Portfolio Performance Tracker with Benchmark Comparison

Project: Portfolio Performance Tracker with Benchmark Comparison

Duration: X weeks/months

Technologies: Python, Pandas, NumPy, Matplotlib

Overview:

This project tracks the performance of a portfolio comprising various assets and compares it with a benchmark index (such as NIFTY 50).

The portfolio is simulated using asset price fluctuations, and its performance is visualized with time-series graphs.

The project allows for real-time price updates and portfolio value adjustments, while calculating key financial metrics such as

dividend income and asset value.

Key Features:

- Portfolio management tool that simulates asset price changes using a random walk model.
- Real-time portfolio value adjustment and optimization to match a target value.
- Performance comparison against a benchmark index like NIFTY 50.
- Data visualization of portfolio vs. benchmark index using Matplotlib.
- Uses Pandas for data manipulation and NumPy for numerical simulations.

Installation Instructions:

1. Clone this repository or download the project files.
2. Ensure that you have Python 3.x installed on your system.
3. Install the required libraries using pip:

`pip install pandas numpy matplotlib`

How to Use:

1. Add assets to the portfolio using the `add_asset()` method, specifying the name, type, units, price, and dividend yield.
2. Update asset prices using the `update_price()` method to reflect real-time data.
3. Adjust the portfolio to a target value using `adjust_portfolio_value()`.
4. Simulate benchmark index data (e.g., NIFTY) and compare portfolio performance using `compare_performance()`.
5. Generate the portfolio report to analyze asset allocation and dividend income.

Example usage:

```
portfolio = Portfolio()
portfolio.add_asset("IRCTC", "Stock", 50, 700, 0.5)
portfolio.add_asset("Zomato", "Stock", 100, 75, 0.0)
portfolio.add_asset("Reliance", "Stock", 20, 2300, 0.8)

portfolio.adjust_portfolio_value(21000)
portfolio.generate_report()

benchmark_data = pd.DataFrame({
    "Date": pd.date_range(start="2023-01-01", periods=10, freq="D"),
    "Index": portfolio.simulate_nifty(25200, 25100, 25000, 10)
})

portfolio.compare_performance(benchmark_data)
```

```

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```