**Football League Project**

Technical documentation in relation to the design of a database system and it’s implementation along with testing of the system. Database system to include teams, fixtures, players and results of football league.

**Database Design**

Original ER Diagram

A diagram of a data flow

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Feedback Received:

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* Revision needed for multiple relations e.g. club to player, results to club.
* Data dictionary to be expanded to include example column.
* Assumptions to be made clearer and concise.

Updated ER diagram

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Updates Made:

* Result relation to Club removed as information can be gathered from Match.
* Revision to following relations: Club to Player, Match to Event and Match to Player.
* Assumptions clearer and justifies entities better.

**Implementation**

DDL (Table creation)

For the creation of tables, I did this using SQL code and creating tables and assigning primary and foreign keys through code as I was able to see relations between tables and make sure constraints were correct.

**Sample Code for Creation of Table ‘Player’**:

CREATE TABLE "Player"(

"Player ID" INTEGER NOT NULL PRIMARY KEY,

"Consultant Name" VARCHAR(50),

"Consultant ID" INTEGER,

"Club ID" INTEGER,

"Group ID" INTEGER,

CONSTRAINT FK\_club\_player FOREIGN KEY("Club ID") REFERENCES "Club"("Club ID"),

CONSTRAINT FK\_group\_player FOREIGN KEY("Group ID") REFERENCES "Group"("Group ID")

);

(Full DDL code can be found in Appendix)

DML (Population of Tables

To insert values into my tables, I preferred to do this through SQL code as it helped me to visualise data clearer even though it was time consuming.

**Sample Code for Insertion of Values into Table ‘Club’:**

INSERT INTO "Club"("Club ID", "Club Name")

VALUES(1,'Data Masters'),

(2, 'BI Gods'),

(3, 'Vis Wizards'),

(4, 'Data Cleaners');

(Full DML code can be found in Appendix)

**PostgreSQL ER Diagram**

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**Testing**

**Q1) List all students who play for a specific department – Cohort 6 chosen.**

SELECT "Player"."Consultant Name", "Group"."Group Name"

FROM "Player", "Group"

WHERE "Player"."Group ID" = "Group"."Group ID"

GROUP BY "Group"."Group Name", "Player"."Consultant Name"

HAVING "Group Name" = 'Cohort 6'

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**Q3) List Players who have scored more than 2 goals.**

SELECT "Player ID"

FROM "Event"

GROUP BY "Player ID", "Event Type"

HAVING COUNT(\*) > 2 AND "Event Type" = 'Goal'

ORDER BY "Player ID"

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**Q5) List number of red and yellow cards per team.**

SELECT "Player"."Club ID", COUNT("Event"."Event Type")

FROM "Player", "Event"

WHERE "Player"."Player ID" = "Event"."Player ID"

GROUP BY "Player"."Club ID", "Event"."Event Type"

HAVING "Event Type" = 'Yellow Card' OR "Event Type" ='Red Card';

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**Q6) Return games that are going to be played ‘Friendly’.**

SELECT \* FROM "Match"

WHERE "Match Type" = 'Friendly';

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**Appendix**

Complete code:

CREATE TABLE "Club"(

"Club ID" INTEGER NOT NULL PRIMARY KEY,

"Club Name" VARCHAR(50)

);

CREATE TABLE "Venue"(

"Venue ID" INTEGER NOT NULL PRIMARY KEY,

"Venue Name" VARCHAR(20)

);

CREATE TABLE "Group"(

"Group ID" INTEGER NOT NULL PRIMARY KEY,

"Group Name" VARCHAR(50)

);

CREATE TABLE "Player"(

"Player ID" INTEGER NOT NULL PRIMARY KEY,

"Consultant Name" VARCHAR(50),

"Consultant ID" INTEGER,

"Club ID" INTEGER,

"Group ID" INTEGER,

CONSTRAINT FK\_club\_player FOREIGN KEY("Club ID") REFERENCES "Club"("Club ID"),

CONSTRAINT FK\_group\_player FOREIGN KEY("Group ID") REFERENCES "Group"("Group ID")

);

CREATE TABLE "Match"(

"Match ID" INTEGER NOT NULL PRIMARY KEY,

"Home Club ID" INTEGER,

"Away Club ID" INTEGER,

"Week" VARCHAR(20),

"Date" DATE,

"Time" TIME,

"Match Type" VARCHAR(20),

CONSTRAINT FK\_home\_club\_match FOREIGN KEY("Home Club ID") REFERENCES "Club"("Club ID"),

CONSTRAINT FK\_away\_club\_match FOREIGN KEY("Away Club ID") REFERENCES "Club"("Club ID")

);

