LIFTLOG

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Design Documentation

Lift Log is a database for an application that allows a user to search for exercises and track their progress over time. Users can track their weight changes over time through a weight log. Users can also search for exercises based on which body part they want to work out. Users can build routines based on their needs or search for routines that other users have created. Users can see and make reviews on routines.

Figure 1: Entity-Relationship Diagram

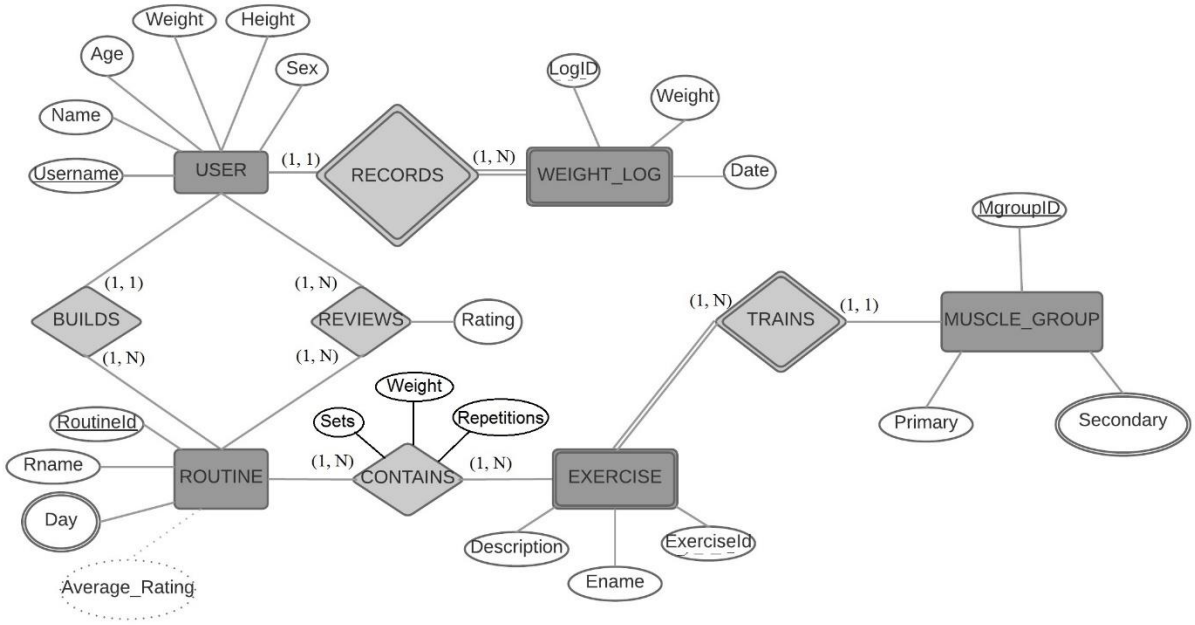

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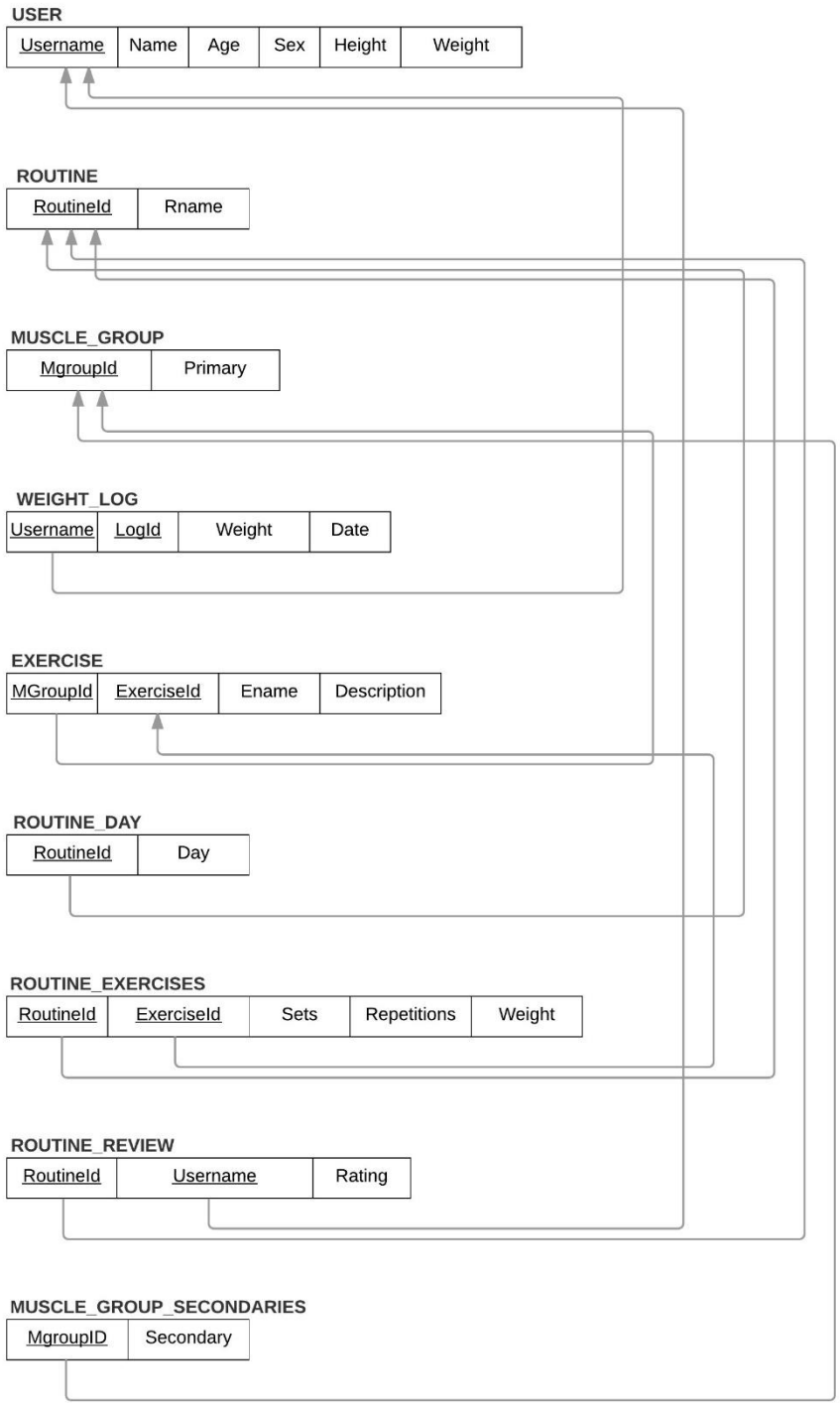
Figure 2: Relational Data Model



Note: MUSCLE_GROUP has an attribute called Primary. In the SQL Creation statements, it is called PrimaryM to avoid SQL conflicts.

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Database Creation and Population

Database Table Names

User
Routine
Muscle_group
Weight_log
Exercise
Routine_day
Routine_exercises
Routine_review
Muscle_group_secondaries

SQL Creation Statements

```
.open LIFTLOG.db

drop table USER;
drop table ROUTINE;
drop table MUSCLE_GROUP;
drop table WEIGHT_LOG;
