Supervised and unsupervised learning:

Supervised Machine Learning:

- Supervised learning needs supervision to train the model, which is similar to as a student learns things in the presence of a teacher.
- Supervised learning can be used for two types of problems: **Classification** and **Regression**.
- Supervised learning model predicts the output.

Unsupervised Machine Learning:

- Unsupervised learning is another machine learning method in which patterns inferred from the unlabeled input data**.**
- Unsupervised learning can be used for two types of problems: **Clustering** and **Association**.
- Unsupervised learning model finds the hidden patterns in data.

Regression Classification and Clustering :

Regression:

Regression is a process of finding the correlations between dependent and independent variables. It helps in predicting the continuous variables such as prediction of **Market Trends**, prediction of House prices, etc**.**

Example: Suppose we want to do weather forecasting, so for this, we will use the Regression algorithm. In weather prediction, the model is trained on the past data, and once the training is completed, it can easily predict the weather for future days**.**

Clustering:

Clustering or cluster analysis is a machine learning technique, which groups the unlabelled dataset. It can be defined as "A way of grouping the data points into different clusters, consisting of similar data points. The objects with the possible similarities remain in a group that has less or no similarities with another group."

the real-world example of Mall: When we visit any shopping mall, we can observe that the things with similar usage are grouped together. Such as the t-shirts are grouped in one section, and trousers are at other sections, similarly, at vegetable sections, apples, bananas, Mangoes, etc., are grouped in separate sections, so that we can easily find out the things. The clustering

technique also works in the same way. Other examples of clustering are grouping documents according to the topic.

Logistic Regression:

Logistic regression is an example of supervised learning. It is used to calculate or predict the probability of a binary (yes/no) event occurring.

An example of logistic regression could be applying machine learning to determine if a person is likely to be infected with COVID-19 or not. Since we have two possible outcomes to this question - yes they are infected, or no they are not infected - this is called binary classification.

In the real world, you can see logistic regression applied across multiple areas and fields.

- In health care, logistic regression can be used to predict if a tumor is likely to be benign or malignant.
- In the financial industry, logistic regression can be used to predict if a transaction is fraudulent or not.

Flask:

Flask is a web framework, it's a Python module that lets you develop web applications easily. It's has a small and easy-to-extend core: it's a microframework that doesn't include an ORM (Object Relational Manager) or such features.

It does have many cool features like url routing, template engine. It is a WSGI web app framework.

Unlike the Django framework, Flask is very Pythonic. It's easy to get started with Flask, because it doesn't have a huge learning curve.

It is based on WSGI toolkit and jinja2 template engine. Flask is considered as a micro framework.

What is WSGI?

It is an acronym for web server gateway interface which is a standard for python web application development. It is considered as the specification for the universal interface between the web server and web application.

What is Jinja2?

Jinja2 is a web template engine which combines a template with a certain data source to render the dynamic web pages.