



AI QA Automation Engine – Jira + Google Sheets + SQL Integration

Overview:

This project is a fully automated QA pipeline designed for real-world software testing and reporting workflows. It integrates JIRA API, Google Sheets, and SQLite, with automated log reporting, error tracking, and evaluation metrics — all inside a single reproducible Jupyter/Colab notebook.

Features:

AI Response Validation Engine — Automatically tests generated responses and logs pass/fail results.

- JIRA Automation — Creates, updates, and links bug reports directly from failed test logs.
- Google Sheets Integration — Syncs QA results for management visibility and collaboration.
- SQLite Database — Stores persistent logs and error history for reproducibility.
- Evaluation Metrics — Computes accuracy, precision, and fail trends.
- Daily Log Reports — Generates new per-day CSV and updates cumulative logs.
- Pytest Integration — Allows structured test cases to run against AI outputs.

Architecture:

Data Layer: CSV / SQLite for QA logs.

Cloud API: Google Sheets API for syncing reports.

Issue Tracker: JIRA REST API for automated ticket creation.

Runtime: Jupyter / Colab.

Automation: Python (requests, pandas).

Setup:

1. **JIRA API Token:** Create an API token via Atlassian Account > Security > Create API Token.
2. **Google Sheets API:** Enable Sheets & Drive APIs in Google Cloud Console.
3. **SQLite:** QA logs automatically sync to /content/drive/MyDrive/AI_QA_Logs/qa_log.db.

Pipeline Flow:

1. AI generates response
2. Evaluation metrics run → pass/fail decided
3. Failures logged into error_log_report.csv
4. JIRA API auto-creates or updates issues
5. Google Sheets syncs daily summaries
6. SQLite stores data for reproducibility

Tech Stack:

Language: Python 3.x

Libraries: pandas, requests, sqlite3, gspread, pytest

Environment: Google Colab / Jupyter Notebook

External APIs: JIRA REST API v3, Google Sheets API

Adversarial & AI Safety Testing:

Built an LLM Red-Teaming system to evaluate robustness against jailbreaks, bias, and toxicity. Logged and visualized results, and integrated failure reports into JIRA for continuous monitoring.

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