

CS50 SQL FINAL PROJECT

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FITNESS TRACKER DATABASE

A relational database designed to help users track their workouts, meals, and physical progress efficiently.

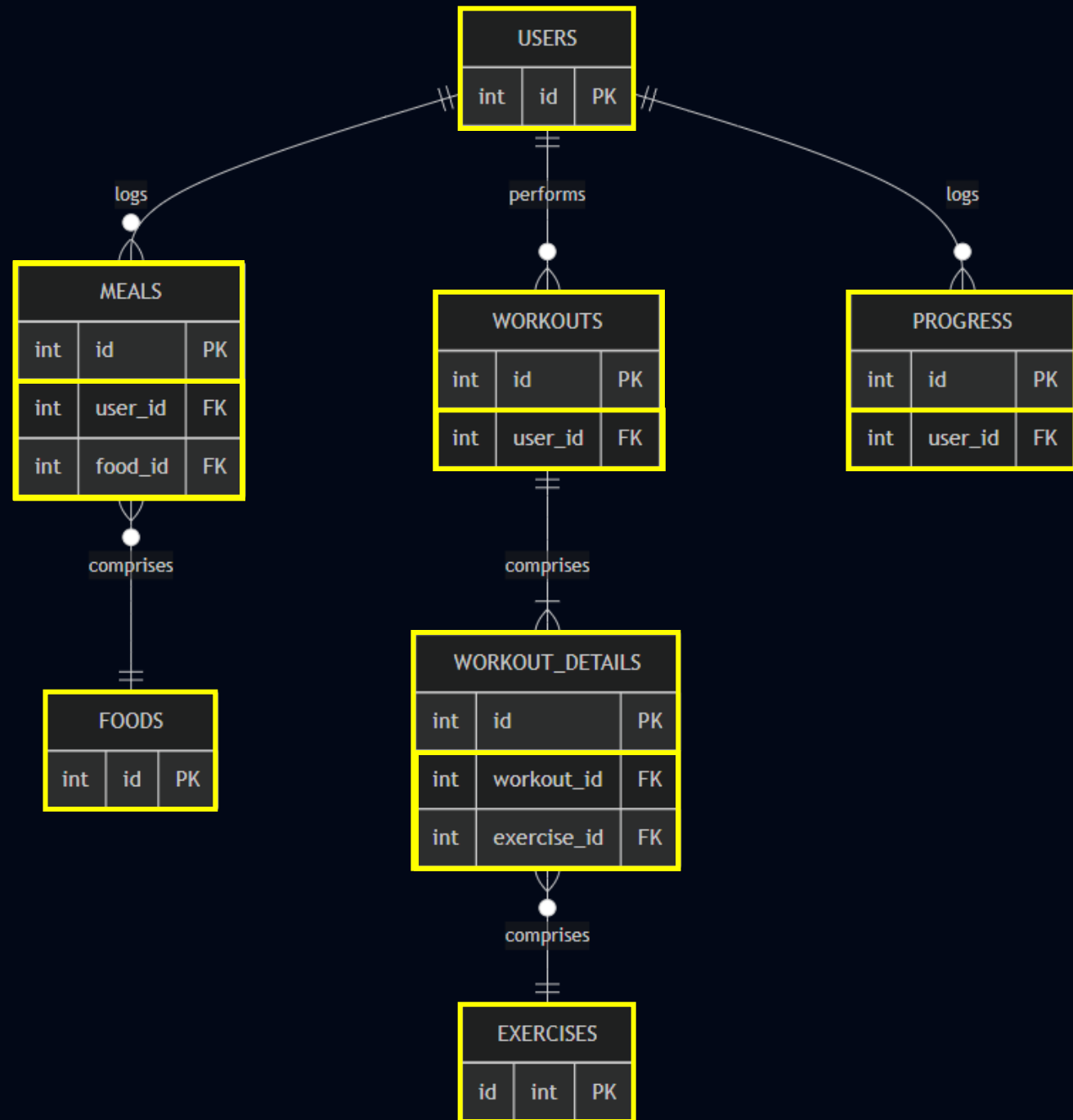
What Does This Database Cover?

- User Profiles
- Workout sessions & exercise details
- Food consumption (calorie and macronutrient intake)
- Physical progress

Purpose: Fitness self-monitoring/tracking

Schema Overview

- Users
- Workouts
- Workout Details
- Exercises
- Meals
- Foods
- Progress



CREATE Views

- workout_list
 - JOIN “users”, “workouts”, “workout_details”, and “exercises”
- meal_nutrients
 - JOIN “users”, “meals”, and “foods”
- user_progress
 - JOIN “users” and “progress”

Purpose: Simplify query logic by joining table and improving reusability

Performance Optimization

CREATE INDEX:

- “username” in “users”
- “user_id” in “workouts”, “meals”, “progress”
- “date” in “workouts”
- “workout_id” in “workout_details”

Result: Common queries are upgraded from SCAN to SEARCH

What Can We Learn From the Data?

Proper queries can give important insights to the user

Total Workout Sessions and Durations

All-time total session:

total_sessions	total_duration	start_date
3	3.25	2025-05-19

Summarized by date:

date	total_sessions	total_duration
2025-05-19	1	1.0
2025-05-20	1	1.5
2025-05-21	1	0.75

Summarized by month:

month	total_sessions	total_duration
05-2025	3	3.25

Summarized by year:

year	total_sessions	total_duration
2025	3	3.25

Total Weight Lifted

All-time total weight lifted:

exercise	total_set	total_reps	total_weight_moved (kg)	start_date
Deadlift	4	40	4800.0	2025-05-19
Squat	4	40	4000.0	2025-05-19
Bench Press	4	40	3200.0	2025-05-20
Shoulder Press	4	40	1600.0	2025-05-20
Bicep Curl	4	48	1200.0	2025-05-21

Total weight lifted summarized by time:

month	exercise	total_set	total_reps	total_weight_moved (kg)
05-2025	Deadlift	4	40	4800.0
05-2025	Squat	4	40	4000.0
05-2025	Bench Press	4	40	3200.0
05-2025	Shoulder Press	4	40	1600.0
05-2025	Bicep Curl	4	48	1200.0

Personal Records (PRs)

muscle_group	exercise	pr_weight (kg)	date	username
Chest	Bench Press	80.0	2025-05-20	erickkhosasi
Arms	Bicep Curl	25.0	2025-05-21	erickkhosasi
Back	Deadlift	120.0	2025-05-19	erickkhosasi
Shoulders	Shoulder Press	40.0	2025-05-20	erickkhosasi
Legs	Squat	100.0	2025-05-19	erickkhosasi

Macronutrient and Calorie Intake

Detail breakdown per meal:

date	meal_type	calories	carbs (g)	protein (g)	fat (g)
2025-05-19	Lunch	385.0	11.1	65.7	7.5
2025-05-19	Dinner	277.0	57.1	8.9	2.1
2025-05-19	Snack	677.0	42.8	26.1	50.3
2025-05-20	Breakfast	383.0	32.8	13.6	25.3

Detail breakdown per day:

date	calories	carbs (g)	protein (g)	fat (g)
2025-05-19	1339.0	111.0	100.7	59.9
2025-05-20	383.0	32.8	13.6	25.3

Limitations and Future Improvements

- No social features and coaching
- No support for duration-based exercises
- No support for complex meal recipe
- Improvement Ideas:
 - Social media feature (workout sharing and challenges)
 - Personal trainer profile and coaching session booking
 - Community challenges

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by Erick Khosasi

Thank You
For Your Attention