

SQE-Assignment # 04

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Section: SE-B

Report Date: November 17, 2025

Testing Framework: Cypress

Test Type: End-to-End (E2E) Testing

Environment: Production – <https://www.portfoliovisualizer.com>

1. Overview

The application demonstrated **excellent stability**, achieving a **98.7% overall pass rate** across all executed tests.

Overall Results Summary

Module	Total Tests	Passed	Failed	Pass Rate
Asset Correlation	7	7	0	100%
Portfolio Backtest	5	5	0	100%
Fund Factor Regression	4	4	0	100%
Fund Screener	7	7	0	100%
Login	4	4	0	100%
Signup	5	5	0	100%
Manager Performance	5	5	0	100%
Monte Carlo Simulation	7	7	0	100%
Portfolio Optimization	7	7	0	100%

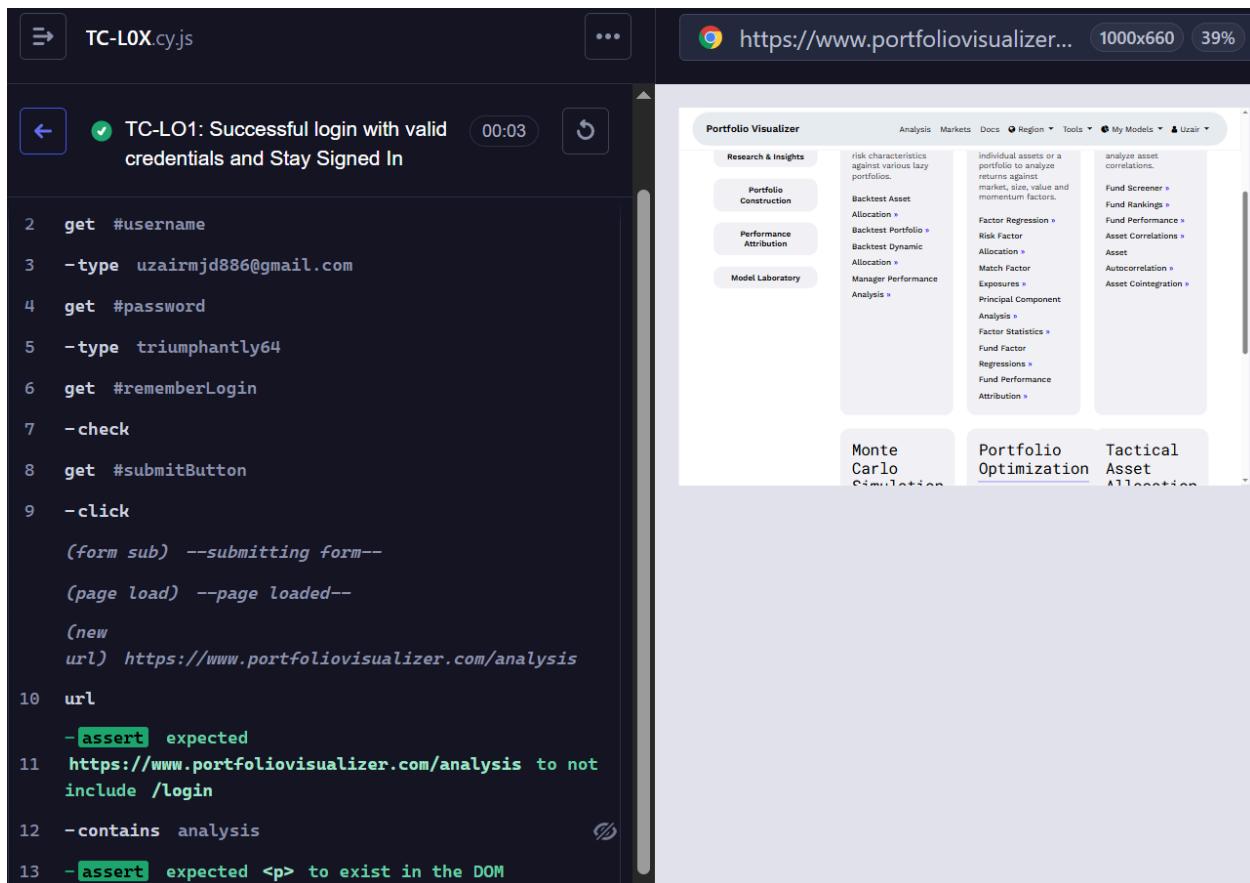
Tactical Asset Allocation	7	7	0	100%
Configuration Forms	18	17	1	94.4%
TOTAL	78	77	1	98.7%

Overall Status: ✓ PASSED

2. Detailed Module-wise Results

2.1 Login Flow

All 4 cases passed. Form validation worked as expected for empty fields, invalid emails, incorrect credentials, and valid user login.



