📋 Mean Reversion Strategy App - No-Code Requirements

# 🔧 Purpose

An interactive browser-based app that lets users backtest a mean reversion strategy — specifically, buying after X red days when RSI < Y, and selling after a % gain or loss. It provides:  
- Custom strategy settings  
- Historical performance testing (backtesting)  
- Trade result visualizations  
- Ranked summary of performance metrics across multiple tickers

# 💻 Tech Stack

- Python  
- Streamlit (web UI)  
- yFinance (historical stock data)  
- Matplotlib (charting)  
- Pandas (data manipulation)

# 🧠 Core Strategy Logic

1. Buy when:  
 - X consecutive red days (close < previous close)  
 - RSI is below user-defined cutoff  
2. Sell when:  
 - Stock moves +/- Y% from buy price  
3. Repeat for date range and all tickers listed

# 🎛️ UI Elements / Inputs

- RSI Threshold: Slider (10–50)  
- % Gain/Loss Exit: Slider (1%–10%)  
- Red Days Before Buy: Slider (1–5)  
- Start Date: Date Picker  
- End Date: Date Picker  
- Watchlist: Comma-separated input (text box)  
- Sort Results By: Dropdown (Avg Return / Win Rate)  
- Run Strategy: Button  
- Select Tickers to Plot: Multi-select box

# 📊 Outputs / Features

- Trade Summary Table: Ticker, # of Trades, Avg Return (%), Win Rate (%)  
- Interactive Chart: Buy (green ^) and Sell (red v) markers on chart  
- Backtest Engine: Uses Yahoo Finance historical data  
- Ranked Results: Sortable by Win Rate or Avg Return  
- Multi-Ticker Capable: Runs all selected tickers  
- Error Handling: Graceful fails  
- Strategy Logic is Fully Adjustable via Sidebar

# 📁 File Management / Logging

- Watchlist Input (inline)  
- Optional: `trade\_log.csv` file for saving buy/sell actions  
- Optional: PNG chart export for saved trade visuals

# 🧱 Minimal Viable Build Includes

- All UI controls (sliders, inputs)  
- Core strategy logic  
- yFinance-based backtest  
- Summary result table  
- Interactive trade charts

# 🧠 Optional Add-ons / Future Features

- Export results to CSV with download button  
- Daily signal alerts  
- Streamlit Cloud deployment for mobile  
- Strategy presets (e.g. conservative, aggressive)  
- Email/push notifications