Session 1: Mentoring Session  
(Introduction to Machine Learning and Data Loading)

# 1. What is Machine Learning (ML)?

Let’s say we have some values of x like 1, 2, 3, 4 and their corresponding y values are 10, 20, 30, 40. Now if someone asks, “What will y be when x is 5?”, it naturally feels like the answer should be 50 because we can see the pattern.

This is predicting based on data drawing a relationship. When a machine learns this pattern on its own from the data and gives us predictions, that's Machine Learning. It's all about making machines learn from examples instead of hard-coded rules.

# 2. What is a Supervised Machine Learning Algorithm?

In supervised learning, the machine learns from labelled data - which means we already have both the input and the output. Like training it with questions and answers. For example, if we give the machine data like soil nutrients (input) and the right crop (output), it starts learning the patterns between them. Later, when we give new soil data, it can predict the right crop — just like a student who has seen enough practice problems.

# 3. What is Regression and Classification?

Labelled data (having both the input and the output) can be of two types - categorical and continuous.  
  
- If the output (label) is categorical, we use Classification Algorithms. These are used when we want to predict a category or label.  
  
- If the output is continuous, we use Regression Algorithms. These help us predict numbers.

Simply,  
Classification = Predicting categories  
Regression = Predicting numbers