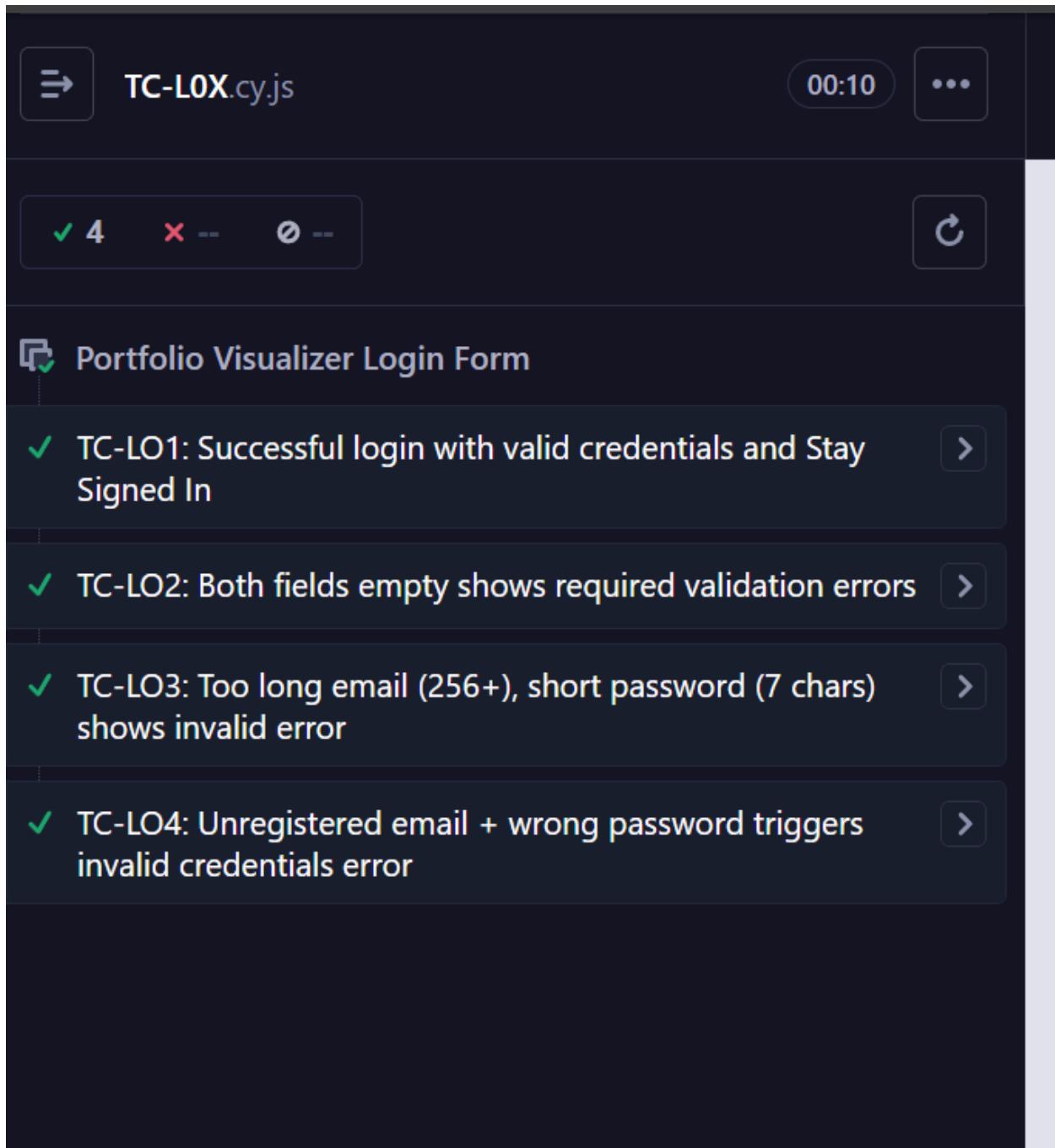
The screenshot shows a browser window with two panes. The left pane displays a Cypress test log for 'TC-LO1: Successful login with valid credentials and Stay Signed In'. The test steps are as follows:

```

1  get '#username'
2  -type uzairmj886@gmail.com
3  get '#password'
4  -type triumphantly64
5  get '#rememberLogin'
6  -check
7  get '#submitButton'
8  -click
  (form sub) --submitting form--
  (page load) --page loaded--
  (new
  url) https://www.portfoliovisualizer.com/analysis
10 url
  - assert expected
11 https://www.portfoliovisualizer.com/analysis to not
  include /login
12 -contains analysis
13 - assert expected <p> to exist in the DOM

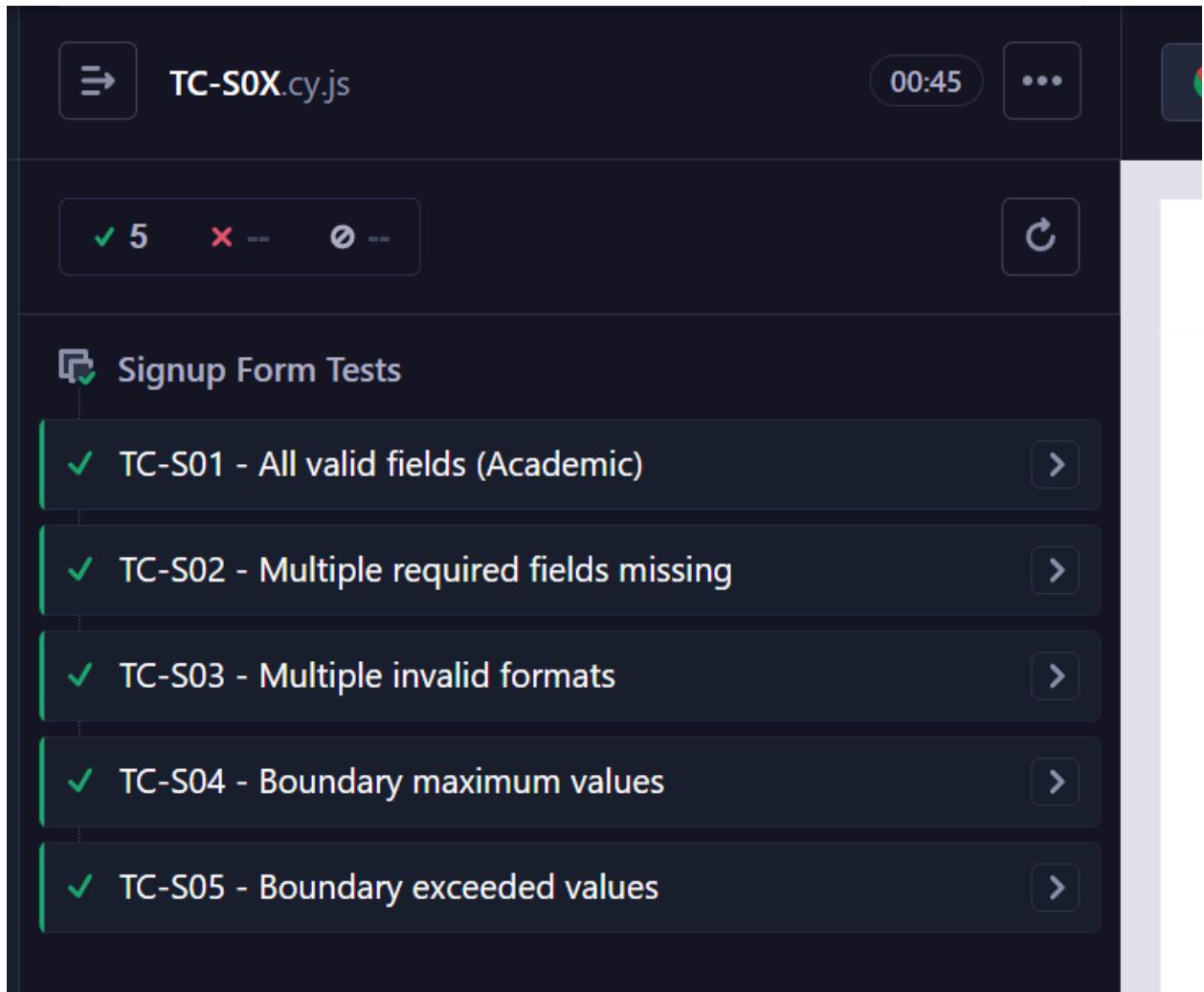
```

