ENES BAŞER - 2020400141

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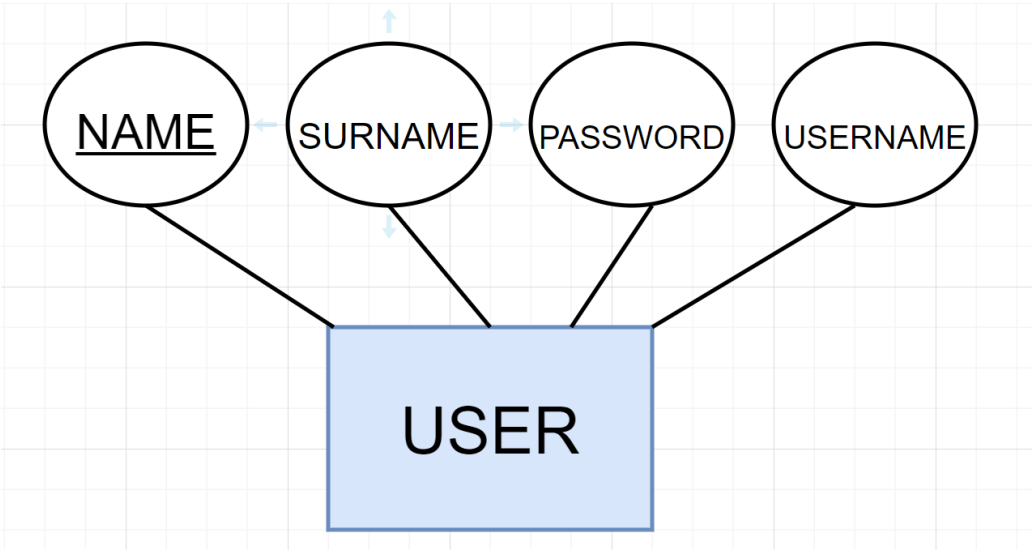
Report - Part 1

Part-1 is the part where we designed the Conceptual Database Design (or ER Design) and drew ER diagrams to capture all the information, following the approach described in the lectures. In this part, we tried to identify all the entity sets and relationship sets in a reasonable way.

Before we start, let me mention some of our design choices of ER Design. First, entity sets are rectangular shaped with blue color. Second, relationship sets are diamond shaped with orange colour.Third, ISA hierarchy is triangular shaped with white color. Attributes of the sets are ellipses shaped with white color. Lastly, Primary keys are underlined and participation constraints are shown with light and bold lines and key constraints are shown with arrows.

Let’s dive in by explaining the design of the first entity set.

