

# Visualization Project

## Formula 1 Analysis

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**Luis Aguilar**

**Siham Argaw**

**Matthew Bush**



**SAN FRANCISCO**  
**STATE UNIVERSITY**

# Abstract

**Problem:** The Formula 1 Analysis Project **investigates historical trends in Formula 1** racing using an **interactive data visualization platform**. This project aims to provide fans, analysts, and strategists with insights into key aspects of the sport.

**Approach:** Our approach involved developing a **web application** that enables users to explore a comprehensive dataset, focusing on factors such as team dominance, driver performance, and strategic elements like pit stops.

**Results:** Preliminary findings **revealed trends** in team performance, the consistency of top drivers, and the impact of race-day strategies like pit stops and qualifying outcomes on results.



# Problem description

The Formula 1 Analysis Project aims to **explore historical trends in Formula 1** racing (1950–2024) through an interactive data visualization system. By analyzing key factors such as team dominance, driver performance, and pit stop strategies, the project seeks to provide visually engaging insights for fans, analysts, and strategists.

## Key Questions:

- Which teams have dominated over the years, and how have their performances fluctuated?
- Which drivers have shown consistent performance across seasons?
- How have pit stop strategies influenced race outcomes?
- What is the impact of qualifying sessions and sprints on race performance?
- Which teams have nurtured the most talented drivers?



# End goals

Some of the end goals of our project were:

- Create an interactive and engaging **visualization system** for exploring historical Formula 1 data.
- **Highlight key trends** in driver and constructor performance from 1950–2024.
- Provide **actionable insights** into the impact of strategies, such as pit stops, on race outcomes.
- Analyze and visualize the **correlation** between **qualifying**, **sprints**, and **race results**.



# Architecture

## A. Data processing layer

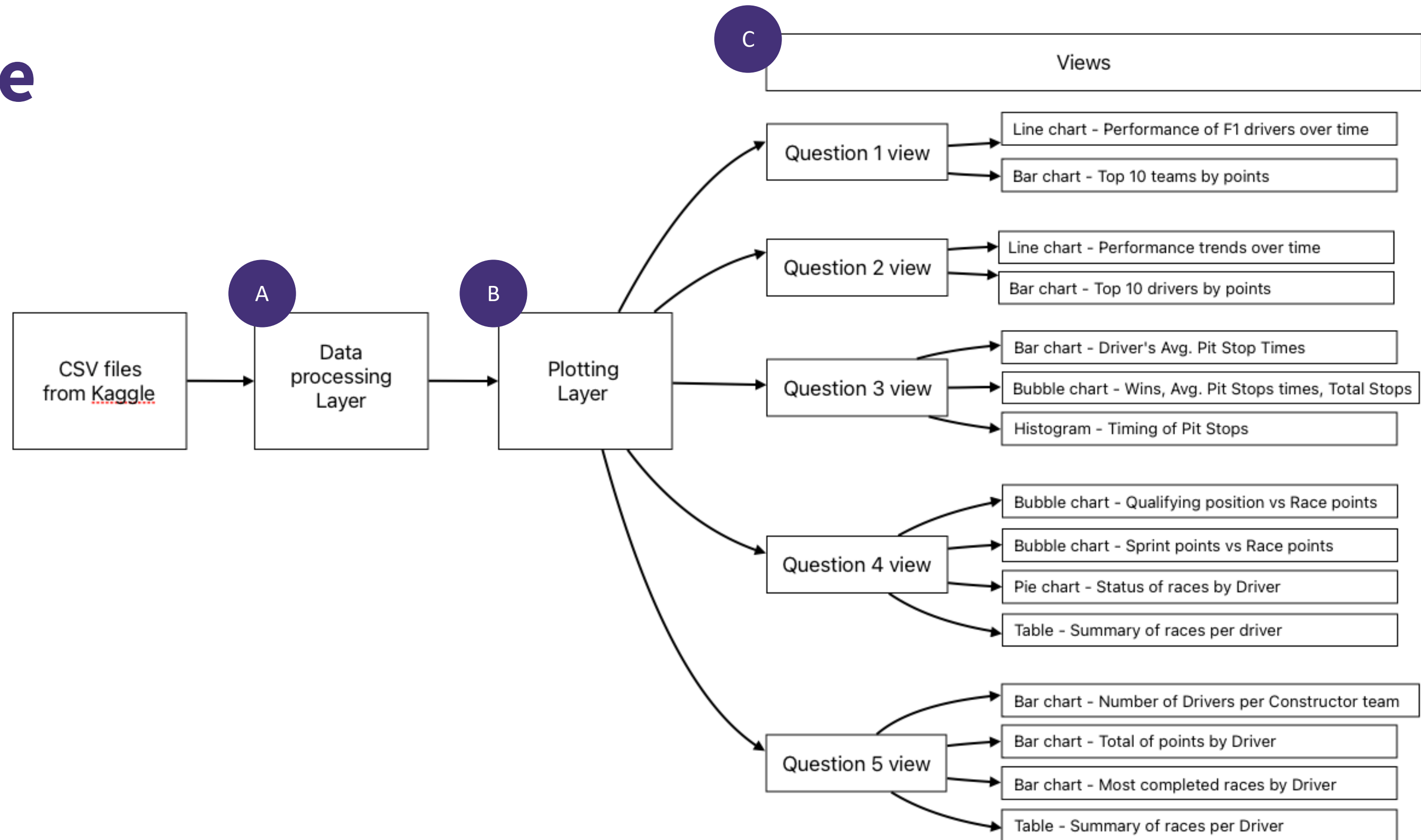
- Load, parse, clean, and manipulate data.

## B. Plotting layer

- Generate visualizations with filtered formatted data.

## C. Views layer

- Render visualizations on a multi-page web application



# Technologies



Python

Main programming language



- Python dependency
- Used for cleaning, exploring, and manipulating data.
- E.g. Load CSV files, manage DataFrames, etc.



- Python dependency
- Used to generate interactive web-based visualizations.
- E.g. Plot bar charts, line charts, bubble charts, etc.



- Python dependency
- Framework for building interactive web applications using Python.
- No need of extensive webdev knowledge (HTML, CSS, and JS).



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