

Gabriel Guo, Sean Ayoub, Joshua Moy
Professor Gatterbauer
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GROUP 13 — NBA DATA MANAGEMENT SYSTEM

EXECUTIVE SUMMARY

Our project implements a relational database designed to support a platform for managing and analyzing NBA basketball data. The platform enables users to track player performance statistics, awards, team affiliations over time, and background information such as college and G-League history. While vast quantities of NBA data are publicly available, they are often fragmented across different sources, difficult to query systematically, or not linked in a way that supports deeper analysis over time. By organizing this data into a coherent relational schema, we can support a wide range of business processes and user interactions. This includes tracking player career progression, comparing team performance, calculating advanced statistics, and supporting media, fan engagement, or front office decisions. Implementing this database makes it easier to answer complex questions, enables statistical tracking over time, and facilitates faster, more informed decision-making.

DATABASE OBJECTIVE

At present, it is difficult to analyze and manage NBA data in a structured, reliable format, especially in a way that supports both statistical analysis and real-world applications. Currently, NBA data is often spread across websites or in loosely structured formats, making it challenging to track relationships between entities like players, teams, awards, and historical performance across seasons. Additionally, users such as team analysts, sports journalists, and fans often lack a unified tool that can quickly answer complex questions such as “Which players from a specific college have the highest scoring averages in the NBA?” or “How does team performance change as rosters evolve over seasons?”

The objective of this database is to resolve these issues by storing NBA player and team data in a structured, searchable format. This allows users to easily access and analyze important information including player stats, team rosters, award history, and career timelines. The benefits realized from implementing this database include improved data accessibility, the ability to analyze player and team performance over time, easier historical comparison, and more reliable support for a variety of business processes — from scouting and salary cap management to media storytelling and fan engagement. By linking player performance data to contextual information like college background and award history,

users can gain deeper insights into career progression, team-building strategies, and the overall evolution of the league.

END USERS

In terms of data entry, scouts and people in charge of team and player intel will be able to input detailed player info for each player on each team through each stage of a player's career, as there is access to college and G-League information as well as NBA data. For each new season, they can input and update performance metrics, contract information, and team changes for each season, and past information can also be accessed because a player's career is organized by a unique year. College and G-League front offices can add new prospects into the database with updated game stats and additional info. Because this database connects all of this data across each and every players' careers, these end users don't have to re-enter the same info time and time again.

NBA scouts can access players using this database by locating stats across different seasons, including how they performed in college or the G-League. NBA general managers or front offices may want to access a player's career history and use their stats per season to see how they've developed to see if they should trade for them or not and how they fit in with their current team. Coaches across all levels may want to access this database to see how well a player has performed under certain circumstances or across certain seasons and environments. Stats gurus and analysts will want to access the database to use stats to back up their claims, and to predict how players may do in future seasons. Common NBA fans will want to use the database as well, as some of them may be interested in seeing how their favorite players are performing, or how they've done in the past.

TAKEAWAYS

From creating this project, we learned a lot about bringing large datasets together to make it more easily readable and usable, seeing how everything relates to each other. Creating the diagrams really puts in perspective how much data is actually being accounted for, while providing a simplified version that helps us understand the specific relationships. We also learned how a good database design can be beneficial to supporting many different user types, as they can insert new data and generate insights from the existing data. We also learned how to handle the different types of relationships between entities and their attributes, as well as gaining a better sense of how to design for scalability, making sure the structure we built can support new teams, players, and stats as they get added in future seasons.



