**WEEK 1: Assessment Document**

**Problem Statement:**

**Plant Disease Detection System for Sustainable Agriculture**

Develop a CNN-based model capable of detecting and classifying plant diseases from images of leaves of various crops such as apples, cherry, grapes, and corn. The model should accurately identify both healthy and diseased leaves while predicting the specific type of disease. This system will aid in precision agriculture by enabling early detection and effective disease management.

**Pipeline:**

1. **Data Collection & Data Loading:**  
   We will collect images of different plant leaves (healthy and diseased).  
   Then, we will load this dataset into our project.
2. **Dataset Structure:**  
   The dataset is split into three parts:
   * **Train set** (to train the model)
   * **Validation set** (to tune the model)
   * **Test set** (to check how good the model is)
3. **Uploading Dataset:**  
   Dataset in a zip file 🡪 Upload it on Google drive 🡪 Mount the drive on google Colab 🡪 Unzip the file using python code 🡪 Access the dataset
4. **Image Processing & Image Augmentation:**  
   Resize all images to 128x128 pixels because CNN models work better with this fixed-size images.  
   Image Augmentation: A technique used to artificially expand a dataset by creating variations (different angles, rotations, flip, zoom etc) of existing images to make the model stronger
5. **Building the CNN Model:**  
   We will design and build a CNN model that can learn from the images and classify them correctly.
6. **Testing and Evaluating:**  
   Finally, we will test our model on the test data to see how accurate it is in detecting plant diseases.