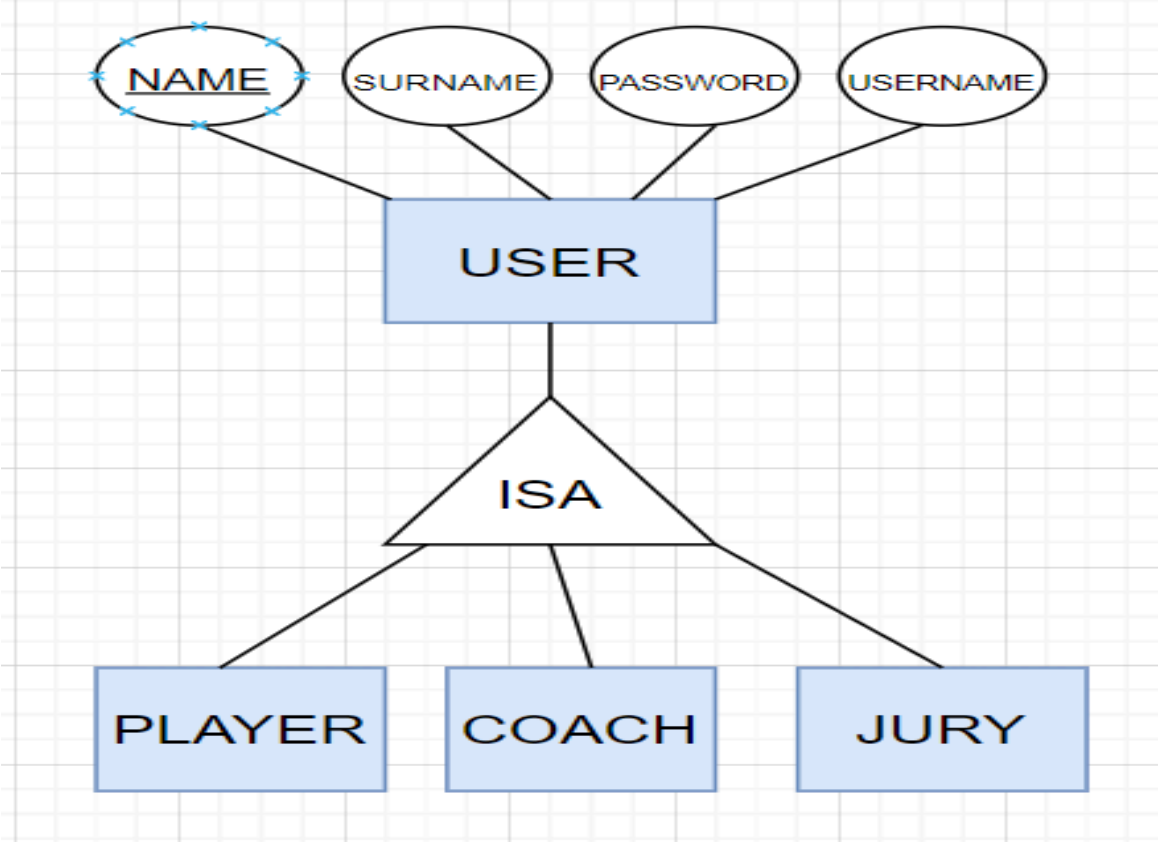
USER ENTITY SET



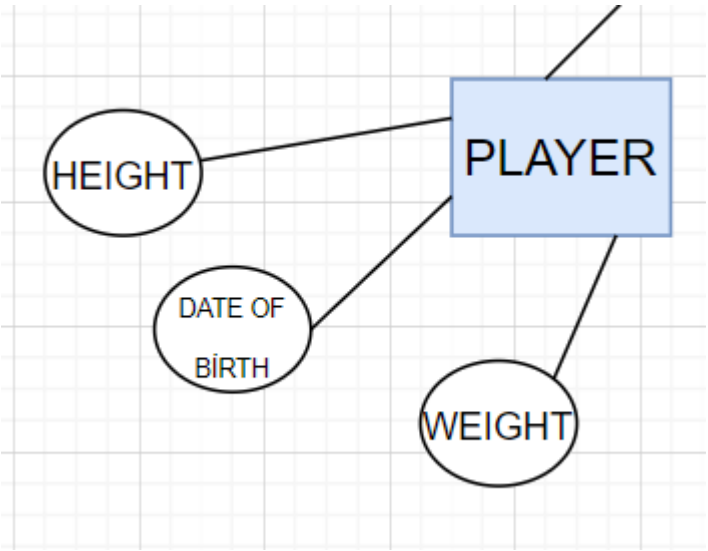
Each user has a unique name, so we set the name attribute as PRIMARY KEY and we underline the NAME attribute. Other attributes such as SURNAME, PASSWORD,

USERNAME are usual attributes ,so they do not have special cases. Also each user is either a player or a coach or a jury. This situation is obtained by the ISA hierarchy as shown below.

