

P.R. 1

Q1 → Write short note on data analysis?

→ Data analysis is the process of inspecting, cleaning, transforming, and modeling data with the goal of discovering useful information, drawing conclusions and support decision making.

Purpose:

- understand structure & quality of dataset
- Identify patterns, trends & relationships within data.
- Detect anomalies or outliers that may impact.

2 Describe how to plan a data science project. List all steps.

→ A data science project plan is a structured roadmap that defines the sequence of steps to be followed when solving a problem using data. It ensures that efforts are organized, goal driven & measurable.

→ To provide clarity on what the project aims to achieve.

→ Break down a data science project into well defined phases.

→ List of steps:

- 1] Define problem
- 2] Data collect
- 3] Data cleaning
- 4] EDA
- 5] Feature engineering
- 6] Model building
- 7] Model Evaluation
- 8] Deployment
- 9] Monitoring & maintenance

3. Frame a ML Problem statement: Predict whether a customer will churn based on purchase behavior.
- > Scenario: An e-commerce company wants to reduce customer churn.
- > Business objective :- Identify customer likely to stop using platform.
- > Input (X): Customer age, subscription length, last login, purchase history
- > Output (Y): Churn (yes=1, No=0)
- > ML task: Classification
- > Evaluation Metric: Recall (so fewer at-risk customers are missed)
- > Success criteria: Recall > 80%.

what are Tensors?

- > A Tensor is a mathematical object that generalize scalars (0D), vectors (1D) & matrices (2D) to higher dimensions. In simple terms, a tensor is just a container for data in multiple dimensions, widely used in deep learning numerical computing.

5 Provide in depth explanation of tensor using numpy.

→ import numpy as np

* scalar = np.array(5)

vector = np.array([1, 2, 3])