Instruction Manual

System Requirements

Before running the project, ensure that your system meets the following requirements:

- **Operating System:** Windows, macOS, or Linux
- **Python Version:** 3.8 or later
- **Required Libraries:** Flask, Pandas, NumPy, Scikit-learn
- **Browser:** Google Chrome, Mozilla Firefox, or Microsoft Edge

3. Installation Guide

Follow these steps to set up and run the project:

Step 1: Install Python

Ensure that Python is installed on your system. You can download it from https://www.python.org/downloads/.

Step 2: Install Dependencies

Open a terminal or command prompt and install the required Python libraries:

pip install flask pandas numpy scikit-learn

Step 3: Run the Backend Server

1. Navigate to the project folder where pro.py is located.
2. Run the following command to start the Flask server:

python pro.py

3. The server will start running at http://127.0.0.1:5000/.

Step 4: Run the Frontend

1. Open the index.html file in a web browser.
2. Enter student details including **Attendance (%), Assignment Score, Quiz Score, and Final Exam Score**.
3. Click on the **Predict** button to get the prediction result.

4. How It Works

- The frontend takes user inputs and sends them to the backend using an API request.
- The backend processes the input using a **K-Nearest Neighbors (KNN) model** and returns the prediction result.

- The frontend displays the prediction, highlighting **Pass in green** and **Fail in red**.

5. Troubleshooting Guide

Issue 1: Flask Server Not Starting

Solution:

- Ensure that Python and Flask are installed correctly.
- Run the command python -m flask run to verify Flask installation.
- Check if another process is using port 5000. If so, change the port using:

python pro.py --port=5001

Issue 2: Web Page Shows "Could Not Reach Server"

Solution:

- Ensure the Flask server is running before accessing the frontend.
- Check the console for any errors (F12 in the browser -> Console Tab).
- Verify that the frontend is making requests to the correct API endpoint.

Issue 3: Prediction Not Displaying Properly

Solution:

- Ensure that JavaScript is enabled in the browser.
- Clear browser cache and reload the page.
- Check the browser console for any JavaScript errors.

6. Additional Notes

- Make sure the dataset file (student_performance_data.csv) is in the same directory as the backend script (pro.py).
- Future improvements could include additional performance metrics, graphical representations of predictions, and an enhanced UI.