Swimming Database
Problem Statement

CSSE333 Databases Spring 2023

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Executive Summary

This document contains information about the problem that our swimming database will solve. It will detail the problem at several different levels and provide designs for our solution which include an E-R diagram and relational schema.

The athletes who compete in the sport of swimming must endure strict and difficult practices on a consistent basis, all in hopes of dropping a few milliseconds in races. It is important for precise documentation of each race to exist to track a swimmer's progress and qualifications for meets. However, there is currently no easy way to find a list of the fastest cuts a swimmer has achieved or how close their time is to the prevalent time standard all in one place. Additionally, with so many different race suits available on the market, it is difficult for newer swimmers to choose which tech suit to use. We propose a database solution that will solve both issues by tracking personal times and time standards to compare the two, as well the suits used by different swimmer for different races.

Introduction

The purpose of this document is to provide the initial design of our swimming database system. This document will summarize our basic implementation ideas before any of the actual construction of the database has taken place to ensure sufficient support has been gathered for the project to proceed further. The problem to be solved will be described in detail to give a sufficient understanding on the value of the project, followed by an E-R diagram and relational schema for our proposed database solution. A clear understanding of how our solution will work should given by the end of this paper.

Main Content

A. High Level Problem Summary

Elevator Statement

The current problem is that there is no easy way for a swimmer to find their fastest cut achieved or how far they are from a new cut, as well as there being no way to identify which tech suit is best for them to buy.

Primary Success Criteria

The primary success criteria include implementing a database that will track swimmers, their best times, the current time standards, and finding a way to calculate the time difference between the swimmers fastest time and the next closest time standard. Additionally, each event will need to be tracked and the type of suit a swimmer wears for an event will also be stored.

Scope

Included:

1. Swimmers
2. Coaches
3. Events
4. Equipment
5. Team
6. USA Standardized Time Standards [1]

This project is specifically designed for competitive swimmers in club or at the collegiate level.

Not Included:

1. Meets participated in
2. State Level and Below Cuts
3. Non-USA swimmers
4. Times other than best times

This project is not designed to keep track of swimming outside of the US's swimming management system, nor is it able to keep track of cuts that are not standardized across the US such as state level cuts [1]. Additionally, it will not keep a record of all the times ever swam of the swimmer, but only the best times which are used to compare to cuts.

B. Detailed Problem Statement

Key Stakeholders

Fola Ayano	*Project Advisor*
Blaise Swartwood	*Project Member*
Brian Beasley	*Project Member*
Ben Graham	*Project Member*
USA Swimmers	*End Users*
Rose-Hulman Swimmers	*Beta Testers, End Users*

Expected Functionality

1. Ability to track swimmers, swimmer's best times, standardized times, and equipment used in races
2. Ability to view time difference between a specific swimmer's best times and closest standardized times
3. Ability to view the fastest time standards a specific swimmer qualifies for
4. Ability to view which tech suits are most used depending on the event
5. Ability to search for one specific event of a swimmer

6. Ability to simply view all time standards for an event
7. Ability for users to login
8. Ability for users to update their best times/synch with USA swimming to pull best times automatically
9. Ability for maintainers to update time standards/synch with USA swimming to pull new time standards automatically

