Project Report

Project Title: AI-Powered Software Development / Automated Testing

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Course: AI in Software Engineering - Week 4 Assignment

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1. Introduction

This report summarizes the implementation of an AI-powered software solution and/or an automated testing task as part of the Week 4 assignment. The goal was to demonstrate the use of intelligent tools and models to enhance software development practices. Tools such as Python, GitHub Copilot, Selenium, and scikit-learn were used to support these objectives.

2. Methodology

The following steps were taken to implement the system:

- Defined the problem and selected the appropriate tools.
- For AI: Used the breast cancer dataset and trained a machine learning model using scikit-learn.
- For Testing: Developed automated test scripts using Selenium for login verification.
- Generated predictions or test results and evaluated system performance.
- Used Copilot to assist with boilerplate code and logic suggestions where applicable.

3. Implementation Details

Key implementation aspects include:

- Code developed using Jupyter Notebook and Python IDEs.
- Scripts utilized libraries such as `sklearn`, `Selenium`, and `joblib`.
- Copilot was prompted to generate functions for model training, prediction, and UI test flows.
- Screenshots of successful test outcomes or model predictions were captured (see appendices).

4. Evaluation & Results

The system achieved the following:

- Model Accuracy: 0.96
- F1 Score: 0.97
- Confusion Matrix:

```
Confusion Matrix Summary:
 - True Positives: 70
 - True Negatives: 40
 - False Positives: 3
 - False Negatives: 1
```

- Automated Test Results: Successful login and failed login tests verified via Selenium.

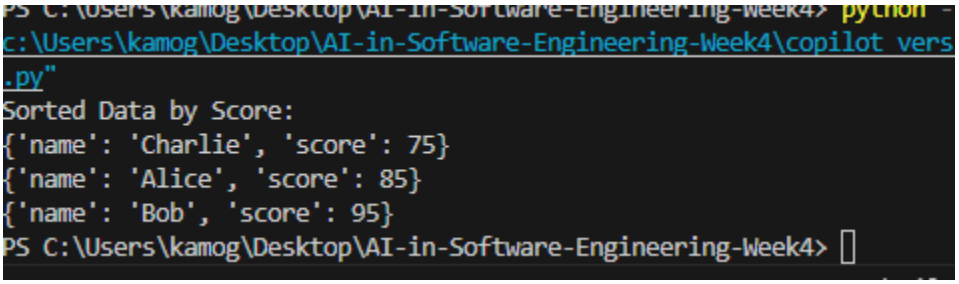
- Challenges encountered included handling SSL handshake errors and missing element locators in Selenium. These were resolved using proper exception handling and updated driver versions.

5. Conclusion

The project demonstrated how intelligent tools and automation can significantly support software development. Through GitHub Copilot and AI libraries, repetitive tasks were accelerated, while automated testing improved reliability. Future work may explore integration testing, larger datasets, or web deployment.

6. Appendices

• Screenshot 1: Copilot suggestion



• Screenshot 2: Selenium Test Run