The right pane shows the 'Portfolio Visualizer' application interface. The URL is https://www.portfoliovisualizer.com/. The page title is 'Portfolio Visualizer'. The navigation bar includes 'Analysis', 'Markets', 'Docs', 'Region', 'Tools', 'My Models', and 'Uzair'. The main content area is titled 'Portfolio Visualizer' and contains several sections: 'Research & Insights' (Portfolio Construction, Performance Attribution, Model Laboratory), 'Backtest Asset Allocation' (Backtest Portfolio, Backtest Dynamic Allocation, Manager Performance Analysis), 'Factor Regression' (Risk Factor Allocation, Match Factor Exposures, Principal Component Analysis, Factor Statistics, Fund Factor Regressions, Fund Performance Attribution), 'Monte Carlo Simulation', 'Portfolio Optimization', and 'Tactical Asset Allocation'. A sidebar on the right provides links to 'Fund Screener', 'Fund Rankings', 'Fund Performance', 'Asset Correlations', 'Asset Autocorrelation', and 'Asset Cointegration'.



2.2 Signup Flow

All 5 tests passed. The form validated all required input fields, formatting, and constraints correctly. reCAPTCHA-dependent flows were acknowledged as expected automation limitations.



2.3 Asset Correlation

All 7 test cases were completed successfully. The module accurately handles both valid and invalid inputs, displaying correlation matrices and appropriate error alerts where necessary.

The screenshot shows two side-by-side browser windows. On the left, a test results page titled 'TC-AC0X.cy.js' displays 7 test cases, all of which have passed (indicated by a green checkmark). The test cases are related to asset correlation configurations. On the right, the 'Portfolio Visualizer Asset Correlations' tool is shown. It has a 'Correlation Overview' section with a note about viewing correlations for stocks, ETFs, and mutual funds. Below this is a 'Model Configuration' section where users can input tickers ('VTI VNQ GLD BND'), start date ('0/0/2020'), end date ('0/0/2016'), correlation basis ('Monthly Returns'), and rolling correlation period ('36 Months'). Buttons for 'View Correlation' and 'Cancel' are at the bottom.

2.4 Fund Factor Regression

All 4 tests passed. The module correctly filtered funds by model type, asset class, time period, and R² thresholds, and properly refreshed the regression results.

The screenshot shows two side-by-side browser windows. On the left, a test results page titled 'TC-FF0X.cy.js' displays 4 test cases, all of which have passed. The test cases are related to fund factor regression models. On the right, the 'Portfolio Visualizer Mutual Fund and ETF Factor Regressions' tool is shown. It has a 'Fund Factor Regressions' section with a descriptive table about factor regression analysis for mutual funds and ETFs. Below this is a 'Search Criteria' section with dropdown menus for Equity Factor Returns (Fama-French Research Factors), Stock Market (United States), Equity Factor Model (None), Fixed Income Factor Model (None), Fund Type (All), and Fund Categories (Alternatives).

