RL Trading System Development Plan- [X]

1. Collect Financial Data

- [X] Identify **data** sources (APIs, providers, web scraping)
- [X] Define required **data** types (prices, volume, fundamentals, indicators)
- [X] Specify assets/markets **of** interest (AAPL, GOOG, ^GSPC, NVDA)
- [X] Determine historical **data range** (5 years)
- [X] Implement **data** collection scripts/processes
- [X] Store collected **data**

- [X] 2. Preprocess and Analyze Data
  - [X] Clean data (handle missing values, outliers)
  - [X] Feature engineering (create relevant indicators, transformations)
  - [X] Exploratory Data Analysis (EDA) (Initial indicators calculated)
  - [X] Prepare data for RL environment (state representation) (CSV files ready)
- [X] 3. Design RL Trading Algorithm
  - [X] Define RL environment (state space, action space, reward function)
  - [X] Choose appropriate RL algorithm (e.g., PPO, DDPG, SAC)
  - [X] Design agent architecture (neural network structure)
  - [ ] Implement RL environment and agent using a framework (e.g., TensorFlow, PyTorch, Stable Baselines3)
  - [ ] Train the agent using historical data
  - [ ] Tune hyperparameters
- [ ] 5. Backtest Trading Strategy
  - [ ] Implement backtesting engine
  - [ ] Evaluate strategy performance (metrics: Sharpe ratio, drawdown, P&L)
  - [ ] Compare against benchmarks
  - [ ] Refine strategy based on backtesting results
- [ ] 6. Connect to Trading Platforms
  - [ ] Research broker APIs (e.g., Interactive Brokers, Alpaca)
  - [ ] Implement API integration for order execution and account management
  - [ ] Handle real-time data feeds
  - [ ] Ensure secure connection and error handling
- [ ] 7. Deploy and Monitor System
  - [ ] Set up deployment environment (cloud, local server)
  - [ ] Implement monitoring tools (performance, errors, logs)
  - [ ] Establish risk management protocols
  - [ ] Consider paper trading before live deployment

- [ ] 8. Document System Architecture
    - [ ] Document data pipeline, model design, backtesting results, deployment setup
    - [ ] Create user guide/manual if applicable