User Personas

1. **Persona 1: Oliva, the Stock Analyst**
   - **Age:** 32
   - **Occupation:** Financial Analyst
   - **Technical Skill:** Intermediate (proficient with data analysis tools like Excel and Python)
   - **Primary Goals:**
     - Track stock performance of Macedonian issuers
     - Conduct basic analyses (price changes, volume trends) to make informed investment decisions
     - Export data for further offline analysis
   - **Pain Points:**
     - Manual retrieval and entry of stock data is time-consuming
     - Inconsistent data formatting across sources
     - Limited ability to visualize large datasets efficiently
   - **Needs from the system:**
     - An automated way to retrieve, process, and update stock data
     - A streamlined interface for accessing daily stock data with minimal delays
     - Export options (e.g., CSV) for further offline analysis
2. **Persona 2: Saso, the Data Engineer**
   - **Age:** 28
   - **Occupation:** Data Engineer
   - **Technical Skill:** Advanced (comfortable with databases, automation, and troubleshooting)
   - **Primary Goals:**
     - Ensure seamless integration of raw stock data into the database
     - Maintain data integrity and avoid duplicates
     - Troubleshoot data retrieval issues quickly
   - **Pain Points:**
     - Difficulty in handling large volumes of data from multiple sources
     - Ensuring the data pipeline remains error-free during processing and updating
     - Diagnosing and fixing errors in real-time
   - **Needs from the system:**
     - Automated stock data retrieval and processing with built-in error logging
     - Integration with existing database management systems
     - Clear and actionable error messages for debugging issues
3. **Persona 3: Petar, the Software Developer**
   - **Age:** 25
   - **Occupation:** Full-stack Developer
   - **Technical Skill:** Advanced (comfortable with multiple programming languages and OS platforms)
   - **Primary Goals:**
     - Develop and maintain the system for cross-platform compatibility
     - Ensure high availability and system reliability
     - Ensure the system follows software development standards
   - **Pain Points:**

- Complexities in designing systems that handle large amounts of data efficiently
- Ensuring the system recovers gracefully from failures
- Keeping the codebase well-documented and easy to maintain
- **Needs from the system:**
  - A robust system that can handle large datasets and is compatible with multiple OS (Linux, macOS, Windows)
  - High availability and graceful error recovery
  - Clean, well-documented code for ease of future development and maintenance

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User Scenarios

1. **Scenario 1: Oliva Analyzes Daily Stock Performance**
   - **Context:** Oliva logs into the system in the morning to check the latest stock data from the Macedonian Stock Exchange (MSE).
   - **Actions:**
     - The system automatically retrieves the latest stock data for all listed issuers from the MSE website.
     - The raw data is processed, ensuring that only relevant stock information is retained, and all entries are correctly formatted.
     - Oliva checks the processed data for price changes, volume trends, and other relevant stock metrics.
     - She uses the export feature to save the data in CSV format for further offline analysis.
   - **Outcome:** Oliva can quickly access up-to-date stock information and perform analysis, improving her investment decisions.
2. **Scenario 2: Saso Troubleshoots Data Retrieval Error**
   - **Context:** Saso is monitoring the system's stock data retrieval process and notices that the data has not been updated.
   - **Actions:**
     - Saso accesses the system's error log, which contains a meaningful error message indicating the issue with fetching data from the MSE website.
     - He identifies the root cause, which could be a temporary issue with the MSE webpage.
     - The system provides a quick recovery option, and Saso resolves the issue by manually re-triggering the data retrieval process.
     - After fixing the issue, the data is processed and updated in the database without duplicates or errors.
   - **Outcome:** Saso ensures that data retrieval issues are quickly identified and resolved, maintaining data integrity and system reliability.
3. **Scenario 3: Petar Updates the System for Cross-Platform Compatibility**
   - **Context:** Petar is tasked with ensuring that the stock data system works on multiple operating systems (Linux, macOS, and Windows).
   - **Actions:**
     - Petar develops and tests the system on different OS platforms, ensuring compatibility.

- He implements necessary changes to the codebase to ensure high availability, even when running the system on different environments.
- The system passes tests for graceful error recovery, meaning that if a failure occurs, data is not lost, and processing is not corrupted.
- Petar ensures that the system's code is clean, well-documented, and adheres to best practices to facilitate future development.
  - **Outcome:** Petar delivers a cross-platform system that is highly available, resilient, and maintainable, supporting smooth operation on any OS.

Narrative

The stock data system is designed to support users like Oliva, Saso, and Petar in their daily tasks. Oliva relies on the system to retrieve and analyze the latest stock data with minimal effort, enabling her to make quick, informed decisions. Saso ensures that the backend runs smoothly by handling large volumes of data, resolving any issues with data retrieval, and ensuring that no duplicates or errors make it into the system. Petar, as a developer, ensures that the system works seamlessly across all operating systems and remains resilient in case of failures, with a clear and maintainable codebase.

The system's automated stock data retrieval process, robust error handling, and seamless data integration with the database help users focus on their tasks without worrying about data inconsistencies or delays. The ability to export data for offline use and perform basic analysis further enhances the system's value for all users. With the system in place, the team can confidently track, analyze, and act on stock market data, making it a critical tool for decision-making.