SportRadar Event Explorer – Documentation

# 1. Introduction

The SportRadar Event Explorer project aims to develop a comprehensive solution for managing, visualizing, and analyzing tennis competition data extracted from the Sportradar API. The application fetches JSON responses, transforms them into structured relational tables, and provides interactive dashboards for exploration and insights.

# 2. Workflow

- Data Extraction: Used the Sportradar Tennis API (competitions.json, complexes.json, rankings.json).  
- Data Transformation: Converted JSON into structured tables: Competitions, Categories, Complexes, Venues, Competitors, and Competitor Rankings.  
- Data Storage: Initially tested in SQLite/MySQL, later exported as CSV for use in Streamlit.  
- Dashboard Development: Built using Streamlit with filters (year, week, gender, country, rank, points, name search) and multiple analysis features.  
- Visualization & Insights: Showed leaderboards, KPIs, competitor details, and country-wise statistics.

# 3. Schema Design

Competitions: (competition\_id, name, parent\_id, type, gender, category\_id)  
Categories: (category\_id, category\_name)  
Complexes: (complex\_id, complex\_name)  
Venues: (venue\_id, venue\_name, city\_name, country\_name, country\_code, timezone, complex\_id)  
Competitors: (competitor\_id, name, country, country\_code, abbreviation)  
Competitor\_Rankings: (competitor\_id, rank, points, movement, competitions\_played, year, week, gender, type)

# 4. Challenges Faced

- API Rate Limits: Sportradar trial keys had strict request limits, requiring staggered API calls.  
- JSON Structure Differences: The rankings.json endpoint had nested 'competitor\_rankings' requiring custom parsing.  
- Database Connection Issues: MySQL setup in Colab/Workbench was inconsistent; final solution was CSV-based integration with Streamlit.  
- Empty Files: Some CSVs initially had no rows due to rate limits, requiring retry logic.  
- Streamlit Config: Errors like set\_page\_config must be first command and slider edge cases (only one year/week) needed debugging.

# 5. Insights & Outcomes

- Built a fully functional dashboard capable of:  
 \* Displaying global & filtered KPIs (competitors, countries, points).  
 \* Searching and filtering competitors by multiple criteria.  
 \* Viewing detailed competitor history and movements.  
 \* Analyzing country-level participation and average points.  
 \* Generating leaderboards for top-ranked and top-point competitors.  
- Enhanced skills in APIs, SQL schema design, data cleaning, and visualization.