Fekedeselassie Kinfu, Andrew Day, Victor Lin, Frazer Workneh, Michael Belay
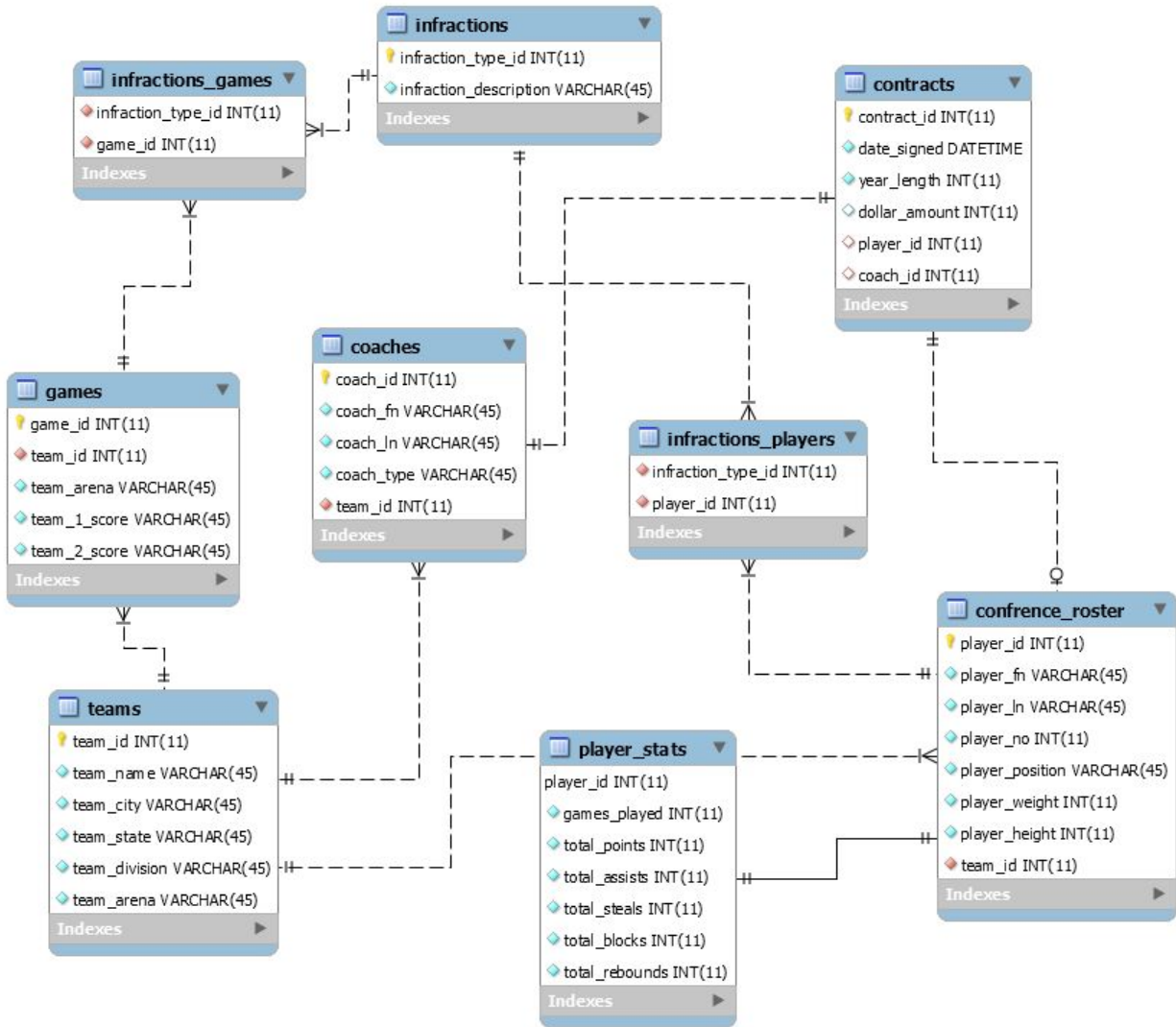**Team Project Final Submission (Database + Report)**

Introduction

The database we have decided to create, rooted from our fanaticism of basketball, is the Eastern Conference for the entirety of the 2018-2019 NBA season. When first choosing this topic, as a group we wanted to pick something that we could all get behind and have interest in for the duration of the whole semester, all while being capable of meeting the project requirements. Most of our group enjoys watching basketball so this was an excellent topic to follow through with. The target audience of which we had in mind while creating the database was NBA analysts and researchers looking to measure different stats around the Eastern Conference. Analysts could use our design to answer a number of questions. Fellow fans of the NBA could also use our database to compare their favorite players or coaches. Our tables include data from games, coaches, teams, infractions, contracts, rosters, and stats. Through many changes in our database, we have decided this was the best route to take for many reasons. The most influential factor that led us this way was to have more one-to-many and many-to-one relationships in our data. We found this to be manageable in terms of data handling and producing queries that are understandable to our audience. We largely chose this because the data for this season has already been produced and we believe it will resonate more with our audience due to how recent it was and mostly because it is easily accessible for us.

