

## Assignment - I

### Task 1

real-world scenario:

Scenario: data driven decision making in healthcare (hospital patient management)  
A hospital uses patient data to make decisions about staffing, treatment plans, and resource allocation. For eg, daily patient admission data, emergency room inflow, and bed-occupancy rates help hospital administrators decide:

- How many doctors and nurses should be assigned to each department
- whether ICU capacity needs expansion
- which treatments or equipment should be prioritized
- how to reduce patient waiting times

using data from electronic health records (EHRs) patient history, lab results, and disease trends allows the hospital to provide more accurate diagnoses, reduce medical errors and ensure faster treatment

### Task 2: Compare and contrast descriptive, predictive and prescriptive models.

#### Descriptive Analytics

Purpose:- understand what has already happened

Focus:- Summaries, trends, dashboards.

## Predictive Analytics

purpose: Forecast what is likely to happen in the future

Focus: Machine learning, statistical forecasting

## Prescriptive Analytics

purpose: Recommend actions to achieve the best outcome

Focus: optimization, simulations, decisions rules.

## Feature Descriptive

Time Orientation Past

Answers "what happened?"

Techniques Reporting, dashboards

Example Sales dashboard

## Task 3. Internal data sources:

1. Customer purchase history: - Records of all orders placed.
2. Website / app clickstream data: - Pages visited, time spent, browsing patterns.
3. Inventory database: - Stock levels, warehouse data
4. Customer service: - chat logs, call center records

## External Data Sources

1. Social media platforms - Customer reviews, brand mentions.
2. Market research reports:- Industry trends from agencies like Nielsen or Gartner.
3. Competitor pricing data:- Scrapped or purchased pricing information.
4. Economic indicators:- inflation rates, consumer spending data.

#### Task 4 In daily life:

- Data from fitness apps helps people monitor health and make better exercise/diet decisions.
- Budgeting apps use spending patterns to help individuals control expense.

#### In Business

- Data reduces guesswork and improves efficiency in marketing, operations, and finance.