Database Documentation for AllaFiszkotekaDemoV2

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Contents

1 Introduction

This document provides a detailed description of the database schema for the AllaFiszkotekaDemoV2 application, a flashcard-based language learning platform with multiplayer features. The schema is designed using PostgreSQL and managed with Entity Framework Core in a .NET 9.0 environment.

2 Database Schema Overview

The database consists of multiple tables to support user management, flashcard learning, social features, progress tracking, multiplayer lobbies, and notifications. Below is a comprehensive breakdown of each table.

3 Table Descriptions

3.1 Users (AspNetUsers)

Column Name	Data Type	Description
Id	text	Unique identifier for the user (primary key).
Nickname	character varying(50)	User's nickname, unique and required.
Points	integer	Points earned by the user, default 0.
StreakCount	integer	Count of consecutive learning days, default 0.
ConsecutiveDays	integer	Number of consecutive days learned, default 0.
SubscriptionType	character varying(50)	Subscription type (e.g., "Free"), default "Free".
SubscriptionEndDate	timestamp with time zone	End date of subscription, nullable.
EmailVerified	boolean	Flag indicating email verification, default false.
CreatedAt	timestamp with time zone	Date of account creation, default CURRENT_TIMESTAMP.
UserName	character varying(256)	User's login name, nullable.
NormalizedUserName	character varying(256)	Normalized version of UserName, nullable.
Email	character varying(256)	User's email, nullable.
NormalizedEmail	character varying(256)	Normalized version of Email, nullable.
EmailConfirmed	boolean	Flag indicating email confirmation, default false.
PasswordHash	text	Hashed password for authentication, nullable.

Column Name	Data Type	Description
SecurityStamp	text	Security stamp for identity, nullable.
ConcurrencyStamp	text	Concurrency control stamp, nullable.
PhoneNumber	text	User's phone number, nullable.
PhoneNumberConfirmed	boolean	Flag indicating phone number confirmation, default false.
TwoFactorEnabled	boolean	Flag for two-factor authentication, default false.
LockoutEnd	timestamp with time zone	Date of lockout end, nullable.
LockoutEnabled	boolean	Flag for lockout capability, default false.
AccessFailedCount	integer	Number of failed access attempts, default 0.

Purpose: Core table for user management, supporting authentication, progress tracking, and subscription details using ASP.NET Identity.

3.2   Friends

Column Name	Data Type	Description
Id	integer	Unique identifier for the friendship (primary key).
UserId1	text	ID of the first user in the relationship.
UserId2	text	ID of the second user in the relationship.
Status	character varying(20)	Status of the friendship (e.g., "Pending"), default "Pending".
CreatedAt	timestamp with time zone	Date of friendship creation, default CURRENT_TIMESTAMP.

Purpose: Manages friend relationships, enabling social features like invitations and connections for multiplayer.

3.3   FlashcardCategories

Column Name	Data Type	Description
Id	integer	Unique identifier for the category (primary key).
UserId	text	ID of the user who created the category.
Name	character varying(100)	Name of the category, required.
IsPublic	boolean	Flag indicating if the category is public, default false.
CreatedAt	timestamp with time zone	Date of category creation, default CURRENT_TIMESTAMP.

Purpose: Organizes flashcards into thematic categories, supporting public sharing for community use.

3.4 Flashcards

Column Name	Data Type	Description
Id	integer	Unique identifier for the flashcard (primary key).
CategoryId	integer	ID of the category the flashcard belongs to.
Word	character varying(100)	Word in the source language, required.
Translation	character varying(100)	Translation in the target language, required.
ExampleUsage	text	Example sentence using the word, nullable.
Tags	varchar[]	Array of tags for categorization, required.
Difficulty	character varying(20)	Difficulty level (e.g., "Medium"), default "Medium".
CreatedAt	timestamp with time zone	Date of flashcard creation, default CURRENT_TIMESTAMP.

Purpose: Stores individual flashcards for learning, with additional metadata for enhanced study experience.

3.5 UserProgress

Column Name	Data Type	Description
Id	integer	Unique identifier for the progress record (primary key).
UserId	text	ID of the user.
FlashcardId	integer	ID of the flashcard.
Status	character varying(20)	Learning status (e.g., "NotLearned"), default "NotLearned".
LastReviewed	timestamp with time zone	Date of last review, nullable.
CorrectAnswers	integer	Number of correct answers, default 0.
WrongAnswers	integer	Number of wrong answers, default 0.
NextReviewDate	timestamp with time zone	Date of next review, nullable.
ReviewInterval	integer	Interval between reviews in days, default 1.
EaseFactor	numeric	Ease factor for spaced repetition, default 2.5.

