What is Machine Learning?

Machine learning is a field of artificial intelligence where computers learn from data to
- improve their performance on a specific task
- without being explicitly programmed.

It involves developing algorithms that can identify **patterns** and **make predictions** or **decisions based** on data, enabling machines to learn and adapt autonomously.

Originating in the 1950s with early efforts in computational models that could learn from data, Arthur Samuel's work on game-playing algorithms marked a pioneering step.

Task Machine Learning can solve
- Email spam detection
- Predicting house prices
- Forecasting stock prices
- Customer segmentation
- Movie recommendations
- Product recommendations
- Sentiment analysis
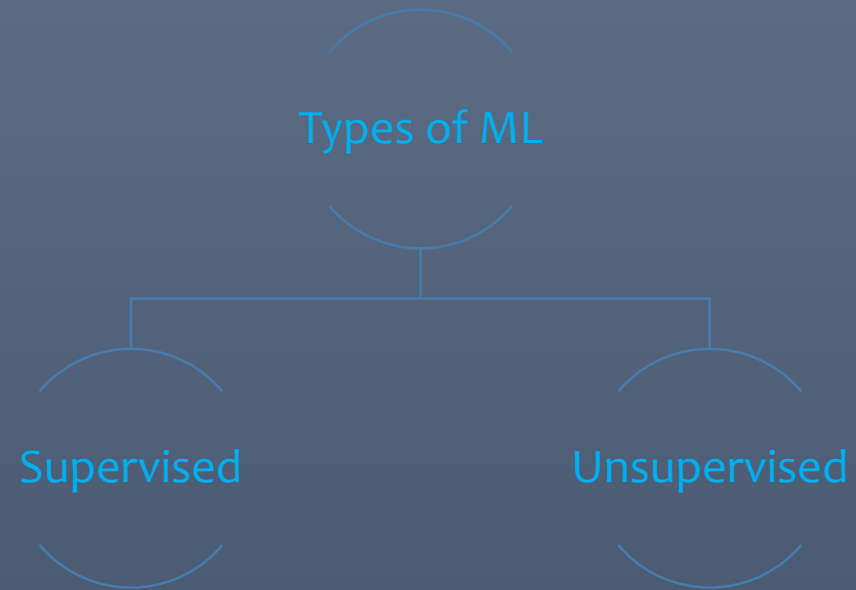
Types of ML

Supervised

Unsupervised

Designation	Country	Self_Employed	CreditScore	Loan_Status
Manager	France	No	619	Y
Senior Manager	Spain	No	608	N
Manager	France	Yes	502	Y
Senior Manager	France	No	600	N
Manager	Spain	No	850	Y
Manager	Spain	Yes	601	N