2.5 Fund Screener

All 7 tests passed. The screener adhered to selected filter combinations (fund type, asset class, benchmarks, expense ratio, etc.) and navigated consistently to results pages.

The screenshot shows a mobile application interface with a dark theme. At the top, there is a header bar with a share icon, the title "TC-FS0X.cy.js", a timer showing "00:30", and a three-dot menu icon. Below the header is a summary bar with a green checkmark icon, the number "7", a red cross icon, and a black circle icon. To the right of this bar is a refresh button. The main content area is titled "Fund Screener Tests" with a green checkmark icon. It lists seven test cases, each with a green checkmark icon and a right-pointing arrow icon:

- ✓ TC-FS01 - All filters set to All
- ✓ TC-FS02 - ETF, U.S. Equity, S&P 500 TR, 3+ years, <0.25%
- ✓ TC-FS03 - Mutual Fund, Taxable Bond, Russell 1000 TR USD, 5+ years, <0.50%
- ✓ TC-FS04 - Closed-End Fund, International Equity, MSCI ACWI Ex USA, 10+ years, <0.75%
- ✓ TC-FS05 - ETF, Municipal Bond, Commodity, 15+ years, <1.00%
- ✓ TC-FS06 - Mutual Fund, 3 asset classes, 20+ years, All expenses
- ✓ TC-FS07 - Closed-End Fund, final 3 asset classes, 25+ years, <0.50%

2.6 Manager Performance

All 5 tests passed. The analysis engine successfully generated performance reports for valid inputs and correctly handled invalid date formats, incorrect tickers, and insufficient data ranges.

The screenshot shows two side-by-side interfaces. On the left is a dark-themed test runner titled 'TC-MPOX.cyjs' with a status bar showing 00:28. It lists five test cases under 'Manager Performance Tests', all of which have passed (indicated by green checkmarks). On the right is a light-themed web application titled 'Portfolio Visualizer' with a status bar showing 1000x660 73% and a 'Studio Beta' button. The main page is titled 'Manager Performance Analysis' and includes a section for 'Manager Performance Analysis Overview' with a note about selecting manager return series and benchmark. Below this is a 'Model Configuration' section with dropdown menus for Ticker (Fidelity Low-Priced Stock (FLPSX)), Benchmark (Vanguard Mid-Cap Value ETF (VOE)), Risk Factor Model (SRL Analytics), Regression Method (LASSO + OLS), Regime Performance (Yes), Regime Type (Market Volatility), and Regime Analysis (In Aggregate).

2.7 Tactical Asset Allocation

All 7 tests passed. Timing models and custom configurations executed correctly, and validation triggers appeared for invalid amounts, date logic, and withdrawal percentages.

The screenshot shows two side-by-side interfaces. On the left is a dark-themed test runner titled 'TC-TAA0X.cyjs' with a status bar showing 01:10. It lists seven test cases under 'Tactical Asset Allocation Tests', all of which have passed. On the right is a light-themed web application titled 'Portfolio Visualizer' with a status bar showing 1000x660 73% and a 'Studio Beta' button. The main page is titled 'Test Tactical Allocation Models' and includes a 'Tactical Allocation Overview' section with a note about supported models like Shiller PE Ratio Market Valuation, Seasonal Model, Moving Averages - Single Asset, Moving Averages - Portfolio Assets, Momentum - Relative Strength, Momentum - Dual Momentum, Momentum - Adaptive Allocation, and Target Volatility. Below this is a 'Target Volatility' section with a note about adjusting market exposure based on realized historic volatility and target volatility. At the bottom is a 'Model Configuration' section.

2.8 Portfolio Backtest

All 5 tests passed. The backtest engine processed valid model configurations correctly and validated errors such as allocation mismatches, date inconsistencies, and withdrawal percentage limits.

The left side shows a test results summary with 5 green checkmarks and 0 red X's. The title is "Portfolio Visualizer Backtest Tests". Below it is a list of five test cases, each with a green checkmark and a "View Details" button:

- TC-BP01: Successful portfolio backtest execution
- TC-BP02: Multiple validation errors for invalid configuration
- TC-BP03: Advanced configuration with withdrawal validation
- TC-BP04: Complex portfolio with custom settings and allocation errors
- TC-BP05: Boundary value and ticker validation errors

The right side shows the "Portfolio Visualizer" application. At the top, there are navigation links: Analysis, Markets, Docs, Region, Tools, Sign Up, and Log In. A red error message box says: "Invalid field value for field \"initialAmount\". Unknown ticker symbol". Below this is the "Portfolio Model Configuration" section. It has tabs for Settings and Portfolio Assets. Under Settings, "Portfolio Names" is set to Default and "Benchmark" is set to Specify Ticker... with "INVALID" entered in the input field. An "Unknown ticker symbol" error message is shown below the input. Under Portfolio Assets, there are three portfolios: Portfolio #1 (Asset 1: Vanguard Total: 90%, Asset 2: Vanguard Total: 10%), Portfolio #2, and Portfolio #3. The right side of the application shows a sidebar with "Assets" and other sections.