References

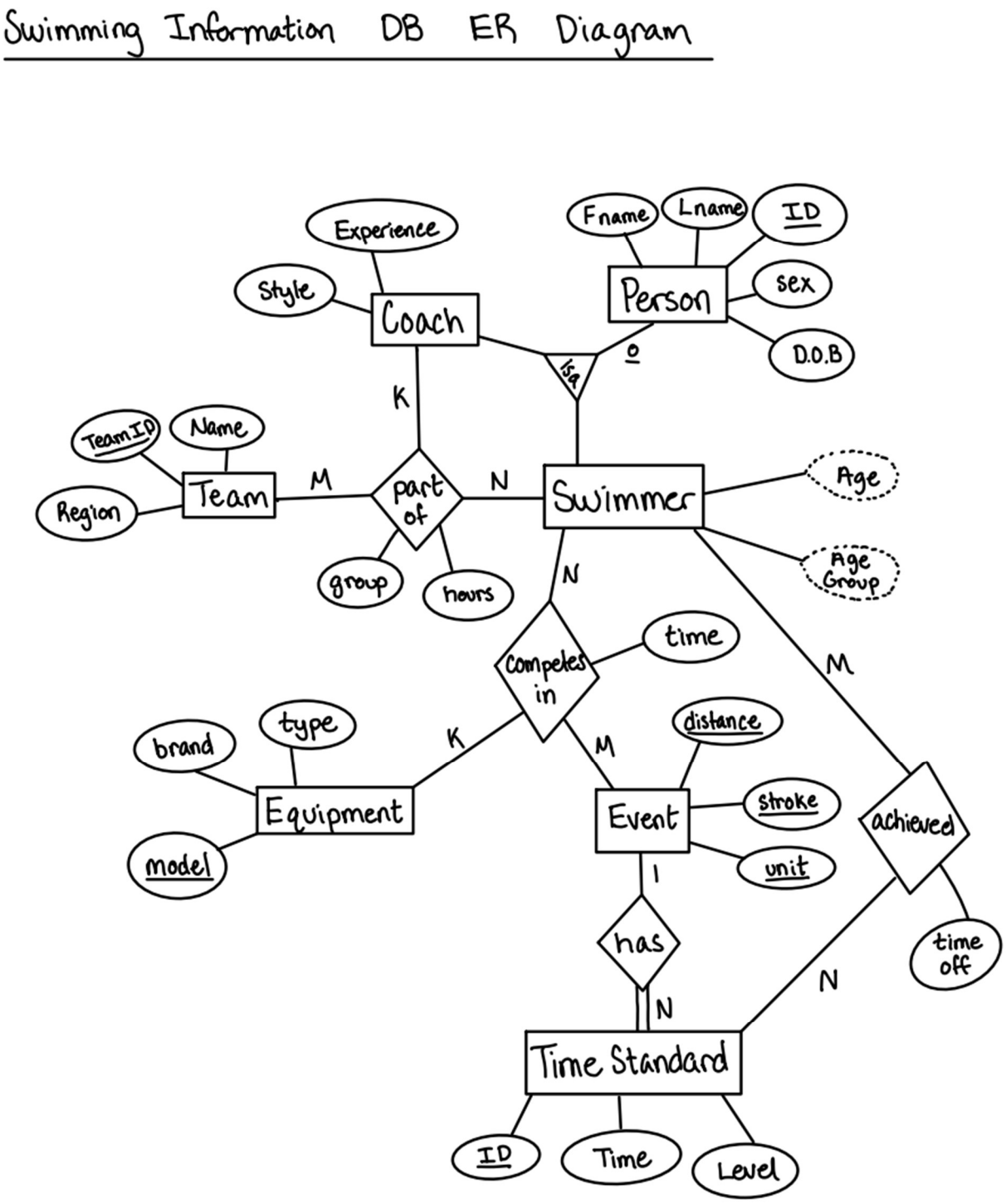
[1] USA Swimming Time Search: Individual Times Search (usaswimming.org)

