**Ensemble Learning:**

Ensemble means a ‘collection of things’

In ML, it refers to combining multiple ML models to produce more accurate and robust predictions compared to any individual model.

The basic idea behind ensemble learning is to leverage the wisdom of the crowd by aggregating the predictions of multiple models, each of which may have its own strengths and weaknesses. This can lead to improved performance and generalization.

**Types of Ensemble Learning:**

**1] Voting:**

In this model, the final prediction is done by combining the predictions of multiple individual models.

Each model in the ensemble makes predictions independently on the input data.

Predictions of individual models are combined through majority voting.

**Assumptions for this model:**

1. All the models in the ensemble must be independent and dissimilar from each other. This introduces diversity of models.
2. The accuracy of all individual model should be greater than 50%.

Sampling process:

Sampling of the original dataset can be done:

1. With replacement: In this, each data point can be selected multiple times, or a data point cannot be selected at all.
2. In this, each data point can only appear once in a sample.

Other ways of sampling:

1. Row sampling: This involves creating subsets of training data by randomly selecting data points (rows).
2. Column sampling: This involves creating subsets of training data by randomly selecting features.
3. Combination of both