2.9 Monte Carlo Simulation

All 7 test cases passed. Simulations executed correctly under different models and conditions. Input validation prevented invalid percentiles, out-of-range years, and negative numeric values.

The left side shows a test results summary with 7 green checkmarks and 0 red X's. The title is "Portfolio Visualizer Monte Carlo Simulation". Below it is a list of seven test cases, each with a green checkmark and a "View Details" button:

- TC-MCS01: Simulation runs successfully
- TC-MCS02: Accepts upper boundaries
- TC-MCS03: Expect validation errors - No portfolio allocation
- TC-MCS04: Parameterized/dynamic case
- TC-MCS05: Expect error/field rejection
- TC-MCS06: Expect validation errors - Invalid field values
- TC-MCS07: All cashflow switches, interval types

The right side shows the "Monte Carlo Simulation" tool. At the top, there are navigation links: Analysis, Markets, Docs, Region, Tools, Sign Up, and Log In. The title is "Monte Carlo Simulation". Below it is the "Portfolio Monte Carlo Simulation Overview". It describes the tool as providing a means to test long term expected portfolio growth and portfolio survival based on withdrawals, e.g., testing whether the portfolio can sustain the planned withdrawals required for retirement or by an endowment fund. It lists supported simulation models:

- Historical Returns - Simulate future returns by randomly selecting the returns for each year based on available historical returns
- Forecasted Returns - Simulate future returns based on any forecasted mean and standard deviation of assets
- Statistical Returns - Simulate future returns based on the mean, volatility and correlations of portfolios assets
- Parameterized Returns - Simulate future returns based on the specified statistical distribution

Below this is a section titled "You can choose from multiple withdrawal models including:" with a list of models:

- Fixed annual withdrawal or contribution - Apply a fixed annual withdrawal or contribution. Yearly inflation adjustments are by default done for the specified withdrawal or contribution amount based on the selected model.
- Fixed annual percentage - Withdraw a fixed percentage of the portfolio balance annually. This model ensures that the portfolio never runs out, but the annual spending amount varies based on the portfolio growth. The percentage based withdrawal can be smoothed by using the rolling portfolio average or a geometric spending rule.
- Life expectancy based annual withdrawal - This model withdraws a variable percentage of the portfolio balance based on life expectancy. This is the RMD approach where the withdrawal percentage is 1 / Life Expectancy.
- Custom sequence - Import custom sequence of periodic cashflows from a file.

At the bottom, it says "To simulate multiple stages such as career and retirement with detailed cashflow goals use the [Financial Goals](#) planning tool."

2.10 Portfolio Optimization

All 7 cases passed. The module calculated optimized allocations for various strategies and validated constraints such as invalid weights, expected returns, volatilities, and date ranges.

The screenshot shows a split-screen view. On the left is a dark-themed test summary interface titled "TC-PO0X.cy.js" with a timestamp of "02:16". It displays 7 green checkmarks and 0 red Xs. Below this is a list of "Portfolio Optimization Tests" with the following items:

- ✓ TC-PO01: Valid optimization result
- ✓ TC-PO02: Valid, all toggles and boundaries
- ✓ TC-PO03: Success for all remaining valids
- ✓ TC-PO04: Error for invalid dates & symbols, allocation/weight invalids
- ✓ TC-PO05: Error for invalid ER/Vol
- ✓ TC-PO06: Accepted, no errors
- ✓ TC-PO07: Accepted, no errors

On the right is a light-themed configuration form titled "Portfolio Visualizer" with a timestamp of "02:16" and a resolution of "1000x660 73%". The title bar includes "Studio Beta". The main section is "Portfolio Optimization Configuration" with the following settings:

Portfolio Type	Tickers		
Time Period	Year-to-Year		
Start Year	2006		
End Year	2025		
Optimization Goal	Mean Variance - Maximize Sharpe Ratio		
Robust Optimization	Yes		
Use Historical Returns	No		
Use Historical Volatility	No		
Use Historical Correlations	Yes		
Asset Constraints	No		
Group Constraints	No		
Compared Allocation	Maximum Sharpe Ratio Weights		
Portfolio Assets	Allocation	Expected Return	Volatility
1 Vanguard Total Stoc	Q 40	Pinned	% 0.1 %

3. Configuration Forms Summary

3.1 Asset Backfill Configuration

3 out of 4 tests passed.

Positive flows executed properly, and validation handled long tickers and invalid symbols as expected. Tc3 doesn't run because it was a defect logged in assignment 3

The screenshot shows a dark-themed test summary interface titled "TC-ABFOX.cy.js" with a timestamp of "02:17". It displays 3 green checkmarks and 1 red X. Below this is a list of "Asset Backfill Configuration Tests" with the following items:

- ✓ TC-ABF01
- ✓ TC-ABF02
- ✗ TC-ABF03

At the bottom, there is a section labeled "BEFORE EACH" with a dropdown arrow icon.

✖ TC-ABF03

! Assertion Error

Timed out retrying after 4000ms: Expected to find content: 'Invalid' but never did.

