

Project part 3

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USER MANUAL:

First you need to download your data to then add to the SQL. You can follow the Import to add the specific tables into your data base. In my python script I follow the below documentation for creating a table and inserting the table. The Python Packages I used to be SYS and PSYCOPG2. I connected to the DB, using the following code:

```
conn = psycopg2.connect(  
    dbname="postgres",  
    user="postgres",  
    password="1234",  
    host="localhost",  
    port="5432"  
)
```

For every python file in the import folder, I connected to the DB, created a table, and then inserted data for a specific .CSV file.

Then once all the data was imported into PGadmin4, I ran the projectcode.py to allow the user to see the CLI and traverse the options that are presented and allow them to manipulate the on the Database.

I am using Python 3.12 64-bit.

The following has descriptions about the implementation.

For this Project I chose the FIFA world cup player statistics. My tables for this part of this project were:

```
tables = {  
    '1': 'Player_info',  
    '2': 'Player_body_component',  
    '3': 'Positions',  
    '4': 'Player_stats',  
    '5': 'Club',  
    '6': 'National',  
    '7': 'Contracts',  
    '8': 'Work_rates',  
    '9': 'Totals',  
    '10': 'Physical_attributes',  
    '11': 'In_game_attributes',  
    '12': 'Position_ratings'  
}
```

The Schema for each of the tables are listed below. Underneath each Schema segment is the DDL command. I used pgAdmin 4 to display my database, and in it my data in my tables. So underneath the DDL command is screenshots of the Data in that table.

1)

```
Player_info (
    ID INTEGER,
    Name VARCHAR(255),
    FullName VARCHAR(255),
    Age INTEGER,
    PhotoUrl TEXT,
    Nationality VARCHAR(100),
    Primary Key (ID)
);
```

```
CREATE TABLE if not exists Player_info (
    ID INTEGER,
    Name VARCHAR(255),
    FullName VARCHAR(255),
    Age INTEGER,
    PhotoUrl TEXT,
    Nationality VARCHAR(100),
    Primary Key (ID)
);
```

1	188545	R. Lewandowski	Robert Lewandowski	32	https://cdn.sofifa.com/players/188/545/22_60.p...	Poland
2	20801	Cristiano Ronaldo	C. Ronaldo dos Santos Aveiro	36	https://cdn.sofifa.com/players/020/801/22_60.p...	Portugal
3	231747	K. Mbappe	Kylian Mbappe	22	https://cdn.sofifa.com/players/231/747/22_60.p...	France
4	200389	J. Oblak	Jan Oblak	28	https://cdn.sofifa.com/players/200/389/22_60.p...	Slovenia
5	192985	K. De Bruyne	Kevin De Bruyne	30	https://cdn.sofifa.com/players/192/985/22_60.p...	Belgium
6	190871	Neymar Jr	Neymar da Silva Santos Jr.	29	https://cdn.sofifa.com/players/190/871/22_60.p...	Brazil
7	215914	N. Kante	N'Golo Kante	30	https://cdn.sofifa.com/players/215/914/22_60.p...	France
8	202126	H. Kane	Harry Kane	27	https://cdn.sofifa.com/players/202/126/22_60.p...	England
9	192448	M. ter Stegen	Marc-Andre ter Stegen	29	https://cdn.sofifa.com/players/192/448/22_60.p...	Germany
10	167495	M. Neuer	Manuel Neuer	35	https://cdn.sofifa.com/players/167/495/22_60.p...	Germany
11	200104	H. Son	Heung Min Son	28	https://cdn.sofifa.com/players/200/104/22_60.p...	Korea Republic
12	200145	Casemiro	Carlos Henrique Venancio Casimiro	29	https://cdn.sofifa.com/players/200/145/22_60.p...	Brazil
13	165153	K. Benzema	Karim Benzema	33	https://cdn.sofifa.com/players/165/153/22_60.p...	France
14	192119	T. Courtois	Thibaut Courtois	29	https://cdn.sofifa.com/players/192/119/22_60.p...	Belgium
15	208722	S. Mane	Sadio Mane	29	https://cdn.sofifa.com/players/208/722/22_60.p...	Senegal
16	203376	V. van Dijk	Virgil van Dijk	29	https://cdn.sofifa.com/players/203/376/22_60.p...	Netherlands
17	230621	G. Donnarumma	Gianluigi Donnarumma	22	https://cdn.sofifa.com/players/230/621/22_60.p...	Italy
18	209331	M. Salah	Mohamed Salah	29	https://cdn.sofifa.com/players/209/331/22_60.p...	Egypt
19	210257	Ederson	Ederson Santana de Moraes	27	https://cdn.sofifa.com/players/210/257/22_60.p...	Brazil
20	212622	J. Kimmich	Joshua Kimmich	26	https://cdn.sofifa.com/players/212/622/22_60.p...	Germany
21	212831	Alisson	Alisson Ramses Becker	28	https://cdn.sofifa.com/players/212/831/22_60.p...	Brazil
22	192505	R. Lukaku	Romelu Lukaku	28	https://cdn.sofifa.com/players/192/505/22_60.p...	Belgium
23	155862	Sergio Ramos	Sergio Ramos Garcia	35	https://cdn.sofifa.com/players/155/862/22_60.p...	Spain
24	176580	L. Suarez	Luis Suarez	34	https://cdn.sofifa.com/players/176/580/22_60.p...	Uruguay
25	182521	T. Kroos	Toni Kroos	31	https://cdn.sofifa.com/players/182/521/22_60.p...	Germany
26	239085	E. Haaland	Erling Haaland	20	https://cdn.sofifa.com/players/239/085/22_60.p...	Norway
27	193041	K. Navas	Keylor Navas	34	https://cdn.sofifa.com/players/193/041/22_60.p...	Costa Rica
28	212198	Bruno Fernandes	Bruno Miguel Borges Fernandes	26	https://cdn.sofifa.com/players/212/198/22_60.p...	Portugal