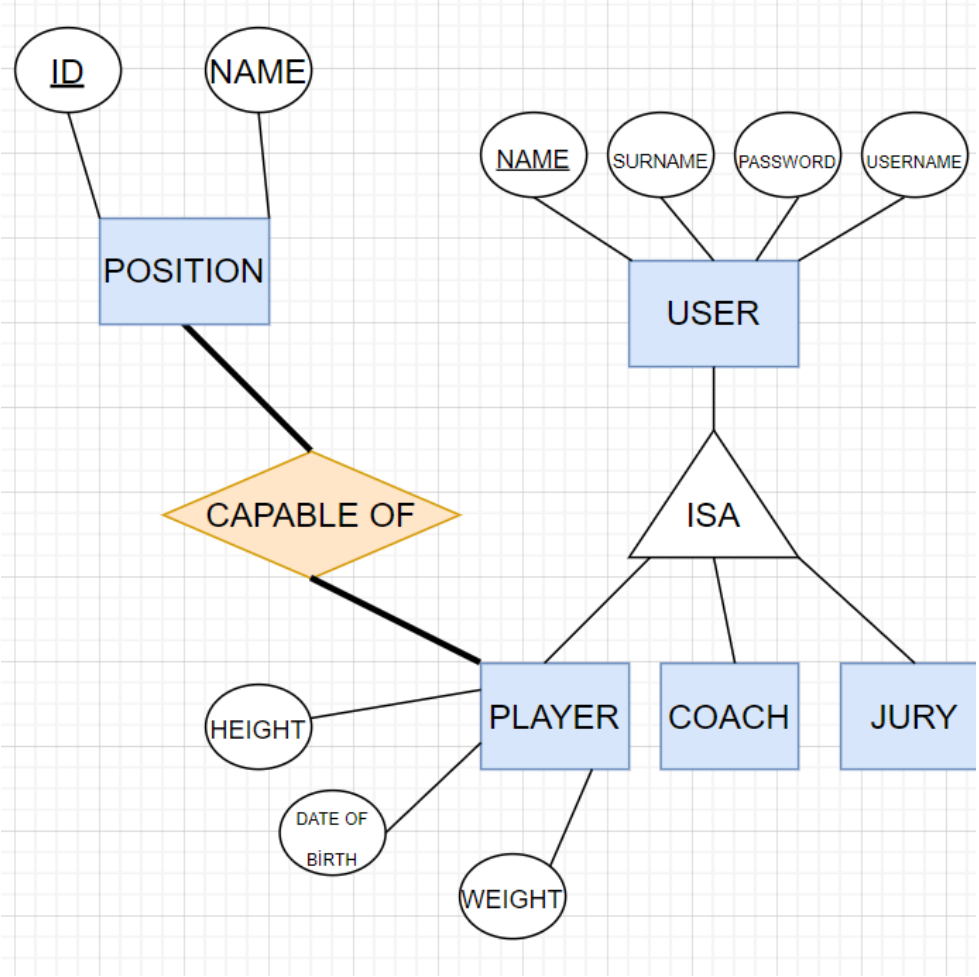
ISA HIERARCHY OF USERS



PLAYER ENTITY SET



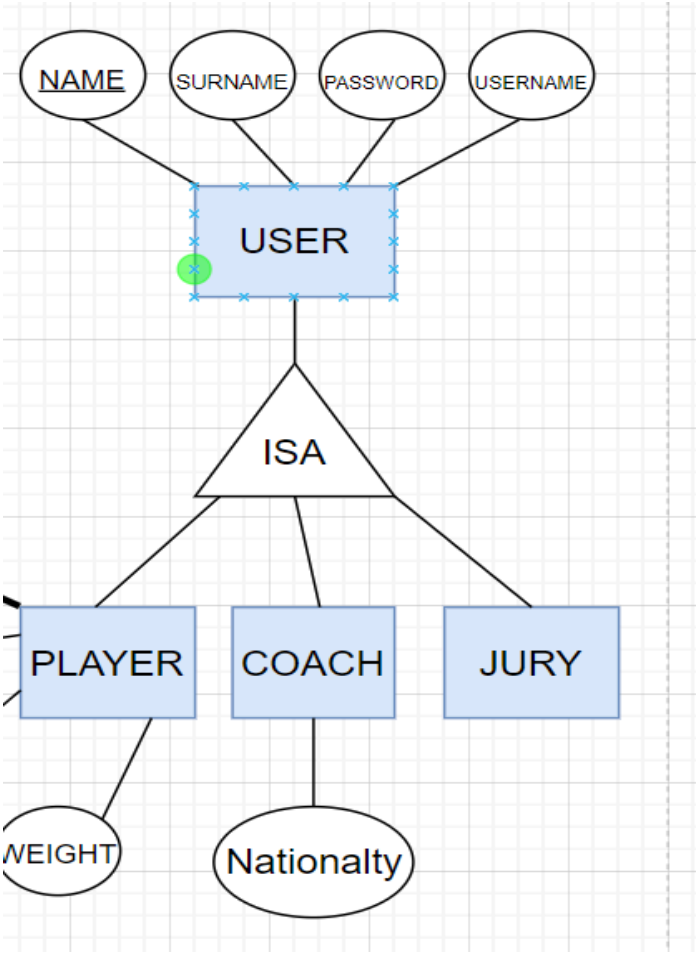
Each player has additional attributes with their user attributes(Each player is a user at the same time). These additional attributes are HEIGHT, DATE OF BIRTH, WEIGHT, POSITION_LIST and TEAM_LIST. HEIGHT, DATE OF BIRTH, WEIGHT attributes are shown as above. To show the list of positions a player can play we used a relation set between player and position entity sets.