drop table EXERCISE;
drop table ROUTINE_DAY;
drop table ROUTINE_EXERCISES;
drop table ROUTINE_REVIEW;
drop table MUSCLE_GROUP_SECONDARIES;

CREATE TABLE USER
(
Username VARCHAR(16) NOT NULL ,
Name VARCHAR(30) NOT NULL ,
Age INT NOT NULL CHECK(Age >= 0) ,
Sex CHAR(1) NOT NULL CHECK(Sex in('M', 'F')) ,
Height INT NOT NULL CHECK(Height >= 0) ,
Weight INT NOT NULL CHECK(Weight >= 0) ,
PRIMARY KEY (Username)
);

CREATE TABLE ROUTINE
(
RoutineId INT NOT NULL ,
Rname VARCHAR(25) NOT NULL ,
PRIMARY KEY (RoutineId)
);
```

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```
CREATE TABLE MUSCLE_GROUP
(
MgroupId INT NOT NULL,
PrimaryM VARCHAR(25) NOT NULL,
PRIMARY KEY (MgroupId)
);

CREATE TABLE WEIGHT_LOG
(
Username VARCHAR(16) NOT NULL,
LogId INT NOT NULL ,
Weight INT NOT NULL ,
Date DATE NOT NULL,
PRIMARY KEY (Username, LogId),
CONSTRAINT WLFK1 FOREIGN KEY (Username) REFERENCES User(Username) ON
UPDATE CASCADE ON DELETE CASCADE
);


CREATE TABLE EXERCISE
(
MGroupId INT NOT NULL ,
ExerciseId INT NOT NULL ,
Ename VARCHAR(25) NOT NULL,
Description VARCHAR(1000),
PRIMARY KEY (MGroupId),
CONSTRAINT EXFK1 FOREIGN KEY (MgroupId) REFERENCES
MUSCLE_GROUP(MgroupId) ON UPDATE CASCADE ON DELETE CASCADE
);