Total rows: 100 of 100 Query complete 00:00:00 130

2)

```
Player_body_component (
    ID INTEGER,
    PreferredFoot VARCHAR(255),
    Height INTEGER,
    Weight INTEGER,
    FOREIGN KEY (ID) REFERENCES Player_info(ID)
);
```

```
CREATE TABLE if not exists Player_body_component (
    ID INTEGER,
    PreferredFoot VARCHAR(255),
    Height INTEGER,
    Weight INTEGER,
    FOREIGN KEY (ID) REFERENCES Player_info(ID)
);
```

1	158023	Left	170	72
2	188545	Right	185	81
3	20801	Right	187	83
4	231747	Right	182	73
5	200389	Right	188	87
6	192985	Right	181	70
7	190871	Right	175	68
8	215914	Right	168	70
9	202126	Right	188	89
10	192448	Right	187	85
11	167495	Right	193	93
12	200104	Right	183	78
13	200145	Right	185	84
14	165153	Right	185	81
15	192119	Left	199	96
16	208722	Right	175	69
17	203376	Right	193	92
18	230621	Right	196	90
19	209331	Left	175	71
20	210257	Left	188	86
21	212622	Right	177	75
22	212831	Right	191	91

3)

```
Positions (
    ID INTEGER,
    Positions Varchar(100),
    BestPosition Varchar(20),
    ClubPosition Varchar(20),
    NationalPosition Varchar(20),
    FOREIGN KEY (ID) REFERENCES Player_info(ID)
);
```

```

CREATE TABLE if not exists Positions (
    ID INTEGER,
    Positions Varchar(100),
    BestPosition Varchar(20),
    ClubPosition Varchar(20),
    NationalPosition Varchar(20),
    FOREIGN KEY (ID) REFERENCES Player_info(ID)
);

```

1	158023	RW ST CF	RW	RW	RW
2	188545	ST	ST	ST	ST
3	20801	ST LW	ST	ST	ST
4	231747	ST LW	ST	ST	LW
5	200389	GK	GK	GK	
6	192985	CM CAM	CM	CM	CM
7	190871	LW CAM	LW	LW	
8	215914	CDM CM	CDM	CM	CDM
9	202126	ST	ST	ST	ST
10	192448	GK	GK	GK	
11	167495	GK	GK	GK	GK
12	200104	LM CF LW	LM	LW	
13	200145	CDM	CDM	CDM	
14	165153	CF ST	CF	CF	CF
15	192119	GK	GK	GK	GK
16	208722	LW	LW	LW	
17	203376	CB	CB	CB	CB
18	230621	GK	GK	GK	GK
19	209331	RW	RW	RW	
20	210257	GK	GK	GK	
21	212622	CDM RB	CDM	CDM	CDM
22	212831	GK	GK	GK	
23	192505	ST	ST	ST	ST
24	155862	CB	CB	CB	SUB
25	176580	ST	ST	ST	

4)

```
Player_stats (
    ID INTEGER,
    TotalStats INTEGER,
    BaseStats INTEGER,
    Overall INTEGER,
    Potential INTEGER,
    Growth INTEGER,
    PRIMARY KEY (TotalStats)
    FOREIGN KEY (ID) REFERENCES Player_info(ID)
);
```

```
CREATE TABLE if not exists Player_stats (
    ID INTEGER,
    TotalStats INTEGER,
    BaseStats INTEGER,
    Overall INTEGER,
    Potential INTEGER,
    Growth INTEGER,
    FOREIGN KEY (ID) REFERENCES Player_info(ID)
);
```

1	158023	2219	462	93	93	0
2	188545	2212	460	92	92	0
3	20801	2208	457	91	91	0
4	231747	2175	470	91	95	4
5	200389	1413	489	91	93	2
6	192985	2304	485	91	91	0
7	190871	2183	454	91	91	0
8	215914	2179	470	90	90	0
9	202126	2205	456	90	90	0
10	192448	1444	484	90	92	2
11	167495	1534	501	90	90	0
12	200104	2142	455	89	89	0
13	200145	2219	462	89	89	0
14	165153	2116	446	89	89	0
15	192119	1327	469	89	91	2
16	208722	2192	465	89	89	0
17	203376	2104	455	89	89	0
18	230621	1377	481	89	93	4
19	209331	2211	468	89	89	0
20	210257	1583	501	89	91	2
21	212622	2283	475	89	90	1
22	212831	1393	486	89	90	1
23	192505	2064	445	88	88	0
24	155862	2251	461	88	88	0