Bold lines indicate that each player plays at least one position and a position is played by at least one player. Position entity has unique position_id ,so it must be the primary key of the set. It also has a position_name attribute.

team_list attribute of the player entity will be shown when the team entity and match session entity are created.

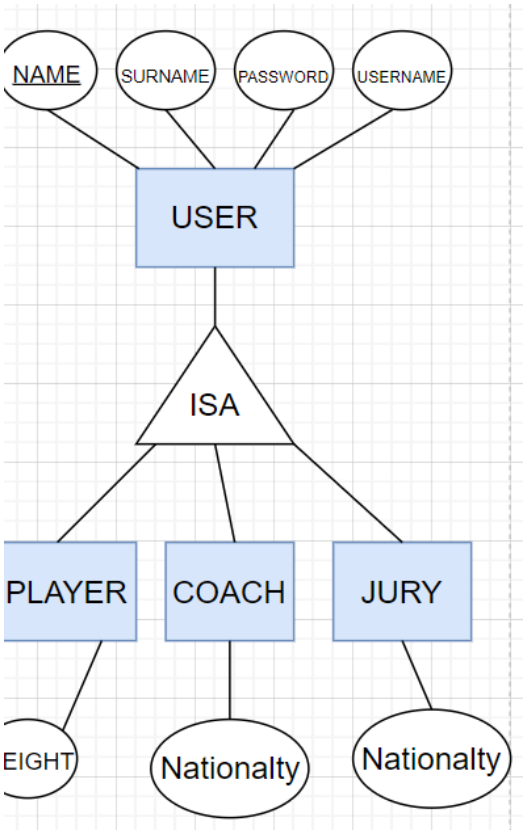
COACH ENTITY SET



Each coach has the attributes of the user entity because each coach is a user at the same time. Coaches additionally have nationality information. Each coach must have only one nationality. We must make the nationality a part of the unique key of the coach entity set. However, it cannot be shown in ER Design.

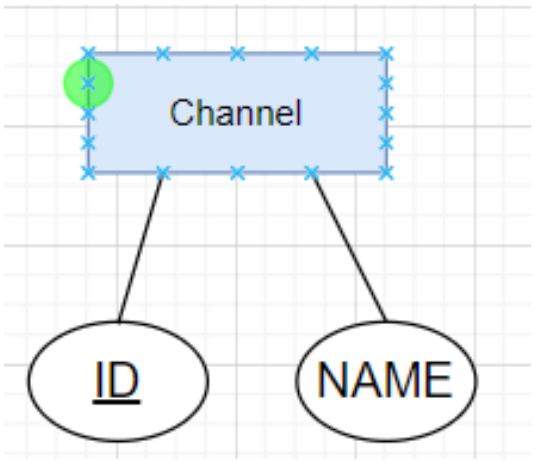
Being in an agreement with more than one team at a time is not possible for coaches. Also, each team must be directed by a unique coach. This relation will be shown when the team entity is created.