CREATE TABLE ROUTINE_DAY
(
RoutineId INT NOT NULL ,
Day VARCHAR(15) NOT NULL ,
PRIMARY KEY (RoutineId),
CONSTRAINT RDFK1 FOREIGN KEY (RoutineId) REFERENCES Routine(RoutineId) ON
UPDATE CASCADE ON DELETE CASCADE
);


CREATE TABLE ROUTINE_EXERCISES
(
RoutineId INT NOT NULL ,
ExerciseId INT NOT NULL ,
Sets INT NOT NULL CHECK(Sets >= 0) ,
```

```
Repetitions INT NOT NULL CHECK(Repetitions >= 0) ,
Weight INT NOT NULL CHECK(Weight >= 0),
PRIMARY KEY (RoutineId, ExerciseId),
CONSTRAINT REFK1 FOREIGN KEY (RoutineId) REFERENCES ROUTINE(RoutineId) ON
UPDATE CASCADE ON DELETE CASCADE,
CONSTRAINT REFK2 FOREIGN KEY (ExerciseId) REFERENCES EXERCISE(ExerciseId)
ON UPDATE CASCADE ON DELETE CASCADE
);

CREATE TABLE ROUTINE_REVIEW
(
RoutineId INT NOT NULL ,
Username VARCHAR(16) NOT NULL,
Rating INT NOT NULL CHECK(rating >= 0 and rating <= 5) ,
PRIMARY KEY (RoutineId, Username),
CONSTRAINT RRFK1 FOREIGN KEY (RoutineId) REFERENCES ROUTINE(RoutineId)
ON UPDATE CASCADE ON DELETE CASCADE
);

CREATE TABLE MUSCLE_GROUP_SECONDARIES
(
MgroupId INT NOT NULL,
Secondary VARCHAR(25),
PRIMARY KEY (MgroupId),
FOREIGN KEY (MgroupId) REFERENCES MUSCLE_GROUP(MgroupId) ON UPDATE
CASCADE ON DELETE CASCADE
);
```

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SQL Insertion Statements

```
insert into USER values ('StrongestMan', 'Jay', 23, 'M', 69, 155);
insert into USER values ('AlwaysLegDay', 'Sasha', 21, 'M', 65, 119);
insert into USER values ('FreePizza', 'Janet', 19, 'M', 64, 115);

insert into ROUTINE values (1234, 'Chest and Back');
insert into ROUTINE values (0000, 'Legs');
insert into ROUTINE values (7777, 'Posterior Chain');
insert into ROUTINE values (1111, 'Shoulders and Arms');

insert into MUSCLE_GROUP values (10, 'Chest'); a
insert into MUSCLE_GROUP values (11, 'Upper Bck');
insert into MUSCLE_GROUP values (12, 'Hamstrings');
insert into MUSCLE_GROUP values (13, 'Quads');
insert into MUSCLE_GROUP values (14, 'Front Delts');
insert into MUSCLE_GROUP values (15, 'Biceps');
insert into MUSCLE_GROUP values (16, 'Triceps');

insert into WEIGHT_LOG values ('StrongestMan', 123, 160, '1-1-2016');
insert into WEIGHT_LOG values ('StrongestMan', 124, 165, '3-1-2016');
insert into WEIGHT_LOG values ('StrongestMan', 125, 158, '5-1-2016');
insert into WEIGHT_LOG values ('StrongestMan', 126, 155, '7-1-2016');
insert into WEIGHT_LOG values ('AlwaysLegDay', 130, 130, '6-23-2016');
insert into WEIGHT_LOG values ('AlwaysLegDay', 131, 124, '7-1-2016');
insert into WEIGHT_LOG values ('FreePizza', 140, 110, '9-23-2016');

