

# Data Analysis Assignment – Hospital Records

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## Objective

The goal of this assignment is to apply data analysis skills to a hospital transactions dataset, including data cleaning, exploratory analysis, aggregation, visualization, and generating insights.

## Dataset Description

You have been provided with a dataset containing hospital records with the following columns:

- **Record\_ID** – Unique identifier for each transaction
- **Date** – Date of the transaction
- **Patient\_Name** – Name of the patient
- **Department** – Department of the hospital (Cardiology, Pediatrics, Oncology, etc.)
- **Doctor\_Name** – Name of the attending doctor
- **Transaction\_Type** – Type of transaction (Appointment, Lab Test, Prescription, Billing, Donation)
- **Amount** – Amount paid or donated
- **Payment\_Mode** – Mode of payment (Cash, Cheque, Online, Credit Card)
- **Notes** – Miscellaneous notes

## Tasks

### 1. Data Cleaning and Preprocessing

- Identify and handle missing values for **Department**, **Doctor\_Name**, **Amount**, and **Payment\_Mode**.
- Standardize **Date** column to a proper datetime format.

- Remove any duplicate records if present.
- Check for inconsistent entries in categorical columns like `Transaction_Type` and `Payment_Mode`.

## 2. Exploratory Data Analysis (EDA)

- Compute total and average `Amount` for each `Department`.
- Find the top 5 doctors with the highest number of transactions.
- Analyze distribution of `Transaction_Type` and `Payment_Mode`.
- Identify trends in hospital transactions over time (monthly/quarterly).

## 3. Data Visualization

- Create a bar chart showing total transactions per department.
- Plot a line chart to visualize trends in donations over time.
- Create a pie chart for payment mode distribution.
- Use a box plot to show distribution of transaction amounts across departments.

## 4. Insights and Recommendations

- Provide key insights from your analysis, e.g., which department receives the highest donations, most popular payment mode, seasonal trends, etc.
- Suggest recommendations for hospital management based on the findings.

## Submission Instructions

- Submit a PDF report containing all analysis, visualizations, and insights.
- Include the code used for analysis Excel in an appendix.
- Ensure the report is well-structured and clearly explains your findings.