CustomerID	Gender	Age	Income	Score
1	Male	19	15	39
2	Male	21	15	81
3	Female	20	16	6
4	Female	23	16	77
5	Female	31	17	40
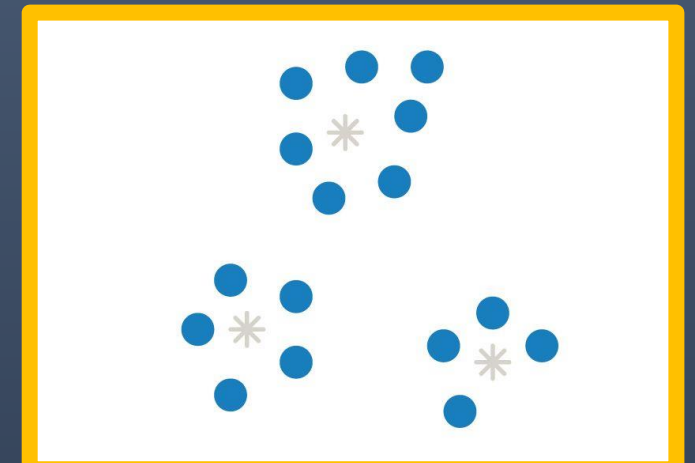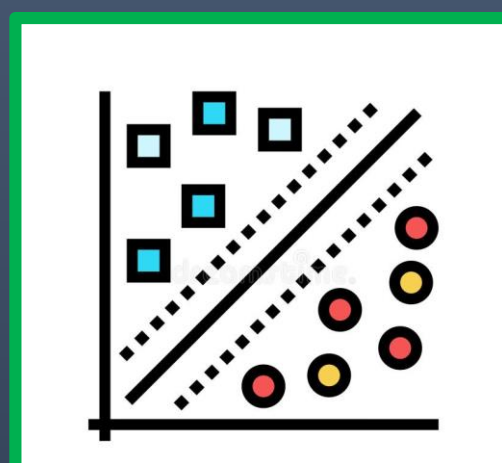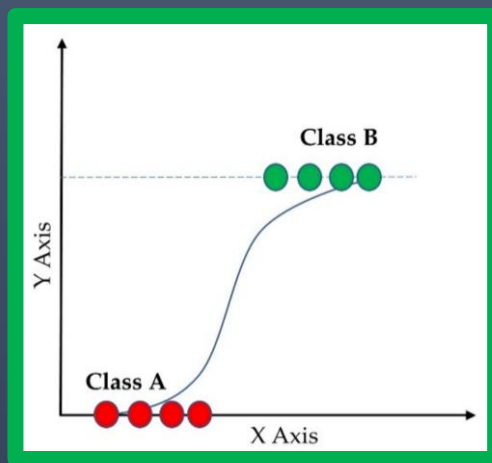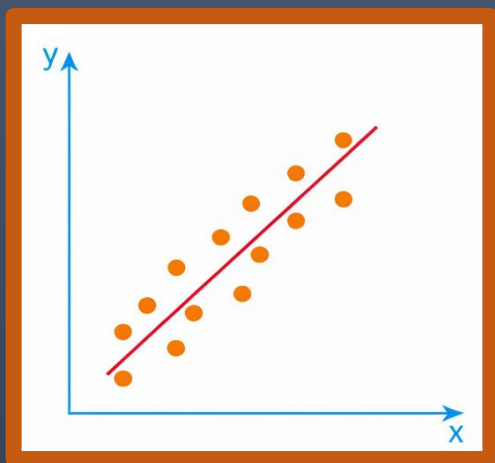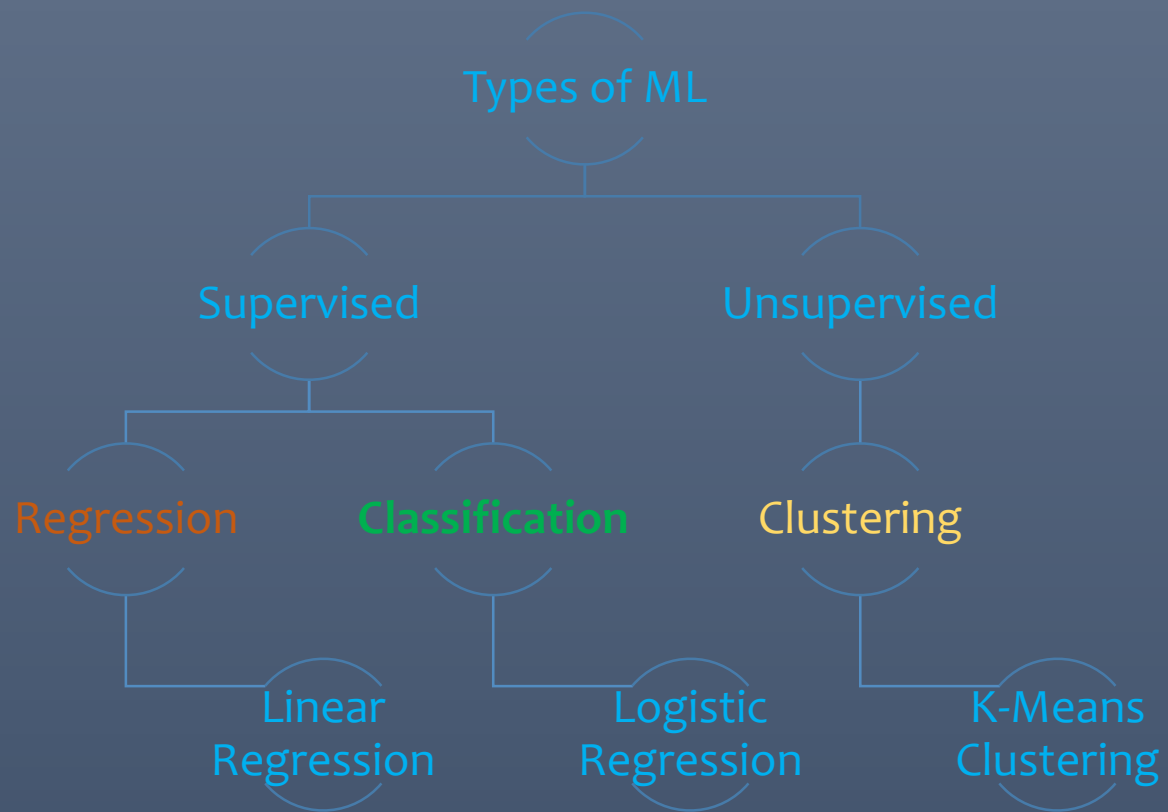
Machine learning Lifecycle (Training)

Designation	Country	Self_Employed	CreditScore	Loan_Status
Manager	France	No	619	Y
Senior Manager	Spain	No	608	N
Manager	France	Yes	502	Y
Senior Manager	France	No	699	Y
Manager	Spain	No	850	Y
Manager	Spain	Yes	645	Y
Executive	France	No	822	Y
Senior Manager	Germany	No	376	N
Manager	France	No	501	Y
Manager	France	No	684	N
Executive	France	No	528	Y

Designation	Country			Self_Employed	CreditScore	Loan_Status
Designation	France	Spain	Germany	Self_Employed	CreditScore	Loan_Status
2	1	0	0	0	619	Y
3	0	1	0	0	608	N
2	1	0	0	1	502	Y
3	1	0	0	0	699	Y
2	0	1	0	0	850	Y
2	0	1	0	1	645	Y
1	1	0	0	0	822	Y
3	0	0	1	0	376	N
2	1	0	0	0	501	Y
2	1	0	0	0	684	N
1	1	0	0	0	528	Y

Pass Cleaned data to the Model to train the Model

Trained Model

Machine learning Lifecycle
(Prediction)

Designation	Country	Self_Employed	CreditScore
Manager	France	No	619

Designation	France	Spain	Germany	Self_Employed	CreditScore
2	1	0	0	0	619

Trained Model

Yes

No