CREATE TABLE "Event"(

"Event ID" INTEGER PRIMARY KEY,

"Player ID" INTEGER,

"Match ID" INTEGER,

"Minute" INTEGER,

"Event Type" VARCHAR(20),

CONSTRAINT FK\_player\_event FOREIGN KEY ("Player ID") REFERENCES "Player"("Player ID"),

CONSTRAINT FK\_match\_event FOREIGN KEY ("Match ID") REFERENCES "Match"("Match ID")

);

CREATE TABLE "Result"(

"Result ID" INTEGER PRIMARY KEY,

"Match ID" INTEGER,

"Club ID" INTEGER,

"Result" VARCHAR(20),

"Points" INTEGER,

CONSTRAINT FK\_match\_result FOREIGN KEY ("Match ID") REFERENCES "Match"("Match ID"),

CONSTRAINT FK\_club\_result FOREIGN KEY ("Club ID") REFERENCES "Club"("Club ID")

);

INSERT INTO "Club"("Club ID", "Club Name")

VALUES(1,'Data Masters'),

(2, 'BI Gods'),

(3, 'Vis Wizards'),

(4, 'Data Cleaners');

INSERT INTO "Venue"("Venue ID", "Venue Name")

VALUES(1, 'Wimbledon 1'),

(2, 'Wimbledon 2'),

(3, 'Wimbledon 3');

INSERT INTO "Group"("Group ID", "Group Name")

VALUES(1, 'Cohort 4'),

(2, 'Cohort 5'),

(3, 'Cohort 6'),

(4, 'Cohort 7'),

(5, 'Bench'),

(6, 'Training Team'),

(7, 'HR'),

(8, 'Consultants');

INSERT INTO "Player"("Player ID", "Consultant Name", "Consultant ID", "Club ID", "Group ID")

VALUES(1, 'Aedan Petty', 200, 1, 1),

(2, 'Aliza Santos', 201, 1, 3 ),

(3, 'Kaylynn Vaughan', 201, 1, 6),

(4, 'Arjun Bauer', 202, 1, 4),

(5, 'Lilian Huber', 202, 1, 2),

(6, 'Lizeth Roberts', 203, 1, 6),

(7, 'Nathan Mcdowell', 203, 1, 7),

(8, 'Alvin Ali', 204, 1, 8),

(9, 'Jordin Christensen', 204, 1, 7),

(10, 'Saul Blevins', 205, 1, 7),

(11, 'Carina Meza', 205, 2, 2),

(12, 'Isabelle Campos', 206, 2, 5),

(13, 'Kyleigh Phelps', 206, 2, 1),

(14, 'Angela Wong', 207, 2, 7),

(15, 'Kole Rojas', 207, 2, 7),

(16, 'Martha Potts', 208, 2, 4),

(17, 'Tomas Powell', 208, 2, 6),

(18, 'Paxton Clarke', 209, 2, 5),

(19, 'Jamya Dodson', 209, 2, 8),

(20, 'Georgia Clements', 210, 2, 8),

(21, 'Edwin Crawford', 210, 3, 2),

(22, 'Malachi Osborn', 211, 3, 8),

(23, 'Zion Kent', 211, 3, 2),

(24, 'Anahi Reyes', 212, 3, 5),

(25, 'Maddox Cabrera', 212, 3, 8),

(26, 'Brody Gutierrez', 213, 3, 4),

(27, 'Hayley Stevenson', 213, 3, 3),

(28, 'Kamora Sanchez', 214, 3, 8),

(29, 'Livia Holmes', 214, 3, 6),

(30, 'Tanner Jenkins', 215, 3, 8),

(31, 'Madelyn Meadowns', 215, 4, 5),

(32, 'Paola Wilkerson', 216, 4, 3),

(33, 'Jared Patton', 216, 4, 6),

(34, 'Pierre Washington', 217, 4, 8),

(35, 'Dominik Cochran', 217, 4, 4),

(36, 'Miya Skinner', 218, 4, 4),

(37, 'Mara Barnett', 218, 4, 5),

(38, 'Cornelius Dodson', 219, 4, 2),

(39, 'Ashleight Kaiser', 219, 4, 6),

(40, 'Weston Meza', 220, 4, 6);

INSERT INTO "Match"("Match ID", "Home Club ID", "Away Club ID", "Week", "Date", "Time", "Match Type")

