Department of Computer Science

CPSC 304 Project Cover Page

Milestone #: 2

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Group Number: 14

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By typing our names and student numbers in the above table, we certify that the work in the attached assignment was performed solely by those whose names and student IDs are included above. (In the case of Project Milestone 0, the main purpose of this page is for you to let us know your e-mail address, and then let us assign you to a TA for your project supervisor.)

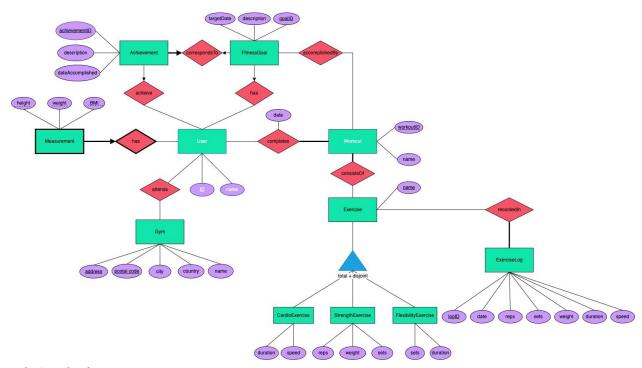
In addition, we indicate that we are fully aware of the rules and consequences of plagiarism, as set forth by the Department of Computer Science and the University of British Columbia

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Project Summary

Our project aims to store and track data related to users' fitness regimes. Users are composed of people looking to introduce an element of consistency and organization to their workouts such that they can clarify their progress and personal targets. The database models users, workouts, exercises, exercise logs, fitness goals, achievements, physical measurements, and gym locations.

ER Diagram



Relational Schema

User(ID: Integer, name: String)

User_Achievement(achievementID: Integer, description: String, dateAccomplished: String)

User_FitnessGoal(goalID: INT, targetDate: String, description: String, userID: INT)

Workout(workoutID: Integer, name: String)

Exercise(<u>name</u>: String)

ExerciseLog(logID: Integer, date: String, reps: Integer, sets: Integer, weight: Integer, duration: Integer,

speed: Integer)

CardioExercise(name: String, duration: Integer, speed: Integer)

StrengthExercise(<u>name</u>: String, reps: Integer, weight: Integer, sets: Integer)

FlexibilityExercise(name: String, duration: Integer, sets: Integer)

Gym(<u>address</u>: String, <u>postalCode</u>: String, city: String, country: String, name: String) User_Measurement(<u>UserID</u>: Integer, <u>height</u>: Integer, <u>weight</u>: Integer, <u>BMI</u>: Real)

Completes(<u>userID</u>: Integer, <u>workoutID</u>: Integer, date: String)

RecordedIn(logID: Integer, exerciseName: String)

Attends(address: String, postalCode: String, userID: Integer)

AccomplishedBy(goalID: Integer, workoutID: Integer) ConsistsOf(workoutID: Integer, exerciseName: String)

