MAS Test Plan

Overall Test Plan

The overall testing strategy for this project will involve a combination of unit testing, integration testing, and user acceptance testing. The project is a web application that utilizes data analytics and visualization to display real-time stock and commodity data, so testing will focus on ensuring the correct display and interpretation of this data.

Unit testing will be performed on individual modules of the project, such as the data querying and chart display functionality, to ensure they are functioning as intended. Integration testing will then be performed to ensure that all of the individual units are working together correctly. User acceptance testing will be performed to ensure that the end user can easily use the application and that it meets their needs.

Testing will be performed at each of the milestones outlined in the project timeline. For example, at Milestone #1 Completion, the ability to display a chart of a given ticker symbol and query data from an API will be tested. At Milestone #2 Completion, the database that stores user accounts, alerts, and watchlist/portfolio data will be tested. Finally, at Milestone #3 Completion, the entire web application will be thoroughly tested and debugged to ensure all implemented functionalities are working correctly.

Test Case Descriptions

TS1.1 **Ticker Symbol Display Test**
TS1.2 This test will ensure that the ticker symbol selected by the user is correctly displayed on the chart.
TS1.3 The test will simulate a user selecting a specific ticker symbol and checking that the chart updates to display data for that symbol.
TS1.4 Inputs: User selects and inputs a specific ticker symbol.
TS1.5 Outputs: Chart updates to display data for the selected ticker symbol.
TS1.6 Normal
TS1.7 Blackbox
TS1.8 Functional
TS1.9 Integration Test

ZHD2.1 **Zoom and Historical Data Test**
ZHD2.2 This test will ensure that the user can correctly zoom in and out on a chart and view historical data.
ZHD2.3 The test will simulate a user zooming in and out on a chart and checking that the data displayed is accurate and corresponds to the selected time range.

ZHD1.4 Inputs: User selects a specific time range and zoom level on the chart.
ZHD2.5 Outputs: Chart updates to display data for the selected time range and zoom level.
ZHD2.6 Normal
ZHD2.7 Blackbox
ZHD2.8 Functional
ZHD2.9 Integration Test

A3.1 **Alerts Test**
A3.2 This test will ensure that alerts are triggered correctly when a specified price point is reached.
A3.3 The test will simulate a user setting an alert for a specific ticker symbol and price point, and checking that the alert is triggered when the price point is reached.
A3.4 Inputs: User sets an alert for a specific ticker symbol and price point.
A3.5 Outputs: Alert is triggered when the specified price point is reached.
A3.6 Normal
A3.7 Blackbox
A3.8 Functional
A3.9 Unit Test

DR4.1 **Data Refresh Test**
DR4.2 This test will ensure that the data displayed on the chart is refreshed at the specified interval.
DR4.3 The test will simulate a user checking the chart at different intervals and verifying that the data displayed is up-to-date.
DR4.4 Inputs: User sets the data refresh interval and checks the chart at different intervals.
DR4.5 Outputs: Chart data is up-to-date at the specified refresh intervals.
DR4.6 Normal
DR4.7 Blackbox
DR4.8 Functional
DR4.9 Unit Test

CT5.1 **Chart Types Test**
CT5.2 This test will ensure that the various chart types offered by the application are correctly displayed.
CT5.3 The test will simulate a user selecting different chart types (e.g. line chart, bar chart, candlestick chart) and verifying that the correct chart type is displayed.
CT5.4 Inputs: User selects different chart types from a dropdown menu.
CT5.5 Outputs: The correct chart type is displayed for the selected option.

CT5.6 Normal
CT5.7 Blackbox
CT5.8 Functional
CT5.9 Unit Test

TI6.1 **Technical Indicators Test**
TI6.2 This test will ensure that the various technical indicators offered by the application are correctly displayed and calculated.
TI6.3 The test will simulate a user selecting different technical indicators (e.g. moving average, RSI) and verifying that the correct indicator is displayed and calculated correctly.
TI6.4 Inputs: User selects different technical indicators from a dropdown menu.
TI6.5 Outputs: The correct technical indicator is displayed and calculated correctly for the selected option.
TI6.6 Normal
TI6.7 Blackbox
TI6.8 Functional
TI6.9 Unit Test

DE7.1 **Data Export Test**
DE7.2 This test will ensure that the data displayed on the chart can be exported in the correct format.
DE7.3 The test will simulate a user exporting the chart data to a CSV or Excel file and verifying that the exported data is accurate.
DE7.4 Inputs: User selects "Export" option and chooses CSV or Excel file format.
DE7.5 Outputs: Data is exported to the chosen file format and is accurate.
DE7.6 Normal
DE7.7 Blackbox
DE7.8 Functional
DE7.9 Unit Test

UL8.1 **User Login Test**
UL8.2 This test will ensure that the login process for the application is working correctly.
UL8.3 The test will simulate a user entering their login credentials and verifying that they are able to access the application.
UL8.4 Inputs: User enters their login credentials.
UL8.5 Outputs: User is able to access the application.
UL8.6 Normal
UL8.7 Blackbox
UL8.8 Functional

UL8.9 Unit Test

DE9.1 **Data Export Test**
DE9.2 This test will ensure that the user can correctly export data from the application in the desired format.
DE9.3 The test will simulate a user exporting data from the application in various formats (e.g. CSV, Excel) and checking that the data exported is accurate and in the correct format.
DE9.4 Inputs: User selects a specific data range and export format.
DE9.5 Outputs: Data is exported in the correct format and with the correct data.
DE9.6 Normal
DE9.7 Blackbox
DE9.8 Functional
DE9.9 Integration Test

P10.1 **Performance Test**
P10.2 This test will measure the application's performance under various loads and usage scenarios.
P10.3 The test will simulate a high number of concurrent users accessing the application and measure the application's response time, memory usage, and overall performance.
P10.4 Inputs: Various loads and usage scenarios.
P10.5 Outputs: The application's response time, memory usage, and overall performance are within acceptable limits.
P10.6 Boundary
P10.7 Blackbox
P10.8 Performance
P10.9 Integration Test

Test Case Matrix

	Normal/ Abnormal	**Blackbox/ Whitebox**	**Functional/ Performance**	**Unit/ Integration**
TS1	Normal	Blackbox	Functional	Integration
ZHD2	Normal	Blackbox	Functional	Integration
A3	Normal	Blackbox	Functional	Unit
DR4	Normal	Blackbox	Functional	Unit
CT5	Normal	Blackbox	Functional	Unit
TI6	Normal	Blackbox	Functional	Unit
DE7	Normal	Blackbox	Functional	Unit
UL8	Normal	Blackbox	Functional	Unit
DE9	Normal	Blackbox	Functional	Integration
P10	Normal	Blackbox	Performance	Integration