# **AI-Powered Test Case Generation**

## **Project Overview**

This project automates the generation of structured test cases from user stories and acceptance criteria using AI. By leveraging **Google Gemini API**, **Python (Pandas, OpenPyXL)**, and **Excel**, this solution enhances efficiency in software testing.

## **Features**

* 📌 Extracts user stories and acceptance criteria from an Excel file
* 📌 Uses AI (Google Gemini API) to generate structured test cases in JSON format
* 📌 Processes and formats the AI response to ensure correctness
* 📌 Writes the generated test cases back to the Excel file
* 📌 Automates the entire test case generation process

## **Tech Stack**

* **Python** 🐍
* **Pandas** (for data extraction & processing)
* **OpenPyXL** (for Excel manipulation)
* **Google Gemini API** (for AI-powered test case generation)

## **Installation**

1. Clone the repository: git clone <https://github.com/Alan-003/AI-Powered_Test_Case_Generation.git>
2. cd AI-Test-Case-Generation
3. Install dependencies: pip install pandas openpyxl google-generativeai
4. Set up API key for **Google Gemini API**: import os  
   os.environ["GOOGLE\_API\_KEY"] = "your\_api\_key\_here"
5. Declare **Excel File path** in code itself.

## **Usage**

1. Place your input Excel file (e.g., test\_cases.xlsx) in the project directory.
2. Run the script: python generate\_test\_cases.py
3. The output Excel file will be updated with AI-generated test cases.

## **File Structure**

## ├── generate\_test\_cases.py # Main script for test case generation ├── README.docx # Project documentation

## **Future Enhancements**

* ✅ Add support for multiple test case formats
* ✅ Improve AI prompt engineering for better accuracy
* ✅ Integrate with test management tools

## **Contributing**

Feel free to open issues or submit pull requests to improve this project. Contributions are always welcome! 🎉