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SQL DDL

```
CREATE TABLE User(
       ID: INT PRIMARY KEY,
       name: CHAR(20),
)
CREATE TABLE User_Achievement(
       achievementID: INT PRIMARY KEY,
       description: CHAR(100),
       dateAccomplished: CHAR(20),
       userID: INT,
       goalID: INT NOT NULL,
       FOREIGN KEY (userID) REFERENCES User,
              ON DELETE CASCADE
              ON UPDATE CASCADE
       FOREIGN KEY (goalID) REFERENCES FitnessGoal,
              ON DELETE CASCADE
              ON UPDATE CASCADE
       UNIQUE GoalID,
)
CREATE TABLE User_FitnessGoal(
       goalID: INT PRIMARY KEY,
       description: CHAR(100),
       targetDate: CHAR(20),
       userID: INT,
       FOREIGN KEY (userID) REFERENCES User
              ON DELETE CASCADE
              ON UPDATE CASCADE
)
CREATE TABLE Workout(
       workoutID: INT PRIMARY KEY,
       name: CHAR(20)
)
CREATE TABLE Exercise(
       name: CHAR(20) PRIMARY KEY
CREATE TABLE ExerciseLog(
       logID: INT PRIMARY KEY,
       date: CHAR(20),
       reps: INT,
       sets: INT,
```

```
weight: INT,
       duration: INT,
       speed: INT
)
CREATE TABLE CardioExercise(
       name: CHAR(20) PRIMARY KEY,
       duration: INT,
       speed: INT,
       FOREIGN KEY (name) REFERENCES Exercise
              ON DELETE CASCADE
              ON UPDATE CASCADE
)
CREATE TABLE StrengthExercise(
       name: CHAR(20) PRIMARY KEY,
       reps: INT,
       weight: INT,
       sets: INT
       FOREIGN KEY (name) REFERENCES Exercise
               ON DELETE CASCADE
              ON UPDATE CASCADE
)
CREATE TABLE FlexibilityExercise(
       name: CHAR(20) PRIMARY KEY,
       duration: INT,
       sets: INT
       FOREIGN KEY (name) REFERENCES Exercise
              ON DELETE CASCADE
              ON UPDATE CASCADE
)
CREATE TABLE Gym(
       address: CHAR(40),
       postalCode: CHAR(20),
       city: CHAR(20),
       country: CHAR(20),
       name: CHAR(20),
       PRIMARY KEY(address, postalCode)
)
CREATE TABLE User Measurement(
       height: INT,
       weight: INT,
       BMI: REAL,
       UserID: INT NOT NULL,
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PRIMARY KEY(userID, height, weight, BMI)
       FOREIGN KEY((userID) REFERENCES User,
              ON DELETE CASCADE
              ON UPDATE CASCADE
)
CREATE TABLE Completes(
       userID: INT,
       workoutID: INT,
       date: CHAR(8),
       PRIMARY KEY(userID, workoutID),
       FOREIGN KEY(userID) REFERENCES User
              ON DELETE SET NULL
              ON UPDATE CASCADE
       FOREIGN KEY(workoutID) REFERENCES Workout
              ON DELETE CASCADE
              ON UPDATE CASCADE
)
CREATE TABLE RecordedIn(
       logID: INT,
       exerciseName: CHAR(20),
       PRIMARY KEY(logID, exerciseName),
       FOREIGN KEY(logID) REFERENCES ExerciseLog
              ON DELETE CASCADE
              ON UPDATE CASCADE
       FOREIGN KEY(exerciseName) REFERENCES Exercise
              ON DELETE CASCADE
              ON UPDATE CASCADE
CREATE TABLE Attends(
       address: CHAR(40),
       postalCode: CHAR(20),
       userID: INT,
       PRIMARY KEY (address, postalCode, userID),
       FOREIGN KEY (address, postalCode) REFERENCES Gym
              ON DELETE SET NULL
              ON UPDATE CASCADE
       FOREIGN KEY (userID) REFERENCES User
              ON DELETE SET NULL
              ON UPDATE CASCADE
)
CREATE TABLE AccomplishedBy(
       goalID: INT,
       workoutID: INT,
```

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PRIMARY KEY (goalID, workoutID),
        FOREIGN KEY (goalID) REFERENCES FitnessGoal
               ON DELETE SET NULL
               ON UPDATE CASCADE
       FOREIGN KEY (workoutID) REFERENCES Workout
               ON DELETE SET NULL
               ON UPDATE CASCADE
)
CREATE TABLE ConsistsOf(
       workoutID: INT,
       exerciseName: CHAR(20),
        PRIMARY KEY(workoutID, exerciseName),
        FOREIGN KEY(WorkoutID) REFERENCES Workout,
               ON DELETE SET NULL
               ON UPDATE CASCADE
       FOREIGN KEY(exerciseName) REFERENCES Exercise
               ON DELETE SET NULL
               ON UPDATE CASCADE
)
Functional Dependencies
User:
userID \rightarrow name
User_Measurement:
userID → height, weight, BMI
height, weight → BMI
User_Achievement:
achievementID \rightarrow userID, \, goalID
goalID → achievementID
User_FitnessGoal:
achievementID \rightarrow goalID
goalID → achievementID, targetDate, description
Workout:
workoutID → name
ExerciseLog:
logID \rightarrow date, reps, sets, weight, duration, speed
CardioExercise:
name \rightarrow duration, speed
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StrengthExercise:

name \rightarrow reps, weight, sets

FlexibilityExercise:

name \rightarrow duration, sets

Gym:

address, postalCode \rightarrow city, country, name postalCode \rightarrow country