5)

```
Club (
    ID INTEGER,
    Club VARCHAR(255),
    ClubNumber INTEGER,
    ClubJoined INTEGER,
    FOREIGN KEY (ID) REFERENCES Player_info(ID)
);
```

```
CREATE TABLE if not exists Club (
    ID INTEGER,
    Club VARCHAR(255),
    ClubNumber INTEGER,
    ClubJoined INTEGER,
    FOREIGN KEY (ID) REFERENCES Player_info(ID)
);
```

1	158023	Paris Saint-Germain	30	2021
2	188545	FC Bayern Munich	9	2014
3	20801	Manchester United	7	2021
4	231747	Paris Saint-Germain	7	2018
5	200389	Atletico de Madrid	13	2014
6	192985	Manchester City	17	2015
7	190871	Paris Saint-Germain	10	2017
8	215914	Chelsea	7	2016
9	202126	Tottenham Hotspur	10	2010
10	192448	FC Barcelona	1	2014
11	167495	FC Bayern Munich	1	2011
12	200104	Tottenham Hotspur	7	2015
13	200145	Real Madrid CF	14	2013
14	165153	Real Madrid CF	9	2009
15	192119	Real Madrid CF	1	2018
16	208722	Liverpool	10	2016
17	203376	Liverpool	4	2018
18	230621	Paris Saint-Germain	50	2021
19	209331	Liverpool	11	2017
20	210257	Manchester City	31	2017
21	212622	FC Bayern Munich	6	2015
22	212831	Liverpool	1	2018

6)

```
National (
    ID INTEGER,
    NationalTeam VARCHAR(255),
    IntReputation INTEGER,
    NationalNumber INTEGER,
    Player_info(ID)
```

```
);  
CREATE TABLE if not exists National (  
    ID INTEGER,  
    NationalTeam VARCHAR(255),  
    IntReputation INTEGER,  
    NationalNumber INTEGER,  
    FOREIGN KEY (ID) REFERENCES Player_info(ID)  
);
```

1	158023	Argentina	5	10
2	188545	Poland	5	9
3	20801	Portugal	5	7
4	231747	France	4	10
5	192985	Belgium	4	7
6	215914	France	4	13
7	202126	England	4	9
8	167495	Germany	5	1
9	165153	France	4	19
10	192119	Belgium	4	1
11	203376	Netherlands	4	4
12	230621	Italy	3	21
13	212622	Germany	4	6
14	192505	Belgium	4	9
15	155862	Spain	4	15
16	239085	Norway	4	23
17	212198	Portugal	3	11
18	202652	England	4	10
19	199556	Italy	3	6
20	183898	Argentina	4	11
21	186153	Poland	3	1
22	192387	Italy	4	17
23	195864	France	4	6
24	209658	Germany	4	8

7)

```
Contracts (
    ID INTEGER,
    ValueEUR INTEGER,
    WageEUR INTEGER,
```

```
    ContractUntil INTEGER,  
    ReleaseClause INTEGER,  
    FOREIGN KEY (ID) REFERENCES Player_info(ID)  
);
```

```
CREATE TABLE if not exists Contracts (  
    ID INTEGER,  
    ValueEUR INTEGER,  
    WageEUR INTEGER,  
    ContractUntil INTEGER,  
    ReleaseClause INTEGER,  
    FOREIGN KEY (ID) REFERENCES Player_info(ID)  
);
```

1	158023	78000000	320000	144300000	2023
2	188545	119500000	270000	197200000	2023
3	20801	45000000	270000	83300000	2023
4	231747	194000000	230000	373500000	2022
5	200389	112000000	130000	238000000	2023
6	192985	125500000	350000	232200000	2025
7	190871	129000000	270000	238700000	2025
8	215914	100000000	230000	185000000	2023
9	202126	129500000	240000	246100000	2024
10	192448	99000000	250000	210400000	2025
11	167495	13500000	86000	22300000	2023
12	200104	104000000	220000	197600000	2025
13	200145	88000000	310000	180400000	2025
14	165153	66000000	350000	135300000	2023
15	192119	85500000	250000	181700000	2026
16	208722	101000000	270000	186900000	2023
17	203376	86000000	230000	159100000	2025
18	230621	119500000	110000	230000000	2026
19	209331	101000000	270000	186900000	2023
20	210257	94000000	200000	181000000	2026

8)

```
CREATE TABLE if not exists Work_rates (
    ID INTEGER,
    AttackingWorkRate INTEGER,
    DefensiveWorkRate INTEGER,
    Player_info(ID)
);
```

```
CREATE TABLE if not exists Work_rates (
    ID INTEGER,
    AttackingWorkRate INTEGER,
    DefensiveWorkRate INTEGER,
    FOREIGN KEY (ID) REFERENCES Player_info(ID)
);
```

1	158023	Medium	Low
2	188545	High	Medium
3	20801	High	Low
4	231747	High	Low
5	200389	Medium	Medium
6	192985	High	High
7	190871	High	Medium
8	215914	Medium	High
9	202126	High	High
10	192448	Medium	Medium
11	167495	Medium	Medium
12	200104	High	High
13	200145	High	High
14	165153	Medium	Medium
15	192119	Medium	Medium
16	208722	High	Medium
17	203376	Medium	Medium
18	230621	Medium	Medium
19	209331	High	Medium
20	210257	Medium	Medium
21	212622	High	Medium