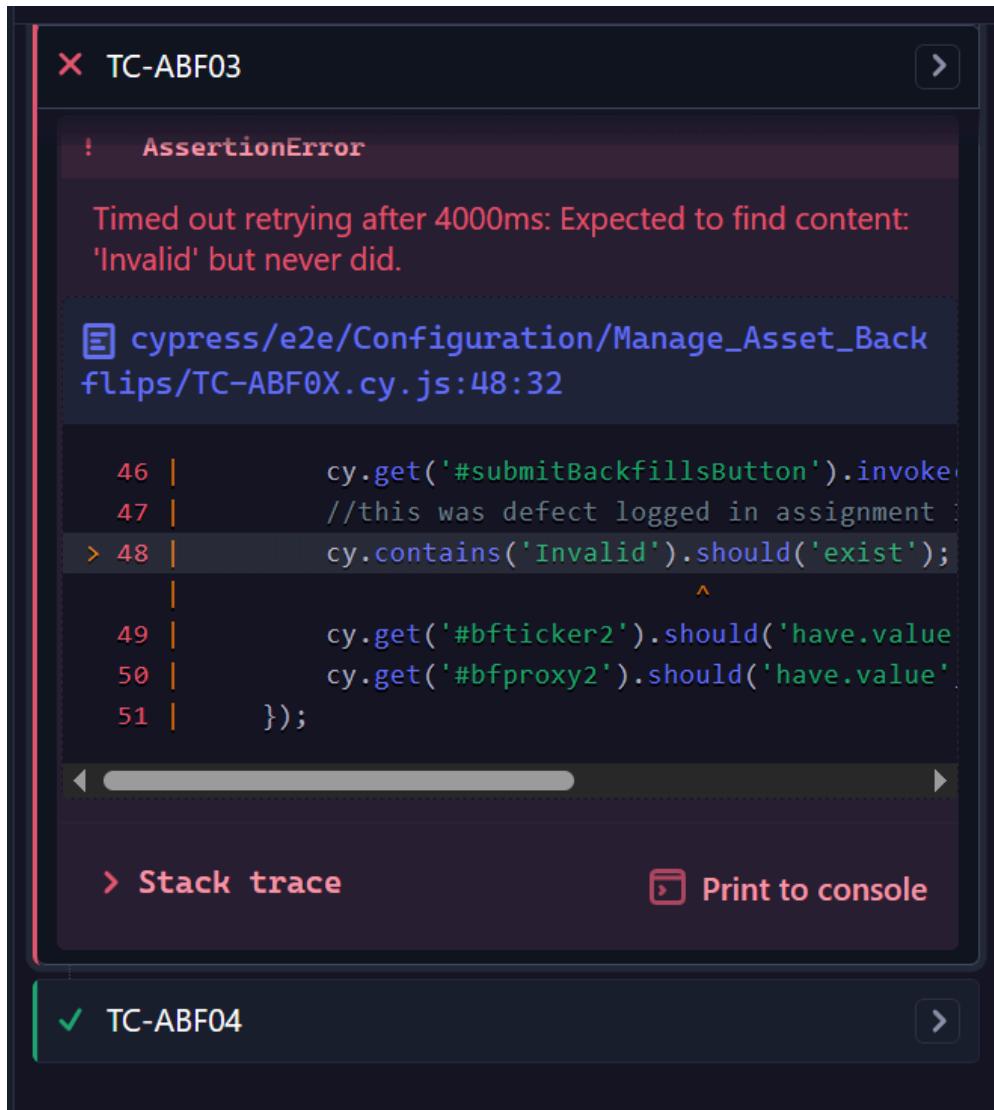
⠼ cypress/e2e/Configuration/Manage_Asset_Backfills/TC-ABF0X.cy.js:48:32

```
46 |         cy.get('#submitBackfillsButton').invoke()
47 |             //this was defect logged in assignment
> 48 |             cy.contains('Invalid').should('exist');
      ^
49 |             cy.get('#bfticker2').should('have.value')
50 |             cy.get('#bfproxy2').should('have.value')
51 |         );
```