Completes:

userID, workoutID \rightarrow date

Normalization

Gym:

address, name, city postalCode country

R1(address, name, city, postalCode)

Key: address, postalCode

address, postalCode \rightarrow city, name \checkmark

R2(postalCode, country)

Key: postalCode

postalCode \rightarrow country \checkmark

User(ID: Integer, name: String)

User Achievement(achievementID: Integer, description: String, dateAccomplished: String)

User FitnessGoal(goalID: INT, targetDate: String, description: String, userID: INT)

Workout(workoutID: Integer, name: String)

Exercise(name: String)

ExerciseLog(logID: Integer, date: String, reps: Integer, sets: Integer, weight: Integer, duration: Integer,

speed: Integer)

CardioExercise(<u>name</u>: String, duration: Integer, speed: Integer)

StrengthExercise(name: String, reps: Integer, weight: Integer, sets: Integer)

FlexibilityExercise(<u>name</u>: String, duration: Integer, sets: Integer)

Gym(<u>address</u>: String, <u>postalCode</u>: String, city: String, name: String)

PCC(postalCode: String, country: String)

User_Measurement(<u>UserID</u>: Integer, <u>height</u>: Integer, <u>weight</u>: Integer, <u>BMI</u>: Real)

Completes(<u>userID</u>: Integer, <u>workoutID</u>: Integer, date: String)

RecordedIn(logID: Integer, exerciseName: String)

Attends(address: String, postalCode: String, userID: Integer)

AccomplishedBy(goalID: Integer, workoutID: Integer) ConsistsOf(workoutID: Integer, exerciseName: String)

Populate Tables

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User:

INSERT INTO User (userID, name)
VALUES (1, 'John Doe');
INSERT INTO User (userID, name)
VALUES (2,' Jane Doe');
INSERT INTO User (userID, name)
VALUES (3, 'Sally Sue');
INSERT INTO User (userID, name)
VALUES (4, 'Kim Possible');

INSERT INTO User (userID, name)

User_Achievement:

VALUES (5, 'James Bond');

INSERT INTO User_Achievement (achievementID, description, dateAccomplished, userID, goalID) VALUES (1, '20 chin-ups', '12/06/2023', 1, 1);

INSERT INTO User_Achievement (achievementID, description, dateAccomplished, userID, goalID) VALUES (2, '80 push-ups', '12/06/2023'', 1, 2);

INSERT INTO User_Achievement (achievementID, description, dateAccomplished, userID, goalID) VALUES (3, 'Splits on both sides', '01/05/2023'', 2, 3);

INSERT INTO User_Achievement (achievementID, description, dateAccomplished, userID, goalID) VALUES (4, 'Splits on both sides', '15/02/2023'', 4, 4);

INSERT INTO User_Achievement (achievementID, description, dateAccomplished, userID, goalID) VALUES (5, 'Run for 30 minutes at 9 kph', '01/01/2023'', 5, 5);

User_FitnessGoal:

INSERT INTO User_FitnessGoal (goalID, description, targetDate, userID) VALUES (1, '20 chin-ups', '01/06/2023', 1);

INSERT INTO User_FitnessGoal (goalID, description, targetDate, userID) VALUES (2, '80 push-ups', '01/06/2023', 1);

INSERT INTO User_FitnessGoal (goalID, description, targetDate, userID) VALUES (3, 'Splits on both sides', '01/04/2023', 3);

INSERT INTO User_FitnessGoal (goalID, description, targetDate, userID) VALUES (4, 'Splits on both sides', '01/01/2023', 4);

INSERT INTO User_FitnessGoal (goalID, description, targetDate, userID)