9)

```
Totals (
    ID INTEGER,
    PaceTotal INTEGER,
    ShootingTotal INTEGER,
    PassingTotal INTEGER,
    DribblingTotal INTEGER,
    DefendingTotal INTEGER,
```

```
PhysicalityTotal INTEGER,  
PRIMARY KEY (PaceTotal)  
FOREIGN KEY (ID) REFERENCES Player_info(ID)  
);
```

```
CREATE TABLE if not exists Totals (  
    ID INTEGER,  
    PaceTotal INTEGER,  
    ShootingTotal INTEGER,  
    PassingTotal INTEGER,  
    DribblingTotal INTEGER,  
    DefendingTotal INTEGER,  
    PhysicalityTotal INTEGER,  
    FOREIGN KEY (ID) REFERENCES Player_info(ID)  
);
```

1	158023	85	92	91	95	34	65
2	188545	78	92	79	85	44	82
3	20801	87	94	80	87	34	75
4	231747	97	88	80	92	36	77
5	200389	87	92	78	90	52	90
6	192985	76	86	93	88	64	78
7	190871	91	83	86	94	37	63
8	215914	78	66	75	81	87	83
9	202126	70	91	83	82	47	83
10	192448	88	85	88	90	45	88
11	167495	88	88	91	88	57	89
12	200104	88	87	82	86	43	69
13	200145	65	73	76	72	86	90
14	165153	76	86	81	87	39	77
15	192119	84	89	74	88	48	86
16	208722	91	83	80	90	44	77
17	203376	78	60	71	71	91	84
18	230621	91	83	79	90	53	85
19	209331	90	87	81	90	45	75
20	210257	87	82	93	88	63	88
21	212622	70	73	86	84	83	79
22	212831	86	86	84	89	51	90
23	192505	84	87	74	78	39	83
24	155862	70	70	76	73	88	84

10)

```
Physical_Attributes(
    ID INTEGER,
    Acceleration INTEGER,
    SprintSpeed INTEGER,
    Agility INTEGER,
    Reactions INTEGER,
    Balance INTEGER,
    ShotPower INTEGER,
    Jumping INTEGER,
    Stamina INTEGER,
    Strength INTEGER,
    Aggression INTEGER,
    Vision INTEGER,
    Composure INTEGER,
    FOREIGN KEY (ID) REFERENCES Player_info(ID)
);
```

```
CREATE TABLE if not exists Physical_Attributes(
    ID INTEGER,
    Acceleration INTEGER,
    SprintSpeed INTEGER,
    Agility INTEGER,
    Reactions INTEGER,
    Balance INTEGER,
    ShotPower INTEGER,
    Jumping INTEGER,
    Stamina INTEGER,
    Strength INTEGER,
    Aggression INTEGER,
    Vision INTEGER,
    Composure INTEGER,
    FOREIGN KEY (ID) REFERENCES Player_info(ID)
);
```

1	158023	91	80	91	94	95	86	68	72	69	44
2	188545	77	79	77	93	82	90	85	76	86	81
3	20801	85	88	86	94	74	94	95	77	77	63
4	231747	97	97	92	93	83	86	78	88	77	62
5	200389	43	60	67	88	49	59	78	41	78	34
6	192985	76	76	79	91	78	91	63	89	74	76
7	190871	93	89	96	89	84	80	64	81	53	63
8	215914	82	75	82	93	92	71	77	97	72	93
9	202126	65	74	71	92	70	91	79	83	85	80
10	192448	38	50	39	86	43	66	79	35	78	43
11	167495	54	60	51	87	35	68	77	43	80	29
12	200104	85	90	86	91	78	88	60	88	64	62
13	200145	60	69	61	87	66	88	87	89	90	91
14	165153	77	75	79	91	72	85	79	78	82	63
15	192119	42	52	62	84	45	56	68	38	70	23
16	208722	93	90	93	91	88	83	87	85	72	75
17	203376	66	88	61	87	53	81	90	69	92	83
18	230621	50	55	64	85	38	59	72	34	72	30
19	209331	89	91	91	92	91	82	69	85	75	63
20	210257	64	63	60	88	48	70	66	41	78	38
21	212622	77	65	84	88	84	78	79	94	68	89
22	212831	56	47	40	87	37	63	52	32	78	27
23	192505	81	87	60	91	52	89	76	71	95	71
24	155862	71	69	77	92	66	79	93	78	84	90
25	176500	76	60	76	82	70	80	60	70	85	87

