**1. What is Machine Learning (ML)?**

Machine Learning (ML) is a subset of artificial intelligence (AI) that allows computer systems to automatically learn and improve from experience without being explicitly programmed. ML systems use algorithms to analyze data, recognize patterns, and make decisions with minimal human intervention.

ML is widely used in:

* Speech recognition (e.g., Siri, Google Assistant)
* Recommendation systems (e.g., Netflix, Amazon)
* Fraud detection (e.g., credit card fraud alerts)
* Medical diagnosis (e.g., disease prediction using patient data)

**Key components of ML:**

* **Data**: The foundation of ML; models learn from historical data.
* **Model**: A mathematical representation of a real-world process.
* **Training**: The process of feeding data to the model.
* **Prediction**: Using the trained model to make decisions or forecasts.

**2. What is Supervised Machine Learning Algorithm?**

Supervised learning is a type of machine learning where the model is trained using labeled data. This means that each input in the training dataset is paired with the correct output (label). The model learns by comparing its predictions with the actual outputs and adjusting itself to reduce the error.

**Examples of Supervised Learning:**

* Email spam detection (spam or not spam)
* Credit scoring (good/bad credit risk)
* Weather forecasting (temperature prediction)

**Common Supervised Algorithms:**

* Linear Regression
* Logistic Regression
* Decision Trees
* Random Forest
* Support Vector Machines (SVM)
* K-Nearest Neighbors (KNN)

**3. What is Regression and Classification?**

**Regression:**

Regression is used when the output variable is a continuous value. The goal is to predict a quantity.

**Example**: Predicting the price of a house based on its features (area, location, number of rooms, etc.)

**Popular Regression Algorithms:**

* Linear Regression
* Polynomial Regression
* Decision Tree Regression

**Classification:**

Classification is used when the output variable is categorical (i.e., belongs to a class or category).

**Example**: Classifying tumors as benign or malignant.

**Popular Classification Algorithms:**

* Logistic Regression
* Decision Trees
* Random Forest
* Naive Bayes
* Support Vector Machines (SVM)