OUTPUT

INTRODUCTION TO AI

PROJECT REPORT

PROBLEM STATEMENT: - Employee Salary Analysis
NAME: - KARTIK KUMAR
BRANCH: - CSE(AIML)
SECTION: - B
ROLL NO.: - 202401100400105

OUTPUT

INTRODUCTION

Employee Salary Analysis – Problem Statement

Objective: To analyze employee salaries based on different job positions and experience levels.

The key goals are:

1. **Understand Salary Distribution**

- Identify how salaries are distributed across employees.
- Detect any skewness or variations in salary levels.

2. **Compare Salaries Across Job Titles**

- Analyze salary differences among various job positions.
- Identify roles with the highest and lowest average salaries.

3. **Analyze Relationship Between Experience and Salary**

- Determine if years of experience impact salary growth.
- Use scatter plots and correlation analysis to identify trends.

4. **Identify Salary Trends and Outliers**

- Find any anomalies in salary data that might indicate pay disparities.
- Use box plots to detect salary outliers.

5. **Provide Insights for Decision-Making**

- Help HR teams optimize salary structures.
- Assist in making fair and competitive salary adjustments.

OUTPUT

METHODOLOGY

The methodology outlines the approach used to analyze employee salaries based on job titles and experience levels. The key steps are as follows:

1. Data Collection

- A sample dataset was created containing employee names, job titles, salaries, and years of experience.
- The dataset includes **10 employees** with three different job roles: **Manager, Engineer, and Technician**.

2. Data Processing

- The data was structured into a **Pandas DataFrame** for analysis.
- Basic statistical analysis was conducted to understand key salary trends.
- Missing values and data inconsistencies were checked and handled if necessary.

3. Data Visualization

To explore salary patterns, multiple visualizations were used:

- **Histogram:** To analyze the distribution of salaries.
- **Box Plot:** To compare salary ranges across job titles and identify outliers.
- **Scatter Plot:** To explore the relationship between experience and salary.
- **Heatmap:** To display the correlation between salary and experience.

OUTPUT

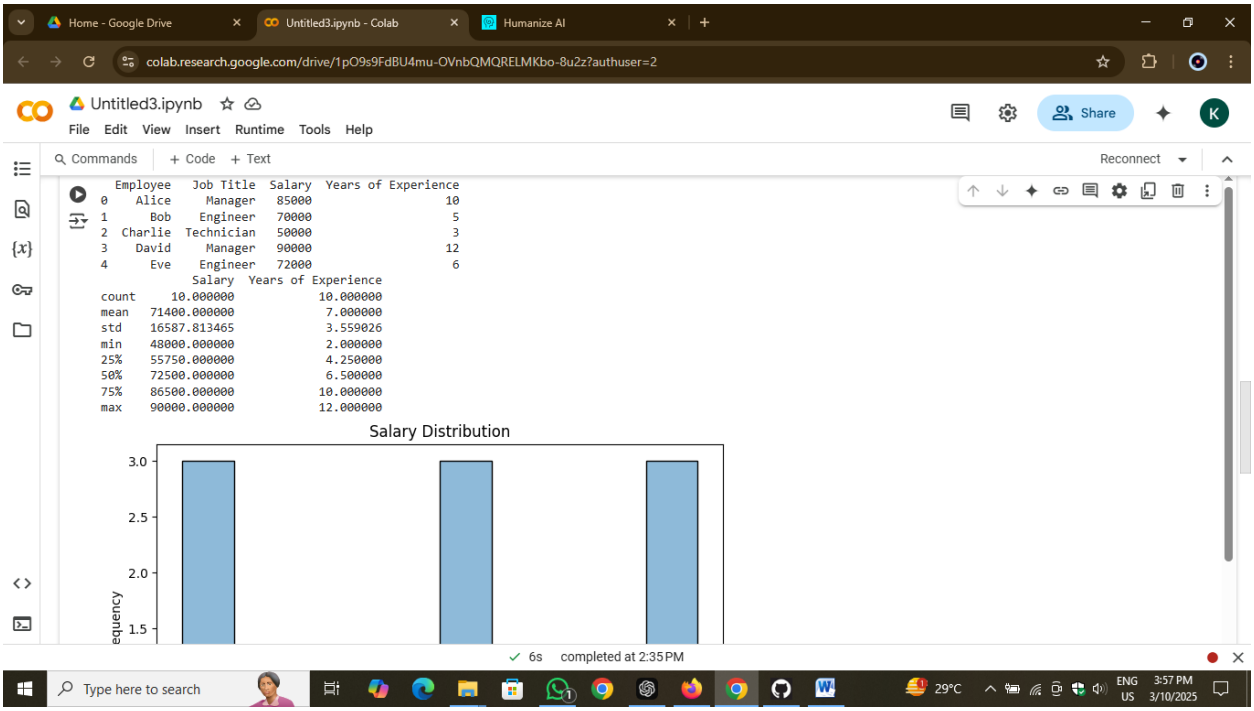
4. Correlation Analysis