[2] SwimCloud Time Search Information: Swimcloud

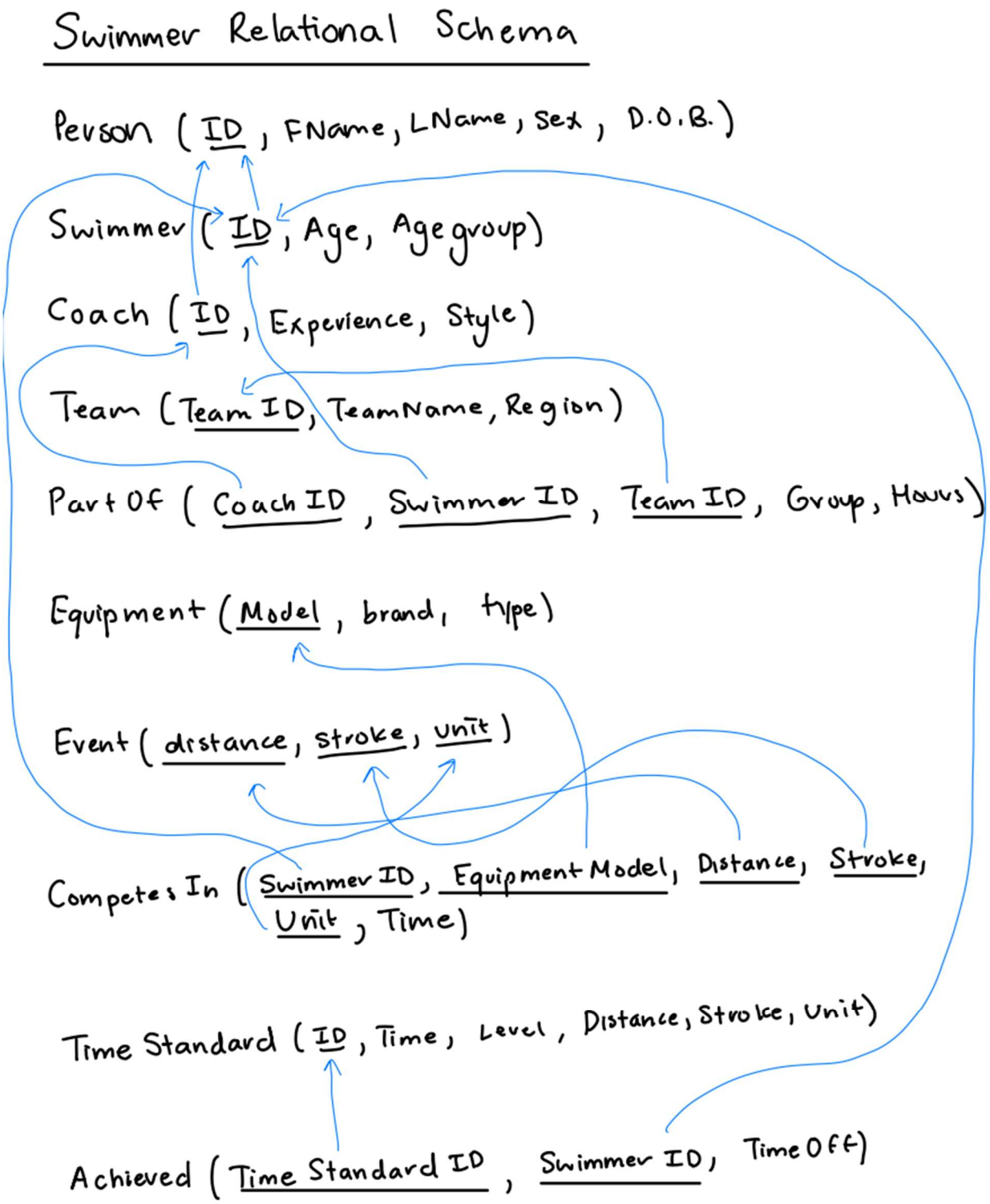
Appendix

Information on tech suits and why it is hard to distinguish between which tech suit is better than the other without data: 21 Best Tech Suits for Swimming- The 2023 Expert Review (swimcompetitive.com)

A: ER Diagram


Swimming Information DB ER Diagram
Experience
Style
Coach
Fname
Lname
ID
Person
sex
D.O.B
ISA
K
O
TeamID
Name
Region
Team
M
part of
N
Swimmer
Age
Age Group
group
hours
N
compeles in
time
M
brand
type
Equipment
K
M
distance
Event
stroke
unit
achieved
model
1
has
N
N
time off
Time Standard
ID
Time
Level

B: Relational Schema



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Glossary

Entity-Relationship (ER) Diagram – representation of a database through depictions

Technical Racing (tech) Suit – a swimsuit meant for competitive racing, which usually cost anywhere from $200-500 and can only be worn a few times before needing to be replaced