VALUES(1, 1, 2, 'Week 1', '2022-10-01', '16:00:00', 'Competitive'),

(2, 3, 4, 'Week 1', '2022-10-01', '16:00:00', 'Competitive'),

(3, 1, 3, 'Week 2', '2022-10-08', '16:00:00', 'Competitive'),

(4, 2, 4, 'Week 2', '2022-10-08', '16:00:00', 'Competitive'),

(5, 1, 4, 'Week 3', '2022-10-22', '16:00:00', 'Competitive'),

(6, 2, 3, 'Week 3', '2022-10-22', '16:00:00', 'Competitive'),

(7, 2, 1, 'Week 4', '2022-10-29', '16:00:00', 'Competitive'),

(8, 4, 3, 'Week 4', '2022-10-29', '16:00:00', 'Competitive'),

(9, 3, 1, 'Week 5', '2022-11-05', '16:00:00', 'Competitive'),

(10, 4, 2, 'Week 5', '2022-11-05', '16:00:00', 'Competitive'),

(11, 4, 1, 'Week 6', '2022-11-12', '16:00:00', 'Competitive'),

(12, 3, 2, 'Week 6', '2022-11-12', '16:00:00', 'Competitive'),

(13, 4, 1, 'Week 7', '2023-11-12', '16:00:00', 'Friendly'),

(14, 3, 2, 'Week 7', '2023-11-12', '16:00:00', 'Friendly');

INSERT INTO "Event"("Event ID", "Player ID", "Match ID", "Minute", "Event Type")

VALUES(1, 8, 1, 5, 'Goal'),

(2, 7, 1, 47, 'Goal'),

(3, 12, 1, 10,'Yellow Card'),

(4, 27, 2, 10, 'Goal'),

(5, 30, 2, 80, 'Yellow Card'),

(6, 35, 2, 20, 'Goal'),

(7, 8, 3, 20, 'Goal'),

(8, 8, 3, 30, 'Goal'),

(9, 1, 3, 5,'Yellow Card'),

(10, 9, 3, 70, 'Yellow Card'),

(11, 27, 3, 1, 'Goal'),

(12, 19, 4, 46, 'Goal'),

(13, 17, 4, 97, 'Goal'),

(14, 35, 4, 3, 'Goal'),

(15, 32, 4, 9, 'Red Card'),

(16, 10, 5, 60, 'Yellow Card'),

(17, 38, 5, 88, 'Yellow Card'),

(18, 19, 6, 55, 'Goal'),

(19, 28, 6, 3, 'Goal'),

(20, 27, 6, 78, 'Goal'),

(21, 19, 7, 20, 'Goal'),

(22, 16, 7, 75, 'Goal'),

(23, 8, 7, 60, 'Goal'),

(24, 3, 7, 62, 'Goal'),

(25, 3, 7, 70, 'Yellow Card'),

(26, 35, 8, 10,'Goal'),

(27, 35, 8, 12,'Yellow Card'),

(28, 25, 8, 88, 'Goal'),

(29, 27, 8, 90, 'Goal' ),

(30,29, 9, 5, 'Goal'),

(31, 29, 9, 18, 'Goal'),

(32, 26, 9, 60, 'Goal'),

(33, 23, 9 , 50, 'Yellow Card'),

(34, 7, 9, 48, 'Goal'),

(35, 8, 9, 67, 'Goal'),

(36, 32, 10, 3, 'Red Card'),

(37, 19, 10, 55, 'Goal'),

(38, 35, 11, 50, 'Goal'),

(39, 37, 11, 60, 'Goal'),

(40, 1, 11, 12, 'Yellow Card'),

(41, 26, 12, 50, 'Goal'),

(42, 25, 12, 80, 'Goal' ),

(43, 19, 12, 5, 'Goal'),

(44, 18, 12, 18, 'Goal'),

(45, 17, 12, 88, 'Yellow Card');

INSERT INTO "Result"("Result ID", "Match ID", "Club ID", "Result", "Points")

VALUES(1, 1, 1, 'Win', 3),

(2, 1, 2, 'Lose', 0),

(3, 2, 3, 'Draw', 1),

(4, 2, 4, 'Draw', 1),

(5, 3, 1, 'Win', 3),

(6, 3, 3, 'Lose', 0),

(7, 4, 2, 'Win', 3),

(8, 4, 4, 'Lose', 0),

(9, 5, 1, 'Draw', 1),

(10, 5, 4, 'Draw', 1),

(11, 6, 2, 'Lose', 0),

(12, 6, 3, 'Win', 3),

(13, 7, 2, 'Draw', 1),

(14, 7, 1, 'Draw', 1),

(15, 8, 4, 'Lose', 0),

(16, 8, 3, 'Win', 3),

(17, 9, 3, 'Win', 3),

(18, 9, 1, 'Lose',0),

(19, 10, 4, 'Lose',0),

(20, 10, 2, 'Win', 3),

(21, 11, 4, 'Win', 3),

(22, 11, 1, 'Lose', 0),

(23, 12, 3, 'Draw', 1),

(24, 12, 2, 'Draw', 1);