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VALUES (5, 'Run for 30 minutes at 9 kph', '01/01/2023', 5);
INSERT INTO User FitnessGoal (goalID, description, targetDate, userID)
VALUES (6, 'Run for 90 minutes at 9 kph', '01/06/2023', 5);
Workout:
INSERT INTO Workout (workoutID, name)
VALUES (1, 'Cardio-Centric High Impact Routine');
INSERT INTO Workout (workoutID, name)
VALUES (2, 'Endurance Boost');
INSERT INTO Workout (workoutID, name)
VALUES (3, 'Upper Body Weight Training);
INSERT INTO Workout (workoutID, name)
VALUES (4, 'Upper Body Strength and Flexibility Fusion');
INSERT INTO Workout (workoutID, name)
VALUES (5, 'HIIT Cycling');
INSERT INTO Workout (workoutID, name)
VALUES (6, 'Endurance Dance Routine');
Exercise:
INSERT INTO Exercise (name)
VALUES ('Jump Squats and Lunges');
INSERT INTO Exercise (name)
VALUES ('Sprints');
INSERT INTO Exercise (name)
VALUES ('Weighted Squats');
INSERT INTO Exercise (name)
VALUES ('HopScotch Circuit');
INSERT INTO Exercise (name)
VALUES ('Box Jumps');
INSERT INTO Exercise (name)
VALUES ('Squat Jump Sequence');
INSERT INTO Exercise (name)
VALUES ('Bicep Curl');
INSERT INTO Exercise (name)
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VALUES ('Bench Press');
INSERT INTO Exercise (name)
VALUES ('Ball Throws');
INSERT INTO Exercise (name)
VALUES ('Power Yoga Flow');
INSERT INTO Exercise (name)
VALUES ('Leg Kicks');
INSERT INTO Exercise (name)
VALUES ('Toe Touches');
INSERT INTO Exercise (name)
VALUES ('Hanging Leg Raises');
INSERT INTO Exercise (name)
VALUES ('Chaturanga Push-Ups');
INSERT INTO Exercise (name)
VALUES ('Cycling');
INSERT INTO Exercise (name)
VALUES ('Pop Dance Routine');
INSERT INTO Exercise (name)
VALUES ('Hip-Hop Dance Routine');
CardioExercise:
INSERT INTO CardioExercise (name, duration, speed)
VALUES ('Jump Squats and Lunges', 5, NULL);
INSERT INTO CardioExercise (name, duration, speed)
VALUES ('Box Jumps', 10, NULL);
INSERT INTO CardioExercise (name, duration, speed)
VALUES ('Squat Jump Sequence', 5, NULL);
INSERT INTO CardioExercise (name, duration, speed)
VALUES ('Sprints', 3, 25);
INSERT INTO CardioExercise (name, duration, speed)
VALUES ('Hop-Scotch Circuit', 5, NULL);
INSERT INTO CardioExercise (name, duration, speed)
VALUES ('Pop Dance Routine', 45, NULL);
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INSERT INTO CardioExercise (name, duration, speed) VALUES ('Hip-Hop Dance Routine', 45, NULL);

INSERT INTO CardioExercise (name, duration, speed) VALUES ('Cycling', 30, 20);

StrengthExercise:

INSERT INTO StrengthExercise (name, reps, weight, sets) VALUES ('Weighted Squats', 20, 15, 3);

INSERT INTO StrengthExercise (name, reps, weight, sets) VALUES ('Bicep Curl', 15, 30, 3);

INSERT INTO StrengthExercise (name, reps, weight, sets) VALUES ('Bench Press', 30, 10, 3);

INSERT INTO StrengthExercise (name, reps, weight, sets) VALUES ('Ball Throws', 25, 20, 3);

INSERT INTO StrengthExercise (name, reps, weight, sets) VALUES ('Chaturanga Push-Ups', 30, NULL, 3);

FlexibilityExercise:

INSERT INTO FlexibilityExercise (name, duration, sets) VALUES ('Power Yoga Flow', 30, NULL);

INSERT INTO FlexibilityExercise (name, duration, sets) VALUES ('Power Yoga Flow', 60, NULL);