JURY ENTITY SET



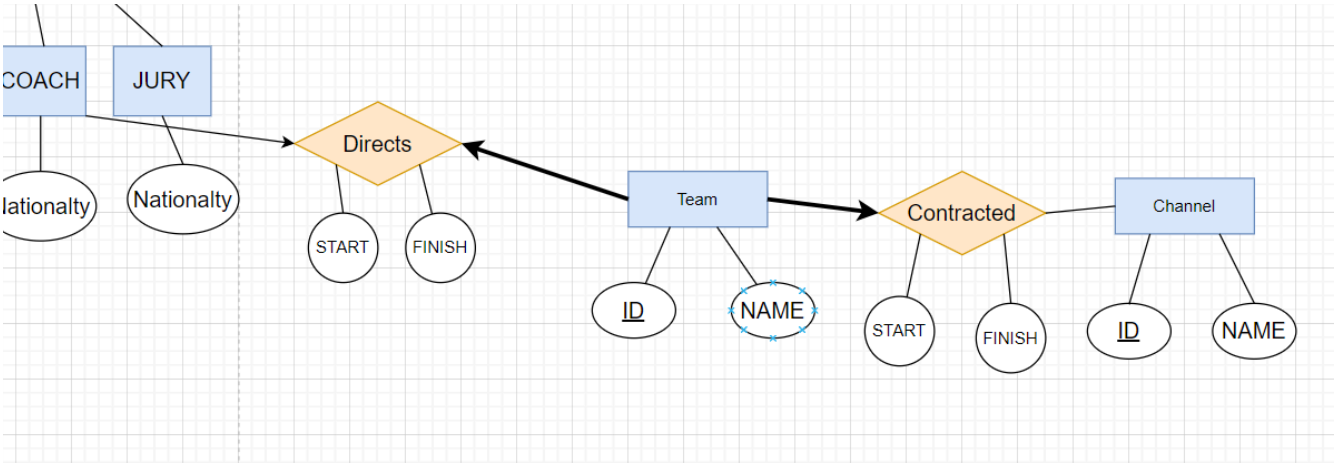
Each jury has the attributes of the user entity because each jury is a user at the same time. Juries additionally have nationality information. Each jury must have only one nationality. We must make the nationality a part of the unique key of the jury entity set. However, it cannot be shown in ER Design.

CHANNEL ENTITY SET



Channel entity set has 2 attributes which are channel_id and channel_name. Each channel ID is associated with a unique channel name. We set channel_id as primary key and (channel_id,channel_name) as unique key.

TEAM ENTITY SET

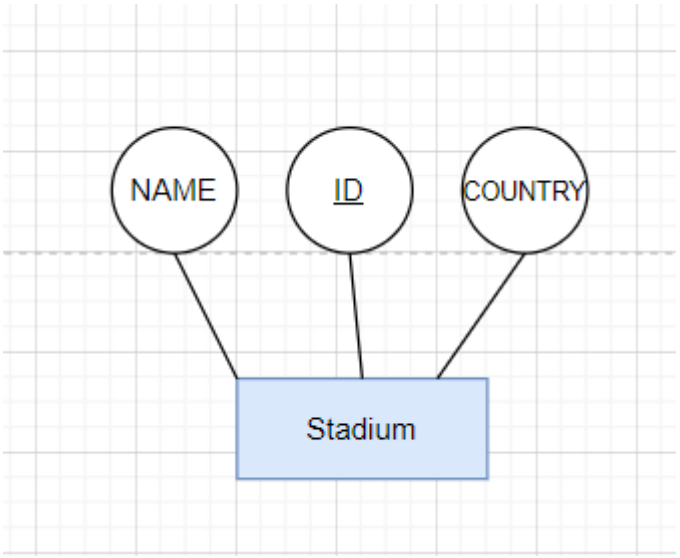


Team includes the following attributes: team_ID, team_name, coach_username, contract_start, contract_finish, channel_ID. team_ID must be unique(it is indicated with highlight), and each channel ID is associated with a unique channel name.