11)

```
InGame_Attributes()
    ID INTEGER,
    WeakFoot INTEGER,
    SkillMoves INTEGER,
    Crossing INTEGER,
    Finishing INTEGER,
    HeadingAccuracy INTEGER,
    ShortPassing INTEGER,
    Volleys INTEGER,
    Dribbling INTEGER,
    Curve INTEGER,
    FKAccuracy INTEGER,
    LongPassing INTEGER,
    BallControl INTEGER,
    LongShots INTEGER,
    Interceptions INTEGER,
    Positioning INTEGER,
    Penalties INTEGER,
    Marking INTEGER,
    StandingTackle INTEGER,
    SlidingTackle INTEGER,
```

```
GKDiving INTEGER,  
GKHandling INTEGER,  
GKKicking INTEGER,  
GKPositioning INTEGER,  
GKReflexes INTEGER,  
FOREIGN KEY (ID) REFERENCES Player_info(ID)  
);
```

```
CREATE TABLE if not exists InGame_Attributes(  
    ID INTEGER,  
    WeakFoot INTEGER,  
    SkillMoves INTEGER,  
    Crossing INTEGER,  
    Finishing INTEGER,  
    HeadingAccuracy INTEGER,  
    ShortPassing INTEGER,  
    Volleys INTEGER,  
    Dribbling INTEGER,  
    Curve INTEGER,  
    FKAccuracy INTEGER,  
    LongPassing INTEGER,  
    BallControl INTEGER,  
    LongShots INTEGER,  
    Interceptions INTEGER,  
    Positioning INTEGER,  
    Penalties INTEGER,  
    Marking INTEGER,  
    StandingTackle INTEGER,  
    SlidingTackle INTEGER,  
    GKDiving INTEGER,  
    GKHandling INTEGER,  
    GKKicking INTEGER,  
    GKPositioning INTEGER,  
    GKReflexes INTEGER,  
    FOREIGN KEY (ID) REFERENCES Player_info(ID)  
);
```

1	158023	4	4	85	95	70	91	88	96	93
2	188545	4	4	71	95	90	85	89	85	79
3	20801	4	5	87	95	90	80	86	88	81
4	231747	4	5	78	93	72	85	83	93	80
5	200389	3	1	13	11	15	43	13	12	13
6	192985	5	4	94	82	55	94	82	88	85
7	190871	5	5	85	83	63	86	86	95	88
8	215914	3	2	68	65	54	82	56	79	49
9	202126	5	3	80	94	86	85	88	83	83
10	192448	4	1	18	14	11	61	14	21	18
11	167495	4	1	15	13	25	60	11	30	14
12	200104	5	4	83	88	68	84	78	87	85
13	200145	3	2	58	64	79	84	62	69	62
14	165153	4	4	75	90	89	86	86	87	81
15	192119	3	1	14	14	13	33	12	13	19
16	208722	4	4	78	86	84	84	75	90	77
17	203376	3	2	53	52	87	79	45	70	60
18	230621	3	1	12	12	12	36	8	28	12
19	209331	3	4	79	91	59	84	81	90	83
20	210257	3	1	20	14	14	61	18	23	15
21	212622	4	3	91	68	72	87	69	83	85
22	212831	3	1	17	13	29	45	20	27	19

12)

```
Position_ratings(
    ID INTEGER,
    STRating INTEGER,
    LWRating INTEGER,
    LFRating INTEGER,
    CFRating INTEGER,
    RFRating INTEGER,
    RWRating INTEGER,
    CAMRating INTEGER,
    LMRating INTEGER,
    CMRating INTEGER,
    RMRating INTEGER,
    LWBRating INTEGER,
    CDMRating INTEGER,
    RWBRating INTEGER,
    LBRating INTEGER,
    CBRating INTEGER,
    RBRating INTEGER,
    GKRating INTEGER,
    FOREIGN KEY (ID) REFERENCES Player_info(ID)
);
```

```

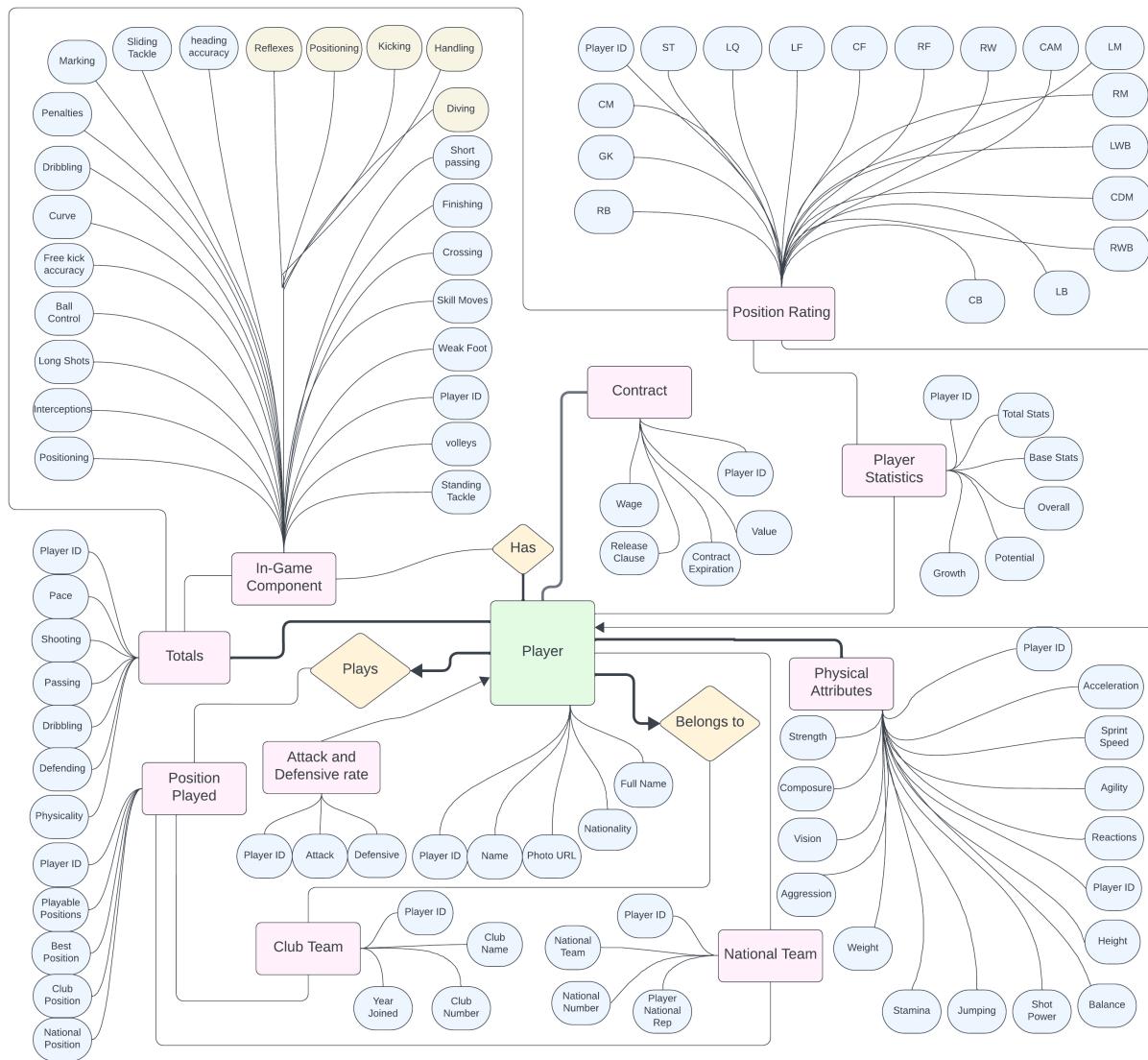
CREATE TABLE if not exists Position_ratings(
    ID INTEGER,
    STRating INTEGER,
    LWRating INTEGER,
    LFRating INTEGER,
    CFRating INTEGER,
    RFRating INTEGER,
    RWRating INTEGER,
    CAMRating INTEGER,
    LMRating INTEGER,
    CMRating INTEGER,
    RMRating INTEGER,
    LWBRating INTEGER,
    CDMRating INTEGER,
    RWBRating INTEGER,
    LBRating INTEGER,
    CBRating INTEGER,
    RBRating INTEGER,
    GKRating INTEGER,
    FOREIGN KEY (ID) REFERENCES Player_info(ID)
);