INSERT INTO FlexibilityExercise (name, duration, sets) VALUES ('Leg Kicks', 3, 15);

INSERT INTO FlexibilityExercise (name, duration, sets) VALUES ('Toe Touches', 3, 5);

INSERT INTO FlexibilityExercise (name, duration, sets) VALUES ('Hanging Leg Raises', 20, 2);

ExerciseLog:

INSERT INTO ExerciseLog (logID, date, reps, sets, weight, duration, speed) VALUES (1, '10/06/2023', 20, NULL, NULL, NULL, NULL);

INSERT INTO ExerciseLog (logID, date, reps, sets, weight, duration, speed) VALUES (2, '30/05/2023', 10, 5, 30, NULL, NULL);

INSERT INTO ExerciseLog (logID, date, reps, sets, weight, duration, speed)

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VALUES (3, '12/06/2023', NULL, NULL, NULL, 60, NULL);

INSERT INTO ExerciseLog (logID, date, reps, sets, weight, duration, speed) VALUES (4, '01/05/2023', NULL, NULL, NULL, 30, 19);

INSERT INTO ExerciseLog (logID, date, reps, sets, weight, duration, speed) VALUES (5, '02/19/2023', NULL, NULL, NULL, 3, 27);

RecordedIn:

INSERT INTO RecordedIn (logID, exerciseName) VALUES (1, "Leg Kicks");

INSERT INTO RecordedIn (logID, exerciseName) VALUES (2, "Bench Press");

INSERT INTO RecordedIn (logID, exerciseName) VALUES (3, "Pop Dance Routine");

INSERT INTO RecordedIn (logID, exerciseName) VALUES (4, "Cycling");

INSERT INTO RecordedIn (logID, exerciseName) VALUES (5, "Sprints");

User_Measurement:

INSERT INTO User_Measurement (height, weight, BMI, UserID) VALUES ('175', '60', '19.6', 1)

INSERT INTO User_Measurement (height, weight, BMI, UserID) VALUES ('188', '75', '21.2', 2)

INSERT INTO User_Measurement (height, weight, BMI, UserID) VALUES ('153', '64', '27.3', 3)

INSERT INTO User_Measurement (height, weight, BMI, UserID) VALUES ('202', '92', '22.5', 4)

INSERT INTO User_Measurement (height, weight, BMI, UserID) VALUES ('166', '49', '17.8', 5)

Completes:

INSERT INTO Completes (userID, workoutID, date) VALUES (1, 5, '22/03/2023')

INSERT INTO Completes (userID, workoutID, date) VALUES (2, 4, '09/02/2023')

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INSERT INTO Completes (userID, workoutID, date) VALUES (3, 3, '11/05/2023')

INSERT INTO Completes (userID, workoutID, date) VALUES (4, 2, '29/01/2023')

INSERT INTO Completes (userID, workoutID, date) VALUES (5, 1, '14/02/2023')

ConsistsOf:

INSERT INTO ConsistsOf (workoutID, exerciseName) VALUES (1, 'Jump Squats and Lunges')

INSERT INTO ConsistsOf (workoutID, exerciseName) VALUES (1, 'Sprints')

INSERT INTO ConsistsOf (workoutID, exerciseName) VALUES (1, 'Box Jumps')

INSERT INTO ConsistsOf (workoutID, exerciseName) VALUES (1, 'Squat Jump Sequence')

INSERT INTO ConsistsOf (workoutID, exerciseName) VALUES (2, 'HopScotch Circuit')

INSERT INTO ConsistsOf (workoutID, exerciseName) VALUES (2, 'Pop Dance Routine')

INSERT INTO ConsistsOf (workoutID, exerciseName) VALUES (2, 'Hip-Hop Dance Routine')

INSERT INTO ConsistsOf (workoutID, exerciseName) VALUES (3, 'Bicep Curl')

INSERT INTO ConsistsOf (workoutID, exerciseName) VALUES (3, 'Bench Press')

INSERT INTO ConsistsOf (workoutID, exerciseName) VALUES (3, 'Ball Throws')