insert into EXERCISE values (10, 10000, 'Bench Press', 'Position yourself under a barbell,
depress your shoulders, grip the barbell so your forearms are perpindicular with the floor. Bring
the barbell slowly to your chest, and press back up');
insert into EXERCISE values (11, 11111, 'Barbell Rows', 'Position a barbell on the ground. Grab
the Barbell and slightly wider than shoulder width. Keep your back straight, and bend over. Pull
the Barbell to slightly below your chest.');
insert into EXERCISE values (12, 12222, 'Deadlifts', 'Position a Barbell on the ground. Set up to
the bar, and make sure the midpoint of your foot is below the bar. Stand with your feet hip-width
apart, and grab the bar at shoulder-width apart. Sit back and keep your back straight, and lift the
weight up, focusing on pressing with your legs.');
insert into EXERCISE values (13, 13333, 'Squats', 'Position a Barbell on your traps and stabilize
with your hands. While keeping your back straight, sit back and lower your body until your hips
break parallel with the ground. Push back up.');
insert into EXERCISE values (14, 14444, 'Shoulder Press', 'Position a Dumbbell in each of your
hands above your shoulders. Ensure your elbows do not go behind your back. Press the
dumbbells and up and shrug your shoulders at the top.');
insert into EXERCISE values (15, 15555, 'Bicep Curls', 'While holding a dumbbel in each hand,
bend at the elbow and keep your upper arm and torso from moving while your bring the
dumbbell to your front delt.');
```

```
insert into EXERCISE values (16, 16666, 'Tricep Dips', 'Set up on a dip bar with your chest out and eyes looking forward. Slowly lower your body until your upper arms are parallel with the floor. Press back up.');

insert into ROUTINE_DAY values (1234, 'Monday');
insert into ROUTINE_DAY values (0000, 'Tuesday');
insert into ROUTINE_DAY values (7777, 'Wednesday');
insert into ROUTINE_DAY values (1111, 'Thursday');

insert into ROUTINE_EXERCISES values (1234, 10000, 5, 5, 150);
insert into ROUTINE_EXERCISES values (1234, 11111, 5, 5, 150);
insert into ROUTINE_EXERCISES values (0000, 13333, 5, 5, 250);
insert into ROUTINE_EXERCISES values (7777, 12222, 1, 5, 300);
insert into ROUTINE_EXERCISES values (1111, 14444, 3, 5, 120);
insert into ROUTINE_EXERCISES values (1111, 15555, 3, 8, 90);
insert into ROUTINE_EXERCISES values (1111, 16666, 3, 8, 90);

insert into ROUTINE_REVIEW values (1234, 'StrongestMan', 5);
insert into ROUTINE_REVIEW values (0000, 'StrongestMan', 4);
insert into ROUTINE_REVIEW values (0000, 'AlwaysLegDay', 4);
insert into ROUTINE_REVIEW values (7777, 'StrongestMan', 5);
insert into ROUTINE_REVIEW values (7777, 'AlwaysLegDay', 5);
insert into ROUTINE_REVIEW values (1111, 'FreePizza', 1);

insert into MUSCLE_GROUP_SECONDARIES values (10, 'Shoulders');
insert into MUSCLE_GROUP_SECONDARIES values (11, 'Lats');
insert into MUSCLE_GROUP_SECONDARIES values (12, 'Lower Back');
insert into MUSCLE_GROUP_SECONDARIES values (13, 'Glutes');
insert into MUSCLE_GROUP_SECONDARIES values (14, 'Triceps');


PRAGMA foreign_keys=1;
```

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SQL Query Statements

*Statements need to be typed into SQLite, copy and pasting doesn't work.

SQL statement	Purpose
SELECT * from WEIGHT_LOG, USER where USER.Username = WEIGHT_LOG.username and WEIGHT_LOG.username = 'StrongestMan';	Search for a history of your weight changes over time.
SELECT * from EXERCISE, MUSCLE_GROUP where MUSCLE_GROUP.MgroupId = EXERCISE.MgroupId and PrimaryM = 'Chest';	Search for exercises that involve the chest. This function can be edited to support the searching of other exercises with a different primary mover
SELECT * from ROUTINE, ROUTINE_EXERCISES, EXERCISE, MUSCLE_GROUP where ROUTINE.RoutineId = ROUTINE_EXERCISES.RoutineId and ROUTINE_EXERCISE.ExerciseId = Exercise.ExerciseId and Exercise.MgroupId = MUSCLE_GROUP.MgroupId and PrimaryM = 'Chest';	Search for a routine that involves exercises that involve the chest. This function can be edited to search routines with different primary movers.
SELECT * from ROUTINE;	Search for a list of all routines.
SELECT * from ROUTINE_EXERCISES, EXERCISE where EXERCISE.ExcerciseId = ROUTINE_EXERCISES.ExerciseId and EXERCISE.Ename = 'Bench Press' ORDER BY WEIGHT DESC LIMIT 1; *type into cmd	Search for highest weight lifted in an exercise.
SELECT * from ROUTINE, ROUTINE_REVIEW where ROUTINE_REVIEW.RoutineId = ROUTINE.RoutineId and Rating >= 4;	Search for routines with a rating of 4 or above. This function can be edited with different parameters for the rating.