Database Design

We can use the Code First approach to define our table schemas so that it will be easy to define Foreign Key Relationships between tables.

Tables

1. Student

Id – nvarchar PK

Username – nvarchar not null

Email – nvarchar not null

Password – nvarchar not null

CollegeName – nvarchar not null

StudentCollegeId – nvarchar not null

DegreeMajor – nvarchar not null

1. Admin

Id – nvarchar PK

Username – nvarchar not null

Email – nvarchar not null

Password – nvarchar not null

OrganizationName – nvarchar not null

EmployeeId – nvarchar not null

Designation – nvarchar not null

1. Topics

Id – nvarchar PK

Name – nvarchar not null

Description – nvarchar not null

TotalNoOfEasyQuestions – tinyInt not null

TotalNoOfMediumQuestions – tinyInt not null

TotalNoOfHardQuestions – tinyInt not null

TotalNoOfQuestions – tinyInt not null

1. Questions

Id – nvarchar PK

Description – nvarchar not null

Option\_1 – nvarchar not null

Option\_2 – nvarchar not null

Option\_3 – nvarchar not null

Option\_4 – nvarchar not null

Answer – nvarchar not null

TopicId – FK to Topics(Id)

1. Reports

Id – nvarchar PK

Student Id – nvarchar FK to Student(Id)

TopicId – nvarchar FK to Topics(Id)

TotalAttemptsInEasyQuestions – tinyInt not null

CorrectAttemptsInEasyQuestions – tinyInt not null

TotalAttemptsInMediumQuestions – tinyInt not null

CorrectAttemptsInMediumQuestions – tinyInt not null

TotalAttempsInHardQuestions – tinyInt not null

CorrectAttemptsInHardQuestions – tinyInt not null

Relationship B/W Tables

STUDENT and TOPICS will have a MANY-TO-MANY Foreign Key Relationship Where a student can take exams on as many topics as they want and a topic can have many students taking it in exams.

ADMIN and TOPICS will have a ONE –TO-MANY Foreign Key Relationship Where an Admin can create as many topics as they want.

TOPICS and QUESTIONS will have a ONE-TO-MANY Foreign Key Relationship Where a Topic will have multiple Questions.

REPORTS will contain STUDENT\_ID and TOPIC\_ID as Foreign Key because we have to store for performance of student for each and every exam they take on each and every topic.