Part 1: The "Background" (The Python Detective Agency 🕵️)

This is all the smart work that happens in your terminal **before** the website even opens. Think of it as the detective doing all the research and paperwork for a case.

- **Step 1: Creating the Case Files (Training Data)**
  - **What happens:** You run python generate_data.py.
  - **In simple words:** This script acts like a factory, creating a fake but very realistic list of bank transactions. It saves this list into the file transactions.csv. Most importantly, it adds a secret "answer key" column called is_fraud, which marks the transactions it knows are part of a sneaky pattern.
- **Step 2: Training the Detective (The ML Model)**
  - **What happens:** You run python train_and_predict.py.
  - **In simple words:** This is like sending a rookie detective to training school!
    - The script reads the transactions.csv file (the "textbook").
    - It studies every example, learning the difference between normal and fraudulent transactions.
    - Once it graduates, it saves its "brain"—all its knowledge—into a file called aml_model.pkl. This means it's now a trained expert, ready for new cases.
- **Step 3: Analyzing a New Case**
  - **What happens:** You run python process_new_file.py <your_new_file.csv>.
  - **In simple words:** You give your trained detective a new case file.
    - The script loads the detective's "brain" from aml_model.pkl.
    - It reads the new transaction file you gave it.
    - It uses its expert knowledge to predict a precise risk score for every single transaction in the new file.
    - Finally, it creates a "final report card" for the website, a file called processed_accounts.csv. This file lists every account and its single, overall ML risk score.
- **Step 4: Opening the Office (Starting the Server)**
  - **What happens:** You run python -m http.server.
  - **In simple words:** This command turns your computer into a mini-website host. It's like opening the doors to the detective agency so the public (your browser) can come in and see the results.

Part 2: The "Frontend" (The Investigation Room 🖥️)

This is everything you see and do in your web browser after you go to http://localhost:8000.

- **Step 1: Setting up the Room**
  - **What happens:** When you open the website, your browser loads the index.html file.
  - **In simple words:** This sets up the investigation room. It creates the title, the buttons on the left, and the big empty "evidence board" (the graph area) and timeline.

- **Step 2: Bringing in the Evidence**
  - **What happens:** You select your two CSV files (transactions.csv and processed_accounts.csv) and click "Load & Visualize".
  - **In simple words:** You are handing the case files over to be displayed. The script.js file takes these files and gets ready to put everything up on the evidence board.
- **Step 3: Pinning Evidence to the Board**
  - **What happens:** The script.js file uses a special library (vis.js) to draw everything.
    - First, it reads your **processed_accounts.csv** file. It uses this "report card" to draw all the **Nodes (the circles)**. The ml_risk_score in this file tells it how big and what color to make each circle.
    - Next, it reads your **transactions.csv** file. It uses this "action log" to draw all the **Edges (the lines)** that connect the circles.
    - It also uses the transactions.csv file to build the interactive **Timeline** at the bottom.
- **Step 4: You Become the Lead Investigator!**
  - **What happens:** You click on a circle, a line, or one of the "Detect" buttons.
  - **In simple words:** The script.js file is your assistant, listening to your commands.
    - If you click a circle (an account), your assistant instantly pulls up its file, showing its details and its ML Risk Score in the panel on the left.
    - If you click a button like "Detect Smurfing", your assistant uses a set of highlighters to color the specific pattern you asked for on the evidence board, making it easy to see *why* an account might be risky.