Chapter 1

Task 1 - Textual description of a database

1.1 Aim

Football manager database in order to be able to simulate football manager game.
It needs to reflect realistically status, description, attributes of entities connected with football in order to ensure better simulation.

1.2 Objects

We have chosen to make 6 entities

- Player - Football players who are involved in matches, are signed to clubs, are coached by specific manager, they are the most important entity in the database as they are base for the whole database to function properly. Their behavior needs to be simulated not only during games but also after and before games.
  skill value, position, reputation, contract status (is player loaned out from another club for example or maybe they do not have a club at all), injury status, age, wages, transfer value,
- Club - budget (for wages, transfers), players assigned to club, manager assigned to club, competitions the club is taking part in, training ground quality, reputation, country of origin,
- Match - Clubs taking part in (from which we derivate manager and players), score, statistics (like shots on target), attendance, weather, duration (90 minutes or extended time), date, referee name

- Manager - skill value, reputation, age, wages
- Competition - list of matches, prize, country, reputation (importance of the tournament)
  (not tournament because tournament usually refers to like cup competitions not league ones)
- Stadium - venue assigned to a club where certain competitions and matches take place, hold information about maximum capacity, stadium reputation, location, year it was build, value of stadium, ticket price,

1.3 Requirements concerning data

Players and Manager skill is between 1 and 10
Positions are restricted to Goalkeeper, Defender, Midfield and Attacker
Reputations (for player, manager, club and match) are restricted between 1 and 5 (as in stars with 1 between each step)
Quality of facilities are restricted between 1 and 5
Competition should have at least one match
Weather restricted to Sunny, Rainy, Snowy,
Contract can be active or expired

1.4 Business Activities

Activities we would like to cover are, players exchanged between clubs, player signed to club, player released from club (end of contract for example)
clubs taking part in matches, clubs hiring players and manager, clubs taking part in competition, players playing in matches
manager exchanged between clubs, manager signed to club, manager released from club,
Competition organizing matches
Stadium ticket price being raised by club
Get Competition schedule from list of matches

Chapter 2

Task 2 - ERD - Entity Relationship Diagram

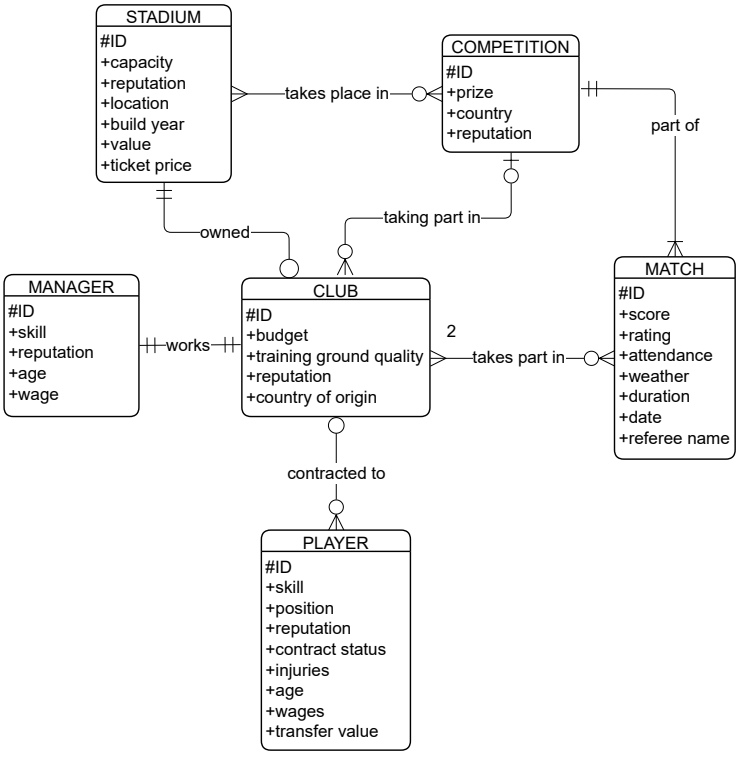

Figure 2.1: ERD

2.1 Description

2.1.1 Relationship description

Stadium → Competion Stadium can belong to many Competitions.

Competion → Stadium Competitions take part in specific Stadiums.

Competion → Match Competition is composed of many Matches.

Match → Competion Match takes part within specific Competition.

Competion → Club Competition consists of many clubs.

Club → Competion Club takes part if one or none Competition at a time.

Club → Stadium Club has Stadium.

Stadium → Club Stadium may belong to a Club.

Manager → Club Manager works in one Club.

Club → Manager Club employs one Manager.

Club → Player Club may employ many Players.

Player → Club Player may be contracted to a (one) Club.

Match → Club Match is played between two Clubs.

Club → Match Club may take part in many Matches.

2.1.2 Entities and attributes description

Stadium Stadium entity represents Stadium object from Objects Section

- capacity - maximum number of fans that can attend Match
- reputation - how popular it is
- location - where is it located
- build year - when it was build
- value - how much is it worth
- ticket price - price to enter a Stadium per person

Competition Competition entity represents Competition object from Objects Section

- prize - Sum of money received by winning Club
- country - Where the Competition is taking place
- reputation - how popular it is

Manager Manager entity represents Manager object from Objects Section

- skill - how good the Manager is at managing Club
- reputation - how popular Manager is
- age - how old the Manager is
- wage - how much is the Manager paid monthly

Club Club entity represents Club object from Objects Section

- budget - amount of money it can spend yearly
- training ground quality - how good training grounds are
- reputation - how popular it is
- country of origin - where it was created

Match Match entity represents Match object from Objects Section

- score - current Match score
- rating - how enjoyable was the game
- attendance - how many people came
- weather - weather condition during the match
- duration - duration of the game
- date - when the game took place
- referee name - who refereed the game

Player Player entity represents Player object from Objects Section

- skill - how good the Player is
- position - position the Player is the best at
- reputation - how popular Player is
- contract status - whether the Player has active contract with a Club or is it expired
- injuries - days until healed (0 if no injuries present)
- age - how old the Player is
- wages - how much the Player is paid monthly
- transfer value - how much the Player is worth

2.1.3 Relational diagram

Description A relational diagram was generated using SQL developer. The most notable aspects of it are:
- Entities remain the same as in the logical diagram, they are now described with higher details written by the generation.
- Most of the relations remained visually the same aside from three, those are:
- STADIUM:COMPETITION-takes_place_in along with CLUB:MATCH-takes_part_in have been separated into a relational block based on the fact that those are N:M relations
- MANAGER:CLUB-works was disjoined into two relations due to the original relation being 1:1 with identity