1.Describe and explain types of machine learning?

Ans: Machine learning is a subset of AI, which enables the machine to automatically learn from data, improve performance from past experiences, and make predictions.

Types of Machine Learning:

1.Supervised Machine Learning
2.Unsupervised Machine Learning
3.Reinforcement Learning

1. **SUPERVISED MACHINE LEARNING:-** Supervised learning is defined as when a model gets trained on a "Labelled Dataset". Labelled datasets have both input and output parameters. In Supervised Learningalgorithms learn to map points between inputs and correct outputs. It has both training and validationdatasets labelled.

Let's understand it with the help of an example.

Example: Consider a scenario where you have to build an image classifier to differentiate between cats and dogs. If you feed the datasets of dogs and cats labelled images to the algorithm, the machine will learn to classify between a dog or a cat from these labeled images. When we input new dog or cat images that it has never seen before, it will use the learned algorithms and predict whether it is a dog or a cat. This is how supervised learning works, and this is particularly an image classification.

There are two main categories of supervised learning that are mentioned below:

- Classification
- Regression

Advantages of Supervised Machine Learning:

- Supervised Learning models can have high accuracy as they are trained on labelled data.
- The process of decision-making in supervised learning models is often interpretable.

Disadvantages of Supervised Machine Learning:

- It has limitations in knowing patterns and may struggle with unseen or unexpected patterns that are not present in the training data.
- It can be time-consuming and costly as it relies on labeled data only.

Applications of Supervised Learning:

1. Image classification
2. Speech recognition
3. Medical diagnosis
4. Natural language processing