

Data Dictionary w/ Business Constraints

Type Name	Type (value)	Description
Season	Entity	Data type that defines the entire volleyball season
<i>Season_Year</i>	Attribute (integer)	The year of the season uniquely identifies the season along with the season location
<i>Season_Location</i>	Attribute (text)	The location of the season uniquely identifies the season along with the season year
Contains_Many	Relationship	Relates a season to a team. A season can contain many teams, but a team can only be a part of one season
Team	Entity	Data type that defines the entire volleyball team
<i>Team_Name</i>	Attribute (text)	The name of the team, uniquely identifies the team
Num_of_Players	Derived Attribute (integer)	Number of players on a team
Is_Made_Up_Of	Relationship	Relates a team to a player. A Team is made up of many players, but a player can only play for one team
Player	Entity	Data type that defines an entire volleyball season
First_Name	Attribute (text)	First name of the player
Last_Name	Attribute (text)	Last name of the player
<i>Player_Num</i>	Attribute (integer)	The players number, unique identifier to identify players
Position	Attribute (text)	Position of the player
Plays_Many	Relationship	Relates a player to a match. A player can play in many matches and a match is played by many players
Match	Entity	Data type that defines an entire volleyball match
<i>Match_ID</i>	Attribute (autonumber)	Unique identifier to identify matches
Match_Opponent	Attribute (text)	The opponent of the match
Match_Score	Attribute (text)	The final score of the match
Up_To_Five	Relationship	Relates a match to a game. A match can have up to five games, but a game can only be part of one match
Game	Entity	Data type that defines an entire volleyball game
<i>Game_ID</i>	Attribute (autonumber)	Unique identifier to identify a game played in a match
Game_Score	Attribute (text)	The final score of a game
Creates	Relationship	Relates match with statistics. A match will create many statistics but a set of statistics will be part of a match.
Stats	Entity	Data type that defines all of the volleyball statistics

<i>Stats_ID</i>	Attribute (autonumber)	Unique identifier to identify the statistics
Attempt_Attack	Attribute (integer)	Number of attack attempts
Kill	Attribute (integer)	Number of kills
Overpass	Attribute (integer)	Number of overpasses
Attack_Error	Attribute (integer)	Number of attack errors
Total_Attacks	Derived Attribute (integer)	Number of total attacks
PCT	Derived Attribute (decimal(2))	Percent total found by dividing the difference of attack errors from kills by the total attacks
Assists	Attribute (integer)	Number of assist
S_R_3	Attribute (integer)	Number of serve receptions of value 3
S_R_2	Attribute (integer)	Number of serve receptions of value 2
S_R_1	Attribute (integer)	Number of serve receptions of value 1
S_R_N	Attribute (integer)	Number of serve reception that result in an overpass
Service_Ace	Attribute (integer)	Number of service aces
Service_Error	Attribute (integer)	Number of service errors
Reception_Error	Attribute (integer)	Number of reception errors
Digs	Attribute (integer)	Number of digs
Single_Block	Attribute (integer)	Number of single blocks
Block_Assist	Attribute (integer)	Number of block assists
Block_Error	Attribute (integer)	Number of block errors
Ball_Handling_Error	Attribute (integer)	Number of ball handling errors
Setter_Assist	Derived Attribute (integer)	Number of setter assists found by the subtracting the sum of all the assists from the number of kills
Obtains_Many	Relationship	Relates a player to his/her statistics. A player will have many sets of statistics but a set of statistics will only be obtained by one player.

Business Rules That Apply to Graphical Interface and Inputting Data

- In order to load a season into the statistical interface for a sporting event, the user must supply the season year, season location and team name.
- In order to create a new season, the user must supply the season year, season location and the name of a team within that season.
- In order to add a player to a team, the user must supply season year, season location and team before the player can be created. Once the user specifies this information, a new player can only be created when the user supplies the first name, last name, number, and position of the new player.
- In order to update a player the user must supply the season year, season location, team name and number of the player. Once this information is provided, the user can change the first name, last name, position and the player's number. The player's number can

only be changed to a number that is not already in possession of another player on the same team.

- In order to delete a season, the user must supply the season year, and season location.
- In order to delete a team, the user must supply the season year, season location, and team name.
- In order to delete a player the user must supply the season year, season location, team name, and number of the player to be deleted.
- The following statistics must update the score of the home team:
 - Kill
 - Overpass,
 - Service Ace
 - Single Block
 - Block Assist (the block assist must only increase the home score by one, even though the statistic is applied to two players)
- The following statistics must update the score of the away team:
 - Attack Error
 - Service Error
 - Reception Error
 - Block Error
 - Ball Handling Error
- A single match must not be related to more than five games.