

# FitTrack Database Documentation

## Database Schema Overview

This document provides detailed information about the database schema for the FitTrack application, a fitness activity tracking platform that allows users to record their exercises, earn achievements, and share their progress with others.

## Tables Structure

### User Table

The `user` table stores information about registered users.

Column	Type	Description
id	INTEGER PRIMARY KEY	Unique identifier for each user
username	VARCHAR(64) UNIQUE	User's chosen display name
email	VARCHAR(120) UNIQUE	User's email address, used for login
password_hash	VARCHAR(128)	Securely stored password using hash algorithm
date_registered	TIMESTAMP	Date and time when the user registered, defaults to current timestamp

### User Relations Table

The `user_relations` table manages the following/follower relationships between users.

Column	Type	Description
follower_id	INTEGER	ID of the user who is following another user
followed_id	INTEGER	ID of the user being followed

Note: This table has a composite primary key of both columns and foreign key constraints referencing the user table.

### Activity Type Table

The `activity_type` table defines the various types of exercises and activities that can be tracked.

Column	Type	Description
id	INTEGER PRIMARY KEY	Unique identifier for each activity type
name	VARCHAR(64) UNIQUE	Name of the activity (e.g., Running, Swimming)
description	TEXT	Detailed description of the activity
icon	VARCHAR(64)	Filename of the icon representing this activity
met_value	FLOAT	Metabolic Equivalent value used for calculating calories burned
category	VARCHAR(64)	Category of the activity (e.g., Cardio, Strength)

## Activity Table

The `activity` table records individual workout sessions by users.

Column	Type	Description
id	INTEGER PRIMARY KEY	Unique identifier for each activity record
user_id	INTEGER	Reference to the user who performed the activity
activity_type_id	INTEGER	Reference to the type of activity performed
duration	INTEGER	Duration of the activity in minutes
distance	FLOAT	Distance covered in kilometers
calories	INTEGER	Estimated calories burned during the activity
date	TIMESTAMP	When the activity was performed, defaults to current timestamp
notes	TEXT	Additional notes or comments about the activity

## Achievement Type Table

The `achievement_type` table defines the various achievements users can earn.

Column	Type	Description
id	INTEGER PRIMARY KEY	Unique identifier for each achievement type
name	VARCHAR(64) UNIQUE	Name of the achievement (e.g., "First Run")
description	VARCHAR(256)	Description explaining the achievement
icon	VARCHAR(64)	Filename of the icon representing this achievement
requirement_text	VARCHAR(256)	Textual description of how to earn this achievement
requirement_value	INTEGER	Numerical threshold required to earn this achievement
category	VARCHAR(64)	Category of achievement (e.g., Running, Consistency)

## Achievement Table

The `achievement` table records which achievements have been earned by which users.

Column	Type	Description
id	INTEGER PRIMARY KEY	Unique identifier for each achievement record
user_id	INTEGER	Reference to the user who earned the achievement
achievement_type_id	INTEGER	Reference to the type of achievement earned
date_earned	TIMESTAMP	When the achievement was earned, defaults to current timestamp

### Share Table

The `share` table records when users share their activities or achievements with other users.

Column	Type	Description
id	INTEGER PRIMARY KEY	Unique identifier for each share record
user_id	INTEGER	Reference to the user sharing the content
recipient_id	INTEGER	Reference to the user receiving the shared content
content_type	VARCHAR(32)	Type of content being shared (e.g., "activity", "achievement")
content_id	INTEGER	ID of the specific content being shared (references activity.id or achievement.id)
message	TEXT	Optional message included with the share
date_shared	TIMESTAMP	When the content was shared, defaults to current timestamp

### Relationships

- Each user can follow multiple users and be followed by multiple users
- Each user can record multiple activities
- Each activity belongs to exactly one user and one activity type
- Users can earn multiple achievements
- Each achievement record links one user to one achievement type
- Users can share activities and achievements with other users