Documentation

**Test Assignment for Middle Python Developer (Machine Learning/AI)**

In the Task 1 Link, there is 3 individual task:

**Task 1:** I developed a simple neural network in Python using TensorFlow.

Steps

1. Loading and Preprocessing Data:

* MNIST dataset is loaded and normalized to values between 0 and 1.
* Labels are one-hot encoded.

1. Building the CNN Model:

* Three convolutional layers, each followed by max-pooling.
* Two fully connected layers.
* ReLU activation for convolutional layers, softmax for output
* Compiled with Adam optimizer and categorical cross-entropy loss.

1. Training the Model:

* Model trained on the training set for 5 epochs with a batch size of 64.
* Training progress, including accuracy and loss, is displayed.

1. Evaluating the Model:

* Model evaluated on the test set to assess generalization performance.
* Test accuracy and loss metrics are reported.

**Task 2:**

Execution:

* Connects to an SQLite database file named 'tasks.db'.
* Creates a 'tasks' table if it doesn't exist, with columns: 'id', 'name', and 'status'.Provides functions to add, retrieve, update, and delete tasks in the 'tasks' table.

Usage:

* add\_task(name, status): Adds a new task with the given name and status.
* get\_tasks(): Retrieves all tasks from the 'tasks' table.
* update\_task\_status(task\_id, new\_status): Updates the status of a task with the specified ID.
* delete\_task(task\_id): Deletes a task with the specified ID.

**Task 3:**

* Run the script with valid credentials.json.
* If token.json is absent or invalid, the script initiates OAuth 2.0 for authorization.
* Retrieves values from Google Sheets columns A and B, calculates sums, and updates columns C and D.

Setup:

* Create a Google Sheets spreadsheet with numeric values.

Dependencies:

* google-auth, google-auth-oauthlib,
* google-auth-httplib2,
* google-api-python-client
* Ensure dependencies are installed using pip install.