**Quality Control (QC) Test Plan: Interactive Data Management Tool**

**Project:** Interactive Data Management Tool

**Version:** 1.0 (Final) **Test Plan Date:** 10 September 2025

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**1. Introduction**

This document outlines the test plan and procedures for the Interactive Data Management Tool. The purpose of this QC process is to verify that all functional and non-functional requirements have been met, ensure the application is free of critical defects, and validate that the user experience is intuitive and polished.

**2. Scope of Testing**

* **In Scope:** All client-side features of the single-page application, including UI/UX, data entry, data visualization, file upload with OCR, reporting, and error handling.
* **Out of Scope:** Server-side performance, database integrity, and API load testing (as the application is a fully client-side solution).

**3. Testing Environment**

* **Browsers:** Google Chrome (latest version), Mozilla Firefox (latest version)
* **Operating System:** Windows 11 / macOS (latest version)
* **Prerequisites:**
  + A correctly formatted test document (PDF or PNG/JPG) containing the fields "Item:" and "Cost:".
  + An incorrectly formatted test document that is missing one or both of the required fields.

**4. Test Cases**

**TC-UI: User Interface & General Layout**

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| **Test ID** | **Feature** | **Test Scenario** | **Test Steps** | **Expected Result** | **Status (Pass/Fail)** |
| **UI-001** | Initial Page Load | Verify the application loads correctly with all static elements present. | 1. Open the application in the browser. | The page loads without errors. The header, action buttons, and two main panels ("Data Entries" and "Data Visualization") are visible. The background has a slow, animated gradient. | Pass |
| **UI-002** | Responsive Layout | Verify the layout adapts correctly | View the app on the browser window | On the screen, the two sections stack vertically. | Pass |
| **UI-003** | Font & Typography | Verify the correct font family ("Inter") is applied throughout the application. | Inspect the header, buttons, and table text using browser dev tools. | The font-family for all text elements is "Inter" or a fallback sans-serif font. Text is clear and legible. | Pass |
| **UI-004** | Button States | Verify all buttons have clear hover and active (click) states. | 1. Hover over each button 2. Click and hold on each button. | Buttons change appearance on hover. "press-down" animation or style change occurs on click. | Pass |

**TC-DE: Data Entry & Table Management**

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| **Test ID** | **Feature** | **Test Scenario** | **Test Steps** | **Expected Result** | **Status (Pass/Fail)** |
| **DE-001** | Add New Row | Verify that clicking the "Add New Line" button adds a new row to the table. | 1. Click the "Add New Line" button. | A new, empty row appears at the bottom of the table with a smooth entrance animation. | Pass |
| **DE-002** | Multiple Row Addition | Verify that multiple rows can be added and managed correctly. | 1. Click "Add New Line" three times. | Three new rows are added to the table, each with a unique key and functioning inputs. | Pass |
| **DE-003** | Manual Data Input | Verify that data can be typed into the input fields of a row. | 1. Add a new row. 2. Type "Test Item" into the Description field. 3. Type "123.45" into the Cost field. | The input fields accept and display the typed data correctly. | Pass |
| **DE-004** | Empty State | Verify the table shows an informative message when there are no rows. | 1. Load the application initially. 2. Add a row. 3. (If implemented) Delete all rows. | 1. Initially, a message like "No data entries yet..." is visible. 2. The message disappears when the first row is added. | Pass |

**TC-DV: Data Visualization (Chart)**

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| **Test ID** | **Feature** | **Test Scenario** | **Test Steps** | **Expected Result** | **Status (Pass/Fail)** |
| **DV-001** | Real-time Update | Verify the chart updates instantly when data in the table is changed. | 1. Add a row with Description "A" and Cost "50" 2. Change the Cost to "100". | The bar for "A" on the chart visibly changes height from 50 to 100 in real-time. | Pass |
| **DV-002** | Update on Row Addition | Verify the chart updates instantly when a new row is added. | 1. Add a row with Cost "50" 2. Add a second row with Description "B" and Cost "75". | A new bar for "B" appears on the chart next to the first one. | Pass |
| **DV-003** | Chart Type Switching | Verify the user can switch between Bar, Line, and Pie chart types. | 1. Add several rows of data. 2. Click the "Line" button. 3. Click the "Pie" button. | The chart visualization correctly changes to a line graph, and then to a pie chart. | Pass |
| **DV-004** | Chart Empty State | Verify the chart displays a clean empty state with no data. | 1. Load the application initially with no rows. | The chart area is visible but empty, with axes and a title but no data points. | Pass |

**TC-OCR: File Upload & OCR**

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| **Test ID** | **Feature** | **Test Scenario** | **Test Steps** | **Expected Result** | **Status (Pass/Fail)** |
| **OCR-001** | Successful OCR (PDF) | Verify a correctly formatted PDF is processed and populates the row. | 1. Add a new row. 2. Click "Upload File". 3. Select the correctly formatted test PDF. | The "Processing..." indicator appears, then disappears. The Description and Cost fields are filled with the correct data from the PDF. | Pass |
| **OCR-002** | Successful OCR (Image) | Verify a correctly formatted image (PNG/JPG) is processed and populates the row. | 1. Add a new row. 2. Click "Upload File" 3. Select a correctly formatted test image. | The "Processing..." indicator appears, then disappears. The Description and Cost fields are filled with the correct data from the image. | Pass |
| **OCR-003** | **Error: Wrong Format** | **Verify an incorrectly formatted file is rejected and the row is removed.** | 1. Add a new row 2. Click "Upload File" 3. Select the incorrectly formatted test document. | The "Processing..." indicator appears, then an alert box is displayed with an error message about the incorrect format. The entire row is then automatically removed from the table. | Pass |
| **OCR-004** | **Error: General Failure** | **Verify a general processing failure is handled gracefully.** | 1. Add a new row 2. Click "Upload File" 3. Select a corrupted or unsupported file type. | The "Processing..." indicator appears, then an alert box is displayed with a general error message. The entire row is then automatically removed from the table. | Pass |

**TC-REP: Reporting Features**

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| **Test ID** | **Feature** | **Test Scenario** | **Test Steps** | **Expected Result** | **Status (Pass/Fail)** |
| **REP-001** | Audit Summary (Success) | Verify the audit summary generates correctly in a new tab with data. | 1. Add 3 rows with costs 10, 20, and 30 2. Click "Produce Audit Summary". | A new browser tab opens. The summary correctly shows: Total Entries: 3, Total Cost: $60.00, Average Cost: $20.00. | Pass |
| **REP-002** | Audit Summary (Empty) | Verify the audit summary shows an alert when there is no data. | 1. Ensure the table is empty. 2. Click "Produce Audit Summary". | An alert box appears with the message "There is no data to summarize." No new tab is opened. | Pass |
| **REP-003** | PDF Report (Success) | Verify the PDF report generates and downloads correctly with data. | 1. Add 2 rows of data 2. Click "Generate PDF Report". | A file download prompt appears for a PDF named data\_report\_[timestamp].pdf. The downloaded PDF contains the correct data in a table. | Pass |
| **REP-004** | PDF Report (Empty) | Verify the PDF report shows an alert when there is no data. | 1. Ensure the table is empty 2. Click "Generate PDF Report". | An alert box appears with the message "There is no data to generate a report." No file is downloaded. | Pass |