setTestQuestions(HashSet) : void

k.setTestUser(User) : void

l.setTestTotalMarks(Double) : void

m.giveTest() : boolean

n.seeQuestions() : HashSet<Questions>

o.addAddQuestions() : Questions

p.updateQuestions() : Questions

q.deleteQuestions() : Questions

r:calculateTotalMarks(): Double

**3.Questions**

a.getQuestionId : Long

b.getQuestionOptions() : Array<String>

c.getQuestionTitle() : String

d.getQuestionAnswer() : Integer

e.getQuestionMarks() : Double

f.getQuestionTest : Test

g.setQuestionId(Long) : void

h.setQuestionOptions(Array) : void

i.getQuestionTitle(String) : void

j.setQuestionAnswer(Integer) : void

k.setQuestionMarks(Double) : void

l.setQuestionTest(Test) : void

**Relationship:**

Association exists between the User and Test classes as the user can give a test. The relationship is one - to - one relationship as only one user can give a test and one test is assigned to a single user.

Composition exists between Test and Question classes as it represents a whole-part relationship where the part(question) has no individual existence. The relationship is one - to - many relationship as a test can have many questions and many questions can be a part of one test.

**Test Cases -**

1. getQuestionAnswer() should return a single integer as only one of the options is correct for every question.
2. When user invokes addTest(), he should be verified first to be admin and then only he can perform the operation else the method cannot be invoked.
3. The size of questionOptions array should be 4 as only four options are present for any question.