INSERT INTO ConsistsOf (workoutID, exerciseName) VALUES (4, 'Chaturanga Push-Ups')

INSERT INTO ConsistsOf (workoutID, exerciseName) VALUES (4, 'Weighted Squats')

INSERT INTO ConsistsOf (workoutID, exerciseName)

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VALUES (4, 'Power Yoga Flow')

INSERT INTO ConsistsOf (workoutID, exerciseName) VALUES (4, 'Leg Kicks')

INSERT INTO ConsistsOf (workoutID, exerciseName) VALUES (4, 'Toe Touches')

INSERT INTO ConsistsOf (workoutID, exerciseName) VALUES (4, 'Hanging Leg Raises')

INSERT INTO ConsistsOf (workoutID, exerciseName) VALUES (5, 'Cycling')

Gym:

INSERT INTO Gym (address, postalCode, city, name)
VALUES ('6000 Student Union Blvd', 'V6T 1Z1', 'Vancouver', 'BirdCoop Fitness Centre')

INSERT INTO Gym (address, postalCode, city, name) VALUES ('3407 Guadalupe St', '78705', 'Austin', 'Anytime Fitness')

INSERT INTO Gym (address, postalCode, city, name)
VALUES ('206 Lakeside Dr', 'V1L 6B9', 'Nelson', 'Maverick Strength')

INSERT INTO Gym (address, postalCode, city, name)
VALUES ('1121 Ironwood St', 'V9W 5L6', 'Campbell River', 'West Coast Muscle and Fitness')

INSERT INTO Gym (address, postalCode, city, name) VALUES ('1350 Manufacturing St Suite 204', '75207', 'Dallas', 'Hunger in the Wild Gym')

PCC:

INSERT INTO Gym (postalCode, country) VALUES ('V6T 1Z1', 'Vancouver', 'Canada')

INSERT INTO Gym (postalCode, country) VALUES ('78705', 'United States')

INSERT INTO Gym (postalCode, country) VALUES ('V1L 6B9', 'Canada')

INSERT INTO Gym (postalCode, country) VALUES ('V9W 5L6', 'Canada')

INSERT INTO Gym (postalCode, country) VALUES ('75207', 'United States')

Attends:

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INSERT INTO Attends (address, postalCode, userID) VALUES ('6000 Student Union Blvd', 'V6T 1Z1', 1)

INSERT INTO Attends (address, postalCode, userID) VALUES ('6000 Student Union Blvd', 'V6T 1Z1', 2)

INSERT INTO Attends (address, postalCode, userID) VALUES ('206 Lakeside Dr', 'V1L 6B9', 3)

INSERT INTO Attends (address, postalCode, userID) VALUES ('1350 Manufacturing St Suite 204', '75207', 4)

INSERT INTO Attends (address, postalCode, userID) VALUES ('3407 Guadalupe St', '78705', 4)

INSERT INTO Attends (address, postalCode, userID) VALUES ('1121 Ironwood St', 'V9W 5L6', 5)

AccomplishedBy:

INSERT INTO AccomplishedBy (goalID, workoutID) VALUES (1, 3)

INSERT INTO AccomplishedBy (goalID, workoutID) VALUES (1, 4)

INSERT INTO AccomplishedBy (goalID, workoutID) VALUES (2, 3)

INSERT INTO AccomplishedBy (goalID, workoutID) VALUES (2, 4)

INSERT INTO AccomplishedBy (goalID, workoutID) VALUES (3, 4)

INSERT INTO AccomplishedBy (goalID, workoutID) VALUES (4, 4)

INSERT INTO AccomplishedBy (goalID, workoutID) VALUES (5, 1)

INSERT INTO AccomplishedBy (goalID, workoutID) VALUES (5, 2)

INSERT INTO AccomplishedBy (goalID, workoutID) VALUES (5, 5)

INSERT INTO AccomplishedBy (goalID, workoutID)

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VALUES (6, 1)

INSERT INTO AccomplishedBy (goalID, workoutID) VALUES (6, 2)

INSERT INTO AccomplishedBy (goalID, workoutID) VALUES (6, 5)