

Assignment - 3

Data Analysis and Visualization

Programme :- BCA (AI & DS) Hon. with research

Course :— Data Driven Decision Making

Semster :— I

Section :— 'C'

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Dataset Used (Sample Sales data)

Month	Sales (in ₹)	Website visits
Jan	12000	450
Feb	15000	520
Mar	18000	610
Apr	17000	590
May	22000	700
Jun	21000	680
July	25000	750
Aug	24000	730
Sep	26000	780
Oct	30000	840
Nov	28000	810
Dec	32000	900

Task - I

1. Mean :- $\text{Mean} = \frac{\sum X}{N}$ where X = each data value
 N = total no. of values

$$\text{Mean} = \frac{12000 + 15000 + \dots + 32000}{12}$$

$$= 22,083.33$$

2. Median :-

Step - 1 \Rightarrow Arrange data in ascending order :

450, 520, 590, 610, 680, 700, 730, 750, 780, 810, 840,
 900

Step 2 - Median for 12 values \Rightarrow average of 6th & 7th value

6th value = 700

7th value = 730

$$\text{Median} = \frac{700 + 730}{2} = \frac{1430}{2} = 715 \text{ units}$$

3. Standard Deviation :-

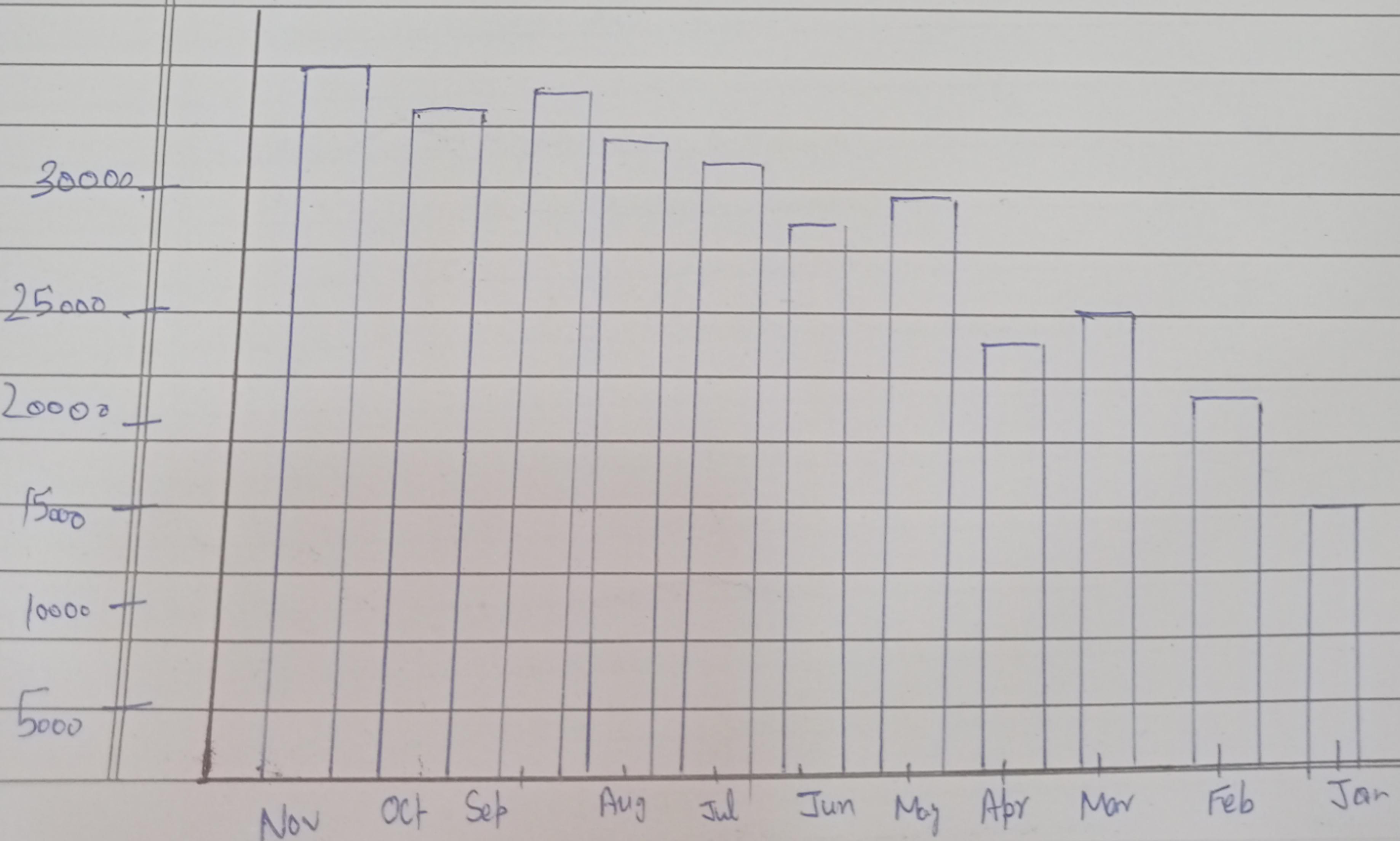
$$\sigma = \sqrt{\frac{\sum (x-\bar{x})^2}{n}}$$

$$\sigma = 6,006.94$$

Task - 2

Data Visualizations

1 Bar chart - Monthly Sales



Task - 3

Insights from the Visualizations

Insight 1: Rising Sales Trend

Sales consistently increased throughout the year peaking in December.

Decision:- Budget allocation for year-end promotions could drive even higher revenue.

Insight 2: Strong Correlation Between Sales and Website Visits

Shows positive correlation: Higher visits generally lead to higher sales.

Insight 3: Website Visits show Seasonal Growth

Visits grow from January to December with slight dips in April and August.

Decision - Optimize campaigns in low-traffic months to equalize demand.

Insight 4: Sales Growth Outpaces Website Growth

Sales rise more sharply than website visits in the last 3 months.

Decision: Conversion rate has increased - Continue strategies used in Q4.

Task 4Reflection - Importance of Visual Storytelling

Visual Storytelling makes data meaningful and easy to understand. Instead of looking at numbers in tables, charts help identify:

- Trends (e.g., increasing or decreasing sales)
- Patterns (Seasonality or sudden spikes)
- Relationships (Sales vs. website visits)
- Outliers that may need investigation

Good visual storytelling helps decision-makers quickly grasp insights and make informed choices.

It turns raw data into a clear narrative, allowing businesses to communicate findings effectively.