```

[Click to copy](#)

1	158023	92	92	93	93	93	92	93	93	90	93
2	188545	92	85	88	88	88	85	89	87	83	87
3	20801	91	88	89	89	89	88	89	89	81	89
4	231747	91	90	90	90	90	90	92	92	84	92
5	200389	36	32	35	35	35	32	41	38	41	38
5	192985	86	88	87	87	87	88	91	91	91	91
7	190871	86	90	88	88	88	90	91	91	85	91
3	215914	75	77	77	77	77	77	81	82	85	82
9	202126	90	84	86	86	86	84	88	87	85	87
10	192448	38	35	38	38	38	35	45	42	48	42
11	167495	43	40	43	43	43	40	50	47	53	47
12	200104	88	87	87	87	87	87	89	89	83	89
13	200145	79	72	76	76	76	72	79	77	85	77
14	165153	89	85	87	87	87	85	89	87	83	87
15	192119	34	29	31	31	31	29	35	34	35	34
16	208722	89	87	88	88	88	87	89	89	83	89
17	203376	73	67	69	69	69	67	73	73	78	73
18	230621	37	34	36	36	36	34	41	38	40	38
19	209331	88	88	88	88	88	88	89	89	85	89
20	210257	43	41	43	43	43	41	50	47	52	47

Part 2: the tables I created are in BNCF form and I followed this charts format.



Part 3:

The following is my Command line Interface and its functionality.

Welcome to the Database CLI Interface!

Please select an option:

1. Insert Data
2. Delete Data
3. Update Data
4. Search Data
5. Aggregate Functions
6. Sorting
7. Joins
8. Grouping
9. Subqueries
10. Transactions
11. Error Handling
12. Exit

Enter your choice (1-12): █

When choosing number 1)

```
Welcome to the Database CLI Interface!
```

```
Please select an option:
```

1. Insert Data
2. Delete Data
3. Update Data
4. Search Data
5. Aggregate Functions
6. Sorting
7. Joins
8. Grouping
9. Subqueries
10. Transactions
11. Error Handling
12. Exit

```
Enter your choice (1-12): 1
```

```
Insert Data selected.
```

1. Player_info
2. Player_body_component
3. Positions
4. Player_stats
5. Club
6. National
7. Contracts
8. Work_rates
9. Totals
10. Physical_Attributes
11. InGame_Attributes
12. Position_ratings

```
Choose a table number to insert data into: 1
```

```
Selected Table: Player_info
```

```
Enter the following details:
```

```
Enter ID: 454545
```

```
Enter Name: shiv
```

```
Enter FullName: patel
```

```
Enter Age: 23
```

```
Enter PhotoUrl: boolsc.com
```

```
Enter Nationality: sa
```

```
Data inserted successfully.
```

```
Press Enter to return to main menu...■
```