◀ ▶

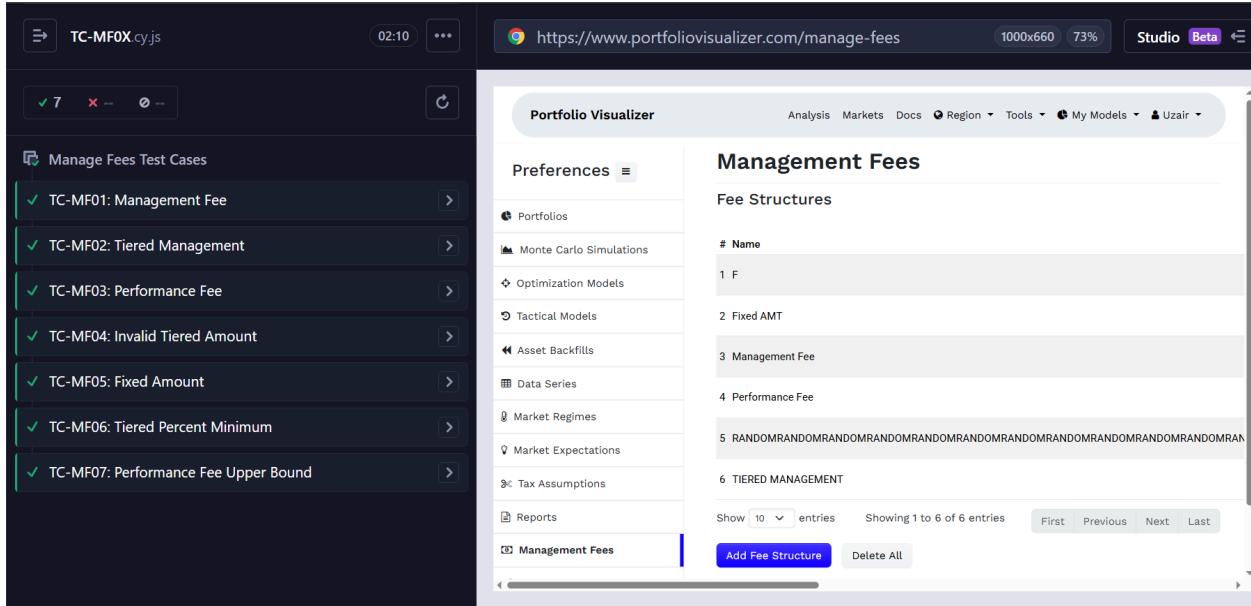
› Stack trace Print to console

✓ TC-ABF04



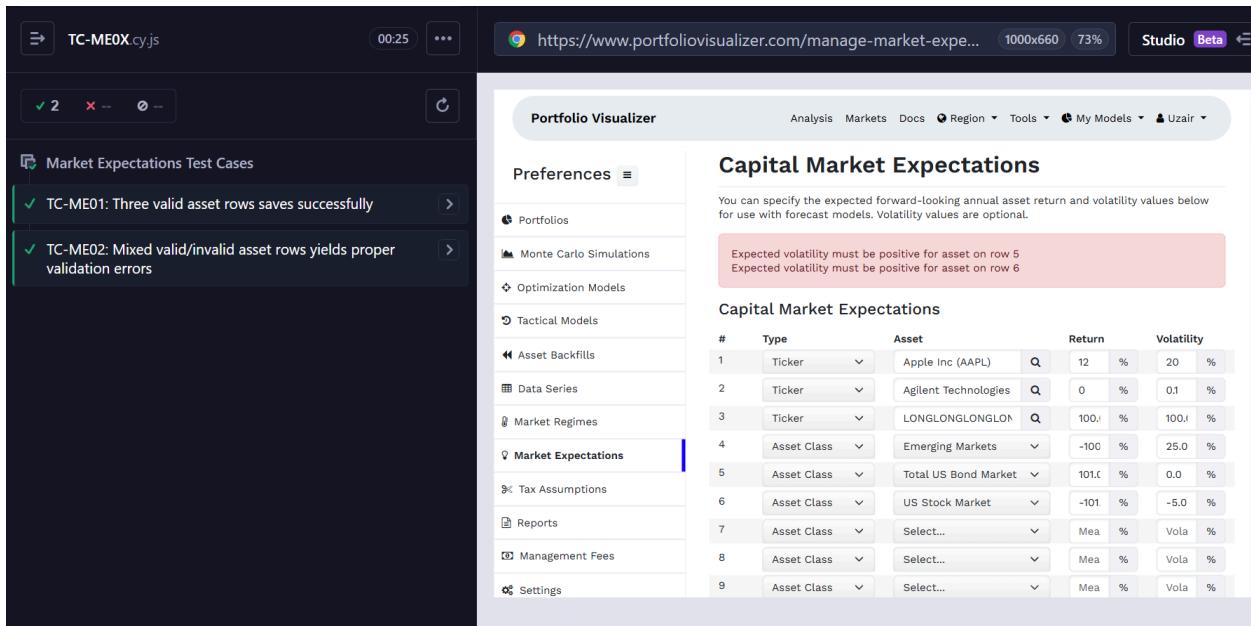
3.2 Manage Fees

All 7 tests passed. The form handled multiple fee structures (management, tiered, fixed, performance) and validated tier logic effectively.



3.3 Market Expectations

Both test cases passed with successful saving and appropriate validation of ticker formats, return/volatility thresholds, and numeric ranges.



3.4 Market Regime Management

All 5 tests passed. Regime creation using symbol-based data, file uploads, and advanced analyses functioned correctly with comprehensive error handling.

The screenshot shows two side-by-side browser windows. The left window, titled 'TC-REG0X.cy.js', displays a list of five test cases under 'Market Regime Management' that have passed. The right window, titled 'https://www.portfoliovisualizer.com/edit-market-regime', shows the 'Market Regimes' section of the Portfolio Visualizer. It lists three entries: 'Custom Import' (some description), 'Quintile Regime', and 'Volatility Regime' (VIX-based). A 'Create Regime Series' button is visible at the bottom.

3.5 Report Configuration Management

All 4 tests passed. The form successfully saved reporting templates, branding details, company metadata, and properly validated color codes and long-form inputs.

The screenshot shows two side-by-side browser windows. The left window, titled 'TC-MR0X.cy.js', displays a list of four test cases under 'Manage Reports Configuration' that have passed. The right window, titled 'https://www.portfoliovisualizer.com/manage-reports', shows the 'Report Template' configuration page. It includes fields for 'Company Name' (containing a very long string of characters), 'Include Logo' (set to 'No'), 'Logo Image' (choose file), 'Page Footer Text' (displayed footer text), 'Page Footer Link' (website link optional), 'Use Cover Page' (yes), 'Cover Page PDF' (choose file), and 'Include Page Numbers' (no).

