# Basketball Analytics Associate Project

Welcome to the Basketball Analytics Associate Project, where you will have an opportunity to showcase your expertise in Python or R, SQL proficiency, and basketball knowledge through a series of data-centric tasks.

**# 1: Data Pipelining / Visualization Project**

* **Data Engineering Objective, Data Visualization, and Reporting Objective:**
  + Answered within Jupyter Notebook: SaraCruz\_IP\_FINAL.ipynb
* **SQL Question**: Write a SQL query to find the names and jersey numbers of all players who participated in the games for the Pacers. Additionally, for each player, display the total number of assists they made in each game. If a player did not participate in a particular game, display “NULL” in the jersey number column and 0 assists for that game.

SELECT

DISTINCT ROSTERS.name,

ROSTERS.gameId,

MAX(CASE WHEN ROSTERS.name = PBP.name then ROSTERS.jerseyNum ELSE NULL END) jerseyNum,

MAX(CASE WHEN ROSTERS.name = PBP.name then PBP.playerTotal ELSE 0 END) ASSISTS

FROM PLAYERS

LEFT JOIN

(SELECT

PBP.name,

PBP.gameId,

PBP.actionType,

PBP.teamTricode,

MAX(PBP.playerTotal) as playerTotal

FROM PBP

WHERE PBP.teamTricode = 'IND' AND PBP.actionType = 'assist'

GROUP BY PBP.name, PBP.gameId) PBP

ON ROSTERS.teamTricode = PBP.teamTricode and ROSTERS.gameId = PBP.gameId

WHERE ROSTERS.teamTricode = 'IND' AND ROSTERS.starter != ''

GROUP BY ROSTERS.name, ROSTERS.gameId;

**#2. Basketball Philosophical Question:** What’s one coaching strategy or idea you’d recommend to a coaching staff? How would you communicate the idea?

* Teams with a defensive-first mentality have a greater advantage during this era of the NBA. Being able to control the game through perfect defense helps increase the team's moral and opens up transition offense. A perfect roster for this idea would involve players in each position that are long, have speed, want to hustle, and have strength. Indiana's current roster only deficiency (for this strategy) is strength. Many of the guards are more offensively inclined.   
    
  To communicate this idea/strategy for the upcoming season/seasons. I would first take a look at teams who have historically had a team built in a similar fashion. The team would have to be from 2010's to now, as today’s NBA defense is vastly different than previous decades.
* Offensive/Defensive Schemes
  + Compare how their rosters looked vs Indiana's.
  + If both rosters a similar, the same principles can be implemented/taught.
  + If the rosters are vastly different more researched would be required.
    - This would first start by looking at the various rosters a coach/coaching staff has had and find players with similar traits.

* Finding this information would be a starting point for developing a defensive deck/module compiled of dashboards and film to showcase what the strategy's specific schemes can do and what role the players can play. Additionally, it would be interesting to develop some sort of simulation model on top of these findings to understand how any scheme changes would affect the flow of the game.
* Changing the Roster
  + Find players who can fill the gaps of a defensive scheme.
  + As previously mentioned, Indiana's current deficiency for this strategy is strength.
    - Simultaneously with gathering information on offensive/defensive schemes, I can compile player profiles for players who would be successful in these strategies. This would help find key players in the current market, upcoming free agency, or draft.
* The player profiles would be a starting point for a second deck aimed to show players who could be successful in the strategy.

Ultimately these decks/modules would be sent to the coaching staff and show how Indiana's current roster could do with a defensive-first strategy.

Additionally with the technology currently being used, we could internally gather data to historically gauge biometrics of future players and how they could fit into similar systems.