Each team has an agreement with just one TV channel. This attribute is achieved by a contracted relation set . The set also has channel_start and channel_finish date attributes. Bold line means every team has an agreement with teams and the arrow limits this situation to only one channel. A TV channel can have agreements with more than one team.

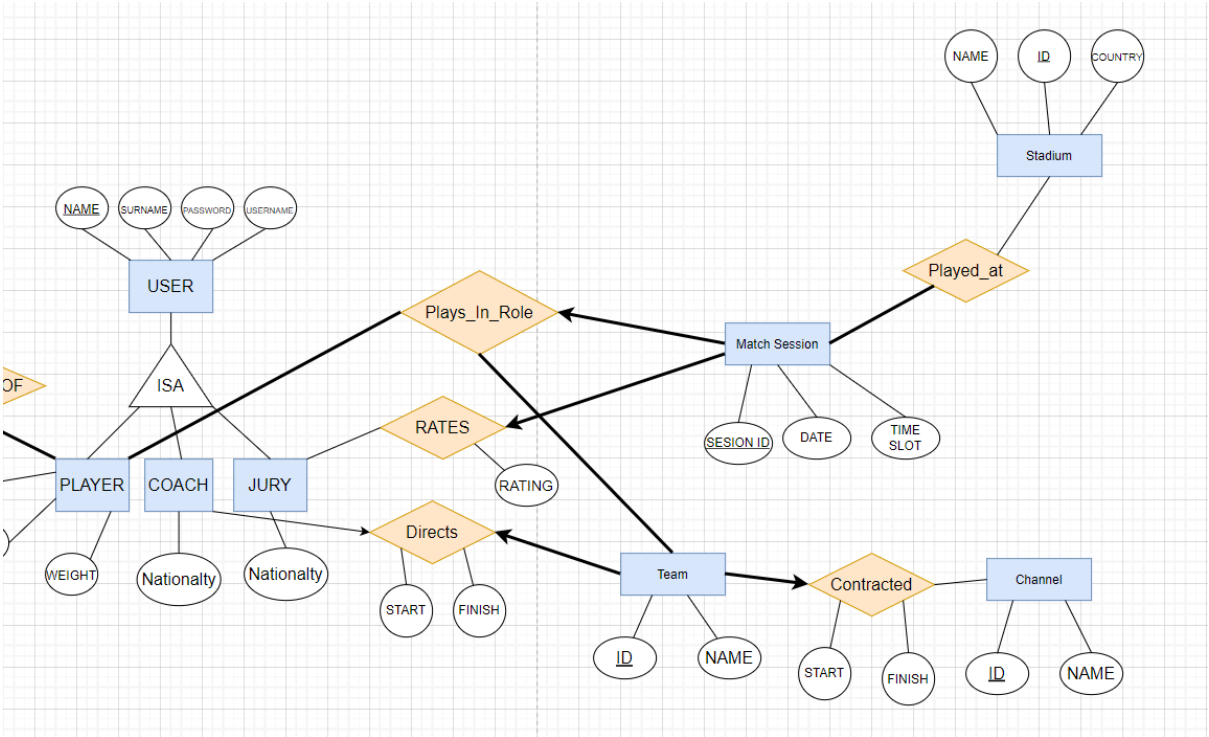
Each team is led by just one coach. This is indicated by a bold arrow. contract_start and contract_finish are used for coach-team agreements.This attribute is achieved by a Directs relation set . The set also has contract_start and contract_finish date attributes. A coach cannot direct more than one team at the same time. This is indicated by a light arrow.

STADIUM ENTITY SET



Stadium entity set has stadium_name, stadium_id, stadium_country attributes. stadium_id is the primary key of the set. Each stadium_id corresponds to a physical location. Hence, stadium_name and stadium_country depend solely on the stadium_id.

MATCH SESSION ENTITY SET



Match Sessions include the following attributes: session_ID, team_ID, played_player username_list, stadium_id, stadium_name, stadium_country, time_slot, date, assigned_jury_username, rating.