Team Project Final Submission (Database + Report)

Database Description

Logical Design

infractions
- infraction_type_id INT(11)
- infraction_description VARCHAR(45)
- Indexes

infractions_games
- infraction_type_id INT(11)
- game_id INT(11)
- Indexes

contracts
- contract_id INT(11)
- date_signed DATETIME
- year_length INT(11)
- dollar_amount INT(11)
- player_id INT(11)
- coach_id INT(11)
- Indexes

coaches
- coach_id INT(11)
- coach_fn VARCHAR(45)
- coach_ln VARCHAR(45)
- coach_type VARCHAR(45)
- team_id INT(11)
- Indexes

infractions_players
- infraction_type_id INT(11)
- player_id INT(11)
- Indexes

games
- game_id INT(11)
- team_id INT(11)
- team_arena VARCHAR(45)
- team_1_score VARCHAR(45)
- team_2_score VARCHAR(45)
- Indexes

confrence_roster
- player_id INT(11)
- player_fn VARCHAR(45)
- player_ln VARCHAR(45)
- player_no INT(11)
- player_position VARCHAR(45)
- player_weight INT(11)
- player_height INT(11)
- team_id INT(11)
- Indexes

teams
- team_id INT(11)
- team_name VARCHAR(45)
- team_city VARCHAR(45)
- team_state VARCHAR(45)
- team_division VARCHAR(45)
- team_arena VARCHAR(45)
- Indexes

player_stats
- player_id INT(11)
- games_played INT(11)
- total_points INT(11)
- total_assists INT(11)
- total_steals INT(11)
- total_blocks INT(11)
- total_rebounds INT(11)
- Indexes

Physical Database

- coaches

coach_id	coach_fn	coach_ln	coach_type	team_id
1	Lloyd	Pierce	Head Coach	1
2	Greg	Foster	Assistant Coach	1
3	Brad	Stevens	Head Coach	2
4	Jerome	Allen	Assistant Coach	2
5	Kenny	Atkinson	Head Coach	3

- conference_roster

player_id	player_fn	player_ln	player_no	player_position	player_weight	player_height	team_id
1	Trae	Young	11	PG	180	73	1
2	Kevin	Huerter	3	SG	190	79	1
3	Taurean	Prince	12	SF	218	79	1
4	John	Collins	20	PF	235	81	1
5	Dewayne	Dedmon	14	C	245	84	1

- contracts

contract_id	date_signed	year_length	dollar_amount	player_id	coach_id
1	2017-05-24 00:00:00	2	21324966	1	NULL
2	2018-09-11 00:00:00	1	23664945	2	NULL
3	2014-03-02 00:00:00	5	17156885	3	NULL
4	2017-09-07 00:00:00	4	13143637	4	NULL
5	2016-07-14 00:00:00	4	17261343	5	NULL

- games

game_id	team_id	team_arena	team_1_score	team_2_score
1	15	state farm	87	79
2	14	td garden	109	110
3	13	barclays	105	99
4	12	spectrum center	109	102
5	11	united center	115	125

- infractions

infraction_type_id	infraction_description
1	traveling
2	frontcourt/backcourt
3	out of bounds
4	improper dribbling or failure to dribble
5	improper throw-in

- infractions_games

infraction_type_id	game_id
2	1
3	1
1	1
3	1
3	2

- infractions_players

infraction_type_id	player_id
2	22
11	1
10	2
14	65
3	32

- player_stats

player_id	games_played	total_points	total_assists	total_steals	total_blocks	total_rebounds
1	81	1549	653	72	15	301
2	75	727	214	65	25	245
3	55	742	118	53	19	199
4	61	1188	121	22	39	595
5	64	693	90	69	71	480

Team Project Final Submission (Database + Report)

- teams

team_id	team_name	team_city	team_state	team_division	team_arena
1	Hawks	Atlanta	Georgia	southeast	state farm
2	Celtics	Boston	Massachusets	atlantic	td garden
3	Nets	Brooklyn	New York	atlantic	barclays
4	Hornets	Charlotte	North Carolina	southeast	spectrum center
5	Bulls	Chicago	Illinois	central	united center

Changes from the original design

Our original design was to create a database on only the Washington Wizards. We
believed that the NBA had too many teams to cover so we thought it was a good idea to just
focus on a team from home. We thought it would be sufficient to solely include multiple
statistics from the Wizards' organization. We still planned to include some elements from other
NBA teams such as former teams that players used to belong to. Our original design was also
going to cover five total seasons to provide us with a large history of the Wizards' roster. We
also planned to look into each players' college background and include that data in the original
design. After talking amongst our amp and each other, we came to the realization that our
original design would not be sufficient to carry on with the project. We decided to pivot our
focus and transition our database to cover a wider scope of the NBA. Discussion and review led
us to believe that the execution might be a little more complicated than expected in terms of how
we were going to link tables and whether or not we were going to have enough linking tables and
many-to-many relationships. However, our original plans were to focus on one single NBA
conference for one season, and in our case, we decided to use the Eastern Conference for the
entirety of the 2018-2019 NBA season. Furthermore, we decided to focus on starting line-ups
instead of using the entire team rosters.

Lessons Learned

Perhaps our greatest challenge was finding common times to meet and collaborate when
we were in the initial stages of the project. Through compromise and utilizing technology, we

were able to find times that we could meet and ways that we could complete our work on time.

This taught us that compromise is necessary when working in groups. Another lesson that we

took away from this project is that things don't always go as planned, as evidenced by the fact

that we had to completely change our dataset at one point. The most notable technical challenge

that we faced was when we were writing queries at the very end. It was challenging at first, but

through collaboration and help from our designated AMP, we were able to figure them out.

Potential Future Work

To start, since we only included the Eastern Conference, we would expand our database

of the 2018-2019 season to include the Western Conference which would total up to all 30 NBA

teams. With this, we would be able to cross-compare which conference is better and what team is

most likely to have success in the playoffs. Another potential addition would be to look into each

teams' fanbase. More specifically, we are interested to look at data revolving around television

streams, social media followers, fan attendance at games, and overall any statistical data that

covers each team's fanbase. This addition would allow us to look at which teams have the largest

fanbase.