EduBright Database Design

Entity: Role

Identifier: RoleID

Attributes: RoleName

The Role entity identified by the Role ID would initially contain the 4 roles “Admin”, “Tutor”, “Student”, “Parent”. This would be necessary to have custom templates, functions and dashboards dependant on the role.

Entity: User

Identifier: UserID

Attributes: FirstName, LastName, Email, UserName, Password, RoleID (FK)

The User entity identified by the User ID would contain the general information for each user such as first and last name, email, username (for login), password (for login), and references the Role ID from the Role entity to figure out what role the user has.

Entity: TutorStudent

Identifier: TutorStudentID

Attributes: Subject, TutorID (UserID Foreign Key), StudentID (UserID Foreign Key)

The TutorStudent entity is an associative entity mapping the relationship between which tutor has which students using the Tutor ID and Student ID. It also contains the information of which subject is being taught for that particular tutor-student pair.

Exp: Grade 10 Math, 01987 (Tutor ID for tutor John), 02455 (Student ID for student Tim)

Entity: ParentStudent

Identifier: ParentStudentID

Attributes: ParentID (UserID Foreign Key), StudentID (UserID Foreign Key)

The ParentStudent entity is a pure junction table that maps parent-student pairs. This would be required for parents to have access to their childrens portal and be able to see the child’s assignments and due dates.

Entity: Assignment

Identifier: AssignmentID

Attributes: AssignmentTitle, UniqueLink, AssignedTime, TutorID (UserID Foreign Key)

The Assignment entity identified by the Assignment ID contains the information such as the assignment title (auto populated through form), a unique rng link (generated along with AI generated questions), the assigned time of the assignment to the student, and references the Tutor ID so it can be seen which tutor assigned a particular assignment

Entity: GeneratedQuestion

Identifier: GeneratedQuestionID

Attributes: PromptID, QuestionType, QuestionScore, QuestionText, ChoiceA, ChoiceB, ChoiceC, ChoiceD, CorrectAnswer, IsApproved, TutorID (User ID Foreign Key)

The GeneratedQuestion entity identified by the GeneratedQuestion ID, is a staging table for the AI generated questions prior to validation and being moved to the Questions entity. It includes prompt ID (the prompt used for the question generated), the question type (multiple choice max of 4, or true and false), the max score of the question, the question text, the 4 potential choices, the correct answer and an is approved column.

The goal of this table would be to allow questions to be stored temporarily based on the given prompt. The tutor then chooses which questions are approved or not and has the option to reprompt to replace the unsatisfactory questions (this would generate another prompt ID). Once all questions are to satisfaction, the approved questions in the table would be then transferred to the questions table.

This prevents overhang of data, possible collision of data during reprompts and once the questions are transferred to the Questions entity, then all rows of info (good and bad questions) depending on Tutor ID can be erased. By erasure based on Tutor ID, multiple tutors can generate questions to be stored in the GeneratedQuestions entity without fear of losing the generated questions due to some other tutor finishing first.

Entity: Questions

Identifier: QuestionID

Attributes: QuestionType, QuestionScore, QuestionText, ChoiceA, ChoiceB, ChoiceC, ChoiceD, CorrectAnswer, AssignmentID Foreign Key

The Questions entity identified by the Question ID contains the approved questions during the AI question generation stage after verification. It contains the question type, the max score of the question, question text, the 4 choices, the correct answer and references the Assignment ID to know which assignment the questions are for.

Entity: StudentAssignmentAccess

Identifier: StudentAssignmentAccessID

Attributes: AttempsAllowd, AttemptsUsed, CompletedTime, CompletedLink, StudentID (UserID Foreign Key), AssignmentID Foreign Key

The StudentAssignmentAccess entity identified by the StudentAssignmentAccess ID, contains the information regarding student access to created assignments. It contains information about number of attempts allowed for an assignment, attempts used, date and time of completion, a read only completed link and references the Student ID as well as Assignment ID to map the relationship of which student would have access to which assignment.

Entity: StudentAnswer

Identifier: StudentAnswerID

Attributes: SelectedAnswer, IsCorrect, AnswerScore, StudentAssignmentAccessID Foreign Key, QuestionID Foreign Key

The StudentAnswer entity identified by the StudentAnswer ID, handles the information regarding the students answer to the questions of an assignment. It contains information on the selected answer for a question, whether the answer is correct or not, the score received for each question and references the StudentAssignmentAccessID and Question ID to map the correct student that was assigned a particular assignment and their answers.

The reasoning behind this table would be for the implementation of autosave features. It is possible a student may try to answer questions to an assignment over the span of multiple days, and the questions solved on one day should be filled when student comes back the following day. Using “state” we can temporarily store information during the session, which can then be saved to the database upon exiting of the tab or window.