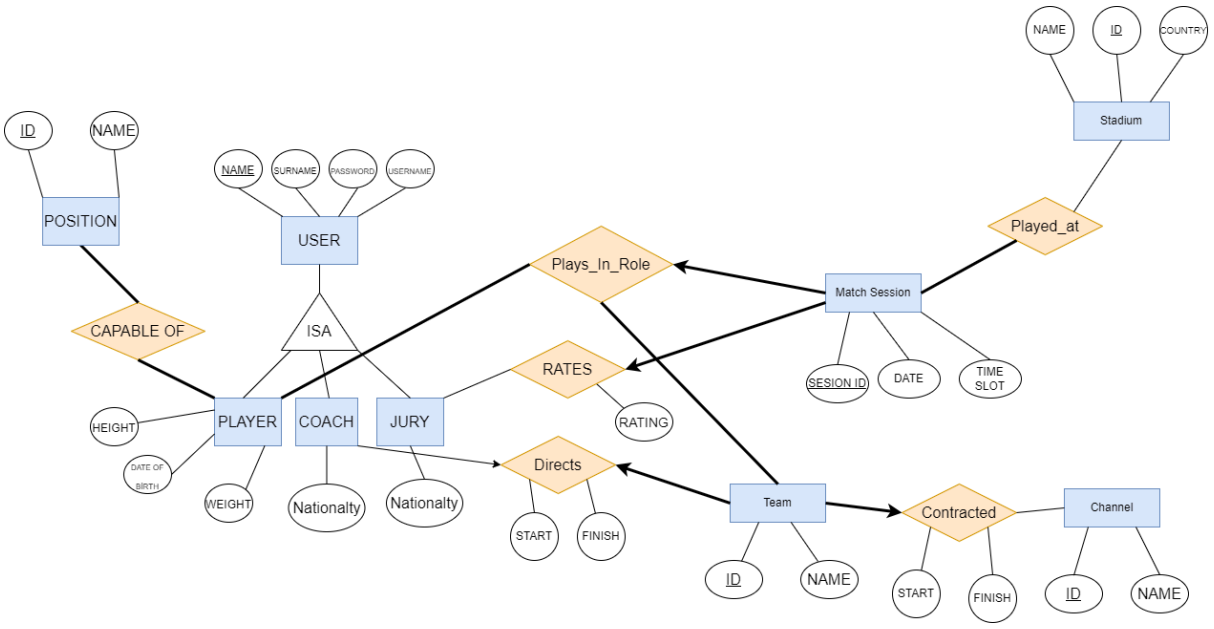
The session_ID must be unique ,so we indicated with highlight.

Each match will be rated by a jury assigned to that match. We achieved this attribute with rates relation set between match session entity set and jury entity set with bold arrow from match session to relation.

Each match session will be played at a stadium. To achieve this attribute, we created a relation set between match session and stadium. Also, every match session is played at a stadium so they are totally involved in the relationship and we showed it with a bold line.

Moreover, we created a ternary relationship set between 3 entities which are player, team, match session. Every player plays in at least one team ,so they are a totally participating player-team relationship set. We indicated that bold line from player to relation set. Each team has at least 5 players so the team entity is totally participating in the relation set and we indicated that with a bold line. Each match session is played by only one team which is indicated by a bold arrow to the relation set.

FINAL ER DIAGRAM



PART WE CANNOT COVER

- However, at this part of the design some rules are not covered in the ER diagram. We first considered using aggregation between team,player and match session but we thought that it may lead to some data to be not covered. Ternary relation seemed to us a better design choice for the “a player plays in team at a match session”. Although we cannot cover this in ER design, in part2 we could create the table and relationship tables according to the rules.
- Unique key constraints cannot be shown in the ER designed .
- Attributes that list type cannot be shown both in ER design and logical database design ,so we allowed multiple entries in entities with list type attributes.
- Alter and not alter also check constraints cannot be shown in ER design. Therefore, we basically showed the attributes of entities and relationships between entries as much as we could.