Purpose: Tracks user progress on flashcards, enabling a spaced repetition system for effective learning.

3.6 Lobbies

Column Name	Data Type	Description
Id	integer	Unique identifier for the lobby (primary key).
CreatorId	text	ID of the user who created the lobby.
FlashcardCategoryId	integer	ID of the category for the game, nullable.
GameMode	character varying(20)	Game mode (e.g., "Points"), default "Points".
Status	character varying(20)	Lobby status (e.g., "Open"), default "Open".
MaxPlayers	integer	Maximum number of players, default 4.
CreatedAt	timestamp with time zone	Date of lobby creation, default CURRENT_TIMESTAMP.

Purpose: Manages multiplayer game lobbies, allowing users to create and join games with specific rules.

3.7 LobbyParticipants

Column Name	Data Type	Description
Id	integer	Unique identifier for the participant (primary key).
LobbyId	integer	ID of the lobby.
UserId	text	ID of the user.
JoinedAt	timestamp with time zone	Date of joining, default CURRENT_TIMESTAMP.

Purpose: Tracks participants in each lobby, ensuring proper management of multiplayer sessions.

3.8 Scores

Column Name	Data Type	Description
Id	integer	Unique identifier for the score record (primary key).
LobbyId	integer	ID of the lobby.
UserId	text	ID of the user.
Points	integer	Number of points scored, required.
CreatedAt	timestamp with time zone	Date of score recording, default CURRENT_TIMESTAMP.

Purpose: Records scores from multiplayer games, supporting leaderboards and competition.

3.9 Notifications

Column Name	Data Type	Description
Id	integer	Unique identifier for the notification (primary key).
UserId	text	ID of the user.
NotificationType	character varying(50)	Type of notification (e.g., "FriendRequest"), required.
Title	character varying(100)	Notification title, required.
Message	text	Notification message, required.
IsRead	boolean	Flag indicating if read, default false.
RelatedEntityType	text	Type of related entity, nullable.
RelatedEntityId	integer	ID of related entity, nullable.
CreatedAt	timestamp with time zone	Date of creation, default CURRENT_TIMESTAMP.

Purpose: Delivers notifications to users about events like friend requests or game invites, enhancing user engagement.

4 Indexes

The following indexes are created to optimize query performance:

- `IX_AspNetRoleClaims_RoleId` on `AspNetRoleClaims(RoleId)`.

- `RoleNameIndex` on `AspNetRoles(NormalizedName)`, unique.

- `IX_AspNetUserClaims_UserId` on `AspNetUserClaims(UserId)`.

- `IX_AspNetUserLogins_UserId` on `AspNetUserLogins(UserId)`.

- `IX_AspNetUserRoles_RoleId` on `AspNetUserRoles(RoleId)`.

- `EmailIndex` on `AspNetUsers(NormalizedEmail)`.

- `UserNameIndex` on `AspNetUsers(NormalizedUserName)`, unique.

- `IX_FlashcardCategories_UserId` on `FlashcardCategories(UserId)`.

- `IX_Flashcards_CategoryId` on `Flashcards(CategoryId)`.

- `IX_Friends_UserId1_UserId2` on `Friends(UserId1, UserId2)`, unique.

- `IX_Friends_UserId2` on `Friends(UserId2)`.

- `IX_Lobbies_CreatorId` on `Lobbies(CreatorId)`.

- `IX_Lobbies_FlashcardCategoryId` on `Lobbies(FlashcardCategoryId)`.

- `IX_LobbyParticipants_LobbyId_UserId` on `LobbyParticipants(LobbyId, UserId)`, unique.

- `IX_LobbyParticipants_UserId` on `LobbyParticipants(UserId)`.

- `IX_Notifications_UserId` on `Notifications(UserId)`.

- `IX_Scores_LobbyId_UserId` on `Scores(LobbyId, UserId)`, unique.

- `IX_Scores_UserId` on `Scores(UserId)`.

- `IX_UserProgress_FlashcardId` on `UserProgress(FlashcardId)`.

- `IX_UserProgress_UserId_FlashcardId` on `UserProgress(UserId, FlashcardId)`, unique.

5 Conclusion

This schema provides a robust foundation for a flashcard learning application with social and multiplayer features. Future enhancements may include additional indexes or constraints based on performance needs.