When choosing number 2)

```
Welcome to the Database CLI Interface!

Please select an option:
1. Insert Data
2. Delete Data
3. Update Data
4. Search Data
5. Aggregate Functions
6. Sorting
7. Joins
8. Grouping
9. Subqueries
10. Transactions
11. Error Handling
12. Exit
Enter your choice (1-12): 2
1. Player_info
2. Player_body_component
3. Positions
4. Player_stats
5. Club
6. National
7. Contracts
8. Work_rates
9. Totals
10. Physical_attributes
11. In_game_attributes
12. Position_ratings
Choose a table number to delete from: 1
Selected Table: Player_info
Columns names: ID, Name, FullName, Age, PhotoUrl, Nationality
Enter the column name to condition the deletion on (e.g., ID): ID
Enter the value of ID for the record to delete: 454545
Record deleted successfully.
Press Enter to return to main menu...
```

When choosing number 3)

```
Welcome to the Database CLI Interface!
```

```
Please select an option:
```

1. Insert Data
2. Delete Data
3. Update Data
4. Search Data
5. Aggregate Functions
6. Sorting
7. Joins
8. Grouping
9. Subqueries
10. Transactions
11. Error Handling
12. Exit

```
Enter your choice (1-12): 3
```

```
Update Data selected.
```

1. Player_info
2. Player_body_component
3. Positions
4. Player_stats
5. Club
6. National
7. Contracts
8. Work_rates
9. Totals
10. Physical_attributes
11. In_game_attributes
12. Position_ratings

```
Choose a table number to update: 1
```

```
Selected Table: Player_info
```

```
Available Columns: ID, Name, FullName, Age, PhotoUrl, Nationality
```

```
Enter the column name for the record to update (e.g., ID): ID
```

```
Enter the value of ID for the record to update: 434343
```

```
Enter the column name you want to update: Name
```

```
Enter the new value for Name: sarah
```

```
Record updated successfully.
```

```
Press Enter to return to main menu...■
```

When choosing number 4)

```
Welcome to the Database CLI Interface!

Please select an option:
1. Insert Data
2. Delete Data
3. Update Data
4. Search Data
5. Aggregate Functions
6. Sorting
7. Joins
8. Grouping
9. Subqueries
10. Transactions
11. Error Handling
12. Exit
Enter your choice (1-12): 4

Search Data selected.
Enter the table name: Player_info
Enter the column name for the search condition: ID
Enter the search condition for ID (e.g., > 10, = 'value', LIKE '%value%')
: = 158023
158023,L. Messi,Lionel Messi,34,https://cdn.sofifa.com/players/158/023/22
_60.png,Argentina
Press Enter to return to main menu...■
TF-8  LF  { Python  3.12.0 64-bit  ⚙  Blackbox  &  ⚡ tabnine starter  ⚡ Prettier
```

When choosing number 5)

```
Welcome to the Database CLI Interface!
```

```
Please select an option:
```

- 1. Insert Data
- 2. Delete Data
- 3. Update Data
- 4. Search Data
- 5. Aggregate Functions
- 6. Sorting
- 7. Joins
- 8. Grouping
- 9. Subqueries
- 10. Transactions
- 11. Error Handling
- 12. Exit

```
Enter your choice (1-12): 5
```

```
Aggregate Functions selected.
```

```
Enter the table name: Club
```

```
Enter the column name to perform the aggregation: Club
```

```
Enter the aggregation operation (sum, avg, count, min, max): min
```

```
The result of MIN(Club) on Club is: 1. FC Heidenheim 1846
```

```
Press Enter to return to main menu...■
```

```
ITE-8  LF  (1 Python 3.12.0 64-bit  $  Blackbox  ☰  ⌂ tabnine starter  ⌂
```

When choosing number 6)

```
Welcome to the Database CLI Interface!
```

```
Please select an option:
```

1. Insert Data
2. Delete Data
3. Update Data
4. Search Data
5. Aggregate Functions
6. Sorting
7. Joins
8. Grouping
9. Subqueries
10. Transactions
11. Error Handling
12. Exit

```
Enter your choice (1-12): 6
```

```
Sorting selected.
```

```
Enter the table name: Club
```

```
Enter the column name to sort by: ClubNumber
```

```
Enter the sort order (ASC for ascending or DESC for descending): ASC
```

```
UTF-8 LF { Python 3.12.0 64-bit Blackbox tabnine starter Prett
```

```
(233791, 'Spartak Moskva', 98, 2015)
(255927, 'Venezia FC', 98, 2020)
(264451, 'US Salernitana 1919', 98, 2021)
(253120, 'Torino F.C.', 98, 2019)
(243910, 'FC Lausanne-Sport', 98, 2021)
(260577, 'Club Brugge KV', 98, 2021)
(257811, 'AFC UTA Arad', 98, 2018)
(226468, 'AC Monza', 98, 2019)
(257811, 'AFC UTA Arad', 98, 2018)
(254289, 'AFC Chindia Targoviște', 98, 2021)
(247751, 'GwangJu FC', 98, 2018)
(246960, 'U.C. Sampdoria', 98, 2021)
(251236, 'FCSB (Steaua)', 98, 2021)
(231266, 'Vitoria de Guimaraes', 98, 2019)
(255887, 'Portland Timbers', 98, 2020)
(245493, 'Abha Club', 98, 2020)
(246960, 'U.C. Sampdoria', 98, 2021)
(241585, 'Fiorentina', 98, 2021)
(263189, 'FC Flyeralarm Admira', 98, 2021)
(255887, 'Portland Timbers', 98, 2020)
(226468, 'AC Monza', 98, 2019)
(240501, 'Piast Gliwice', 98, 2021)
(240501, 'Piast Gliwice', 98, 2021)
(241237, 'KSV Cercle Brugge', 98, 2020)
(251603, 'Empoli', 98, 2019)
(234725, 'SV Zulte Waregem', 98, 2019)
(234857, 'PFC CSKA Moscow', 98, 2018)
(246960, 'U.C. Sampdoria', 98, 2021)
(251603, 'Empoli', 98, 2019)
```