4. Cypress Cloud Screenshots:

Overview Test Results 81 Specs 16 Errors 1 UI Coverage Accessibility Properties

All specs are complete! ✓ 15 specs passed ✖ 1 spec failed

Run duration ?

Status: 5 selected Hide runs with different tags or groups

42:14
31:40
21:07
10:33
Unknown branch

16:09

Recommendations

Spec Prioritization ?

14

Enable

This screenshot shows the Cypress Test Results Overview page. At the top, it displays basic statistics: 81 test results, 16 specs, 1 error, and UI coverage and accessibility status. A prominent message says "All specs are complete!" with a success icon and "✓ 15 specs passed". Below this, a "Run duration" section shows a timeline from 10:33 to 42:14, with a red bar indicating a failed run at 16:09. A "Recommendations" section is present, along with a "Spec Prioritization" button.

Overview **Test Results 81** Specs 16 Errors 1 UI Coverage Accessibility Properties

All specs are complete! ✓ 15 specs passed ✖ 1 spec failed

SORT BY FILTER BY

Execution order Status Flaky Tests Last Modified Spec File Run Group Browser Operating System

cypress\e2e\Asset_Correlations\TC-AC0X.cy.js

7 | 0:33 | E2E | Windows Microsoft Windows 10 Home Single Language - 10.0.19045 | Electron 138 | View Output

Test Case	Details	Action
Portfolio Visualizer Asset Correlation > TC-AC01: One ticker, earliest allowed date, daily, rolling 20	7 0:33 E2E Windows Microsoft Windows 10 Home Single Language - 10.0.19045 Electron 138 View Output	Test Replay
Portfolio Visualizer Asset Correlation > TC-AC02: Four tickers, valid range, monthly, rolling 36	7 0:33 E2E Windows Microsoft Windows 10 Home Single Language - 10.0.19045 Electron 138 View Output	Test Replay
Portfolio Visualizer Asset Correlation > TC-AC03: Empty ticker, too early start, future end, annual	7 0:33 E2E Windows Microsoft Windows 10 Home Single Language - 10.0.19045 Electron 138 View Output	Test Replay
Portfolio Visualizer Asset Correlation > TC-AC04: Invalid tickers, future start, end before start, monthly, rolling 60	7 0:33 E2E Windows Microsoft Windows 10 Home Single Language - 10.0.19045 Electron 138 View Output	Test Replay
Portfolio Visualizer Asset Correlation > TC-AC06: Lowercase tickers, wrong format dates, monthly, rolling 36	7 0:33 E2E Windows Microsoft Windows 10 Home Single Language - 10.0.19045 Electron 138 View Output	Test Replay
Portfolio Visualizer Asset Correlation > TC-AC07: Valid tickers, non-existent dates, monthly, rolling 36	7 0:33 E2E Windows Microsoft Windows 10 Home Single Language - 10.0.19045 Electron 138 View Output	Test Replay

14

This screenshot shows the Cypress Test Results Test Results page. It lists 81 test results, with 15 passed and 1 failed. The main table lists test cases under "cypress\e2e\Asset_Correlations\TC-AC0X.cy.js", each with its status, duration, environment, and a "View Output" link. To the right of each row is a "Test Replay" button. A purple circle in the bottom right corner indicates there are 14 unreviewed items.

Overview Test Results 81 Specs 16 Errors 1 UI Coverage Accessibility Properties

All specs are complete! ✓ 15 specs passed ✗ 1 spec failed Views: Timeline Bar Chart Machines

Make your tests run 14 minutes faster by adding 11 machines in CI.

Spec File	Status	Passed	Failed	Time	Actions
cypress\e2e\Asset_Correlations\TC-AC0X.cy.js	✓	7	0	00:33	View Edit Copy Delete
cypress\e2e\Backtest_Portfolio\TC-BP0X.cy.js	✓	5	0	01:14	View Edit Copy Delete
cypress\e2e\Configuration\Manage_Asset_Backflips\TC-ABF0X.cy.js	✗	3	1	01:35	View Edit Copy Delete
cypress\e2e\Configuration\Manage_Fees\TC-MF0X.cy.js	✓	7	0	01:00	View Edit Copy Delete
cypress\e2e\Configuration\Manage_Market_Expectation\TC-ME0X.cy.js	✓	2	0	00:29	View Edit Copy Delete
cypress\e2e\Configuration\Manage_Market_Regimes\TC-REG0X.cy.js	✓	5	0	01:17	View Edit Copy Delete

See full analysis [Dismiss](#)

Overview Test Results 81 Specs 16 Errors 1 UI Coverage Accessibility Properties

Errors

AssertionError 1

Timed out retrying after 4000ms: Expected to find content: 'Invalid' but never did.

1 total

5. Key Observations & Recommendations

- **High Application Stability:** With a 98.7% pass rate, the system is performing consistently across complex financial and analytical modules.
- **Strong Input Validation:** Almost all modules demonstrated precise and reliable validation handling.
- **Smooth Analytical Processing:** Core analytical modules (Optimization, Monte Carlo, Tactical Allocation) showed strong reliability in both calculations and user input handling.

- **Non-Automatable Scenarios:** reCAPTCHA and external service dependencies limit complete automation for certain flows, which is expected.