Not evident but it sorted it correctly.

When choosing number 7)

```
Welcome to the Database CLI Interface!

Please select an option:
1. Insert Data
2. Delete Data
3. Update Data
4. Search Data
5. Aggregate Functions
6. Sorting
7. Joins
8. Grouping
9. Subqueries
10. Transactions
11. Error Handling
12. Exit
Enter your choice (1-12): 7

Join selected.
Enter the first table name: Club
Enter the second table name: Positions
Enter the join key from Club (e.g., column name in Club): Club
Enter the join key from Positions (e.g., column name in Positions): ClubPosition
Enter the type of join (INNER, LEFT OUTER, RIGHT OUTER, FULL OUTER): INNER
No records found.
Press Enter to return to main menu...■
```

When choosing number 8)

PRESS ENTER TO RETURN TO MAIN MENU...

Welcome to the Database CLI Interface!

Please select an option:

1. Insert Data
2. Delete Data
3. Update Data
4. Search Data
5. Aggregate Functions
6. Sorting
7. Joins
8. Grouping
9. Subqueries
10. Transactions
11. Error Handling
12. Exit

Enter your choice (1-12): 8

1. Player_info
2. Player_body_component
3. Positions
4. Player_stats
5. Club
6. National
7. Contracts
8. Work_rates
9. Totals
10. Physical_attributes
11. In_game_attributes
12. Position_ratings

Choose a table number: 1

Selected Table: Player_info

Columns available: ID, Name, FullName, Age, PhotoUrl, Nationality

Enter the column name to group by: ID

Enter the column name to apply the aggregate function on: Name

Enter the aggregate function (COUNT, SUM, AVG, MAX, MIN): MIN

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```
(252773, 'J. Griffiths')
(261775, 'M. Gragger')
(210820, 'H. Zackrisson')
(246074, 'B. Goller')
(233050, 'M. Smith')
(239964, 'E. Shomurodov')
(258474, 'A. Foley')
(262815, 'G. Kotsiras')
(190971, 'O. Alonso')
(264646, 'M. Weier')
(253509, 'S. Das')
(245509, 'J. Cavallo')
(235633, 'Y. Diouf')
(236474, 'M. Bundu')
(256889, 'T. Vannoye')
(255479, 'G. Norlin')
(263449, 'G. Amanda')
(226259, 'L. Andrenacci')
(221456, 'R. Burke')
(251373, 'K. Klefisch')
(193247, 'H. Lindner')
(226924, 'R. Kerschbaum')
(244780, 'E. Masciangelo')
(253644, 'J. Reyes')
(234906, 'H. Aouar')
(242911, 'Zhang Yu')
(264651, 'J. Carabali')
(240259, 'M. Merghem')
(251086, 'F. Achim')
```

I did not have any subqueries for number 9) so I allowed the User to create their own SQL command and insert it in to it.

When choosing number 10)

```
11. Error Handling
12. Exit
Enter your choice (1-12): 10

Transactions selected.
Available actions:
1. Insert Data
2. Delete Data
3. Update Data
4. Exit this menu
Choose an action (1-4):
```

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So, I just redirect them to options 1, 2, and 3.

When choosing number 11)

```
Welcome to the Database CLI Interface!
```

```
Please select an option:
```

- 1. Insert Data
- 2. Delete Data
- 3. Update Data
- 4. Search Data
- 5. Aggregate Functions
- 6. Sorting
- 7. Joins
- 8. Grouping
- 9. Subqueries
- 10. Transactions
- 11. Error Handling
- 12. Exit

```
Enter your choice (1-12): 11
```

```
Error Handling selected.
```

```
Python script already uses error handling at every function call to
ensure correctness.
```

```
Press Enter to return to main menu...■
```

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I used try except for all my python functions so I didn't need to do anything for error handling.

When choosing number 12)

```
Welcome to the Database CLI Interface!
```

```
Please select an option:
```

- 1. Insert Data
- 2. Delete Data
- 3. Update Data
- 4. Search Data
- 5. Aggregate Functions
- 6. Sorting
- 7. Joins
- 8. Grouping
- 9. Subqueries
- 10. Transactions
- 11. Error Handling
- 12. Exit

```
Enter your choice (1-12): 12
```

```
Exiting the Database CLI. Goodbye!
```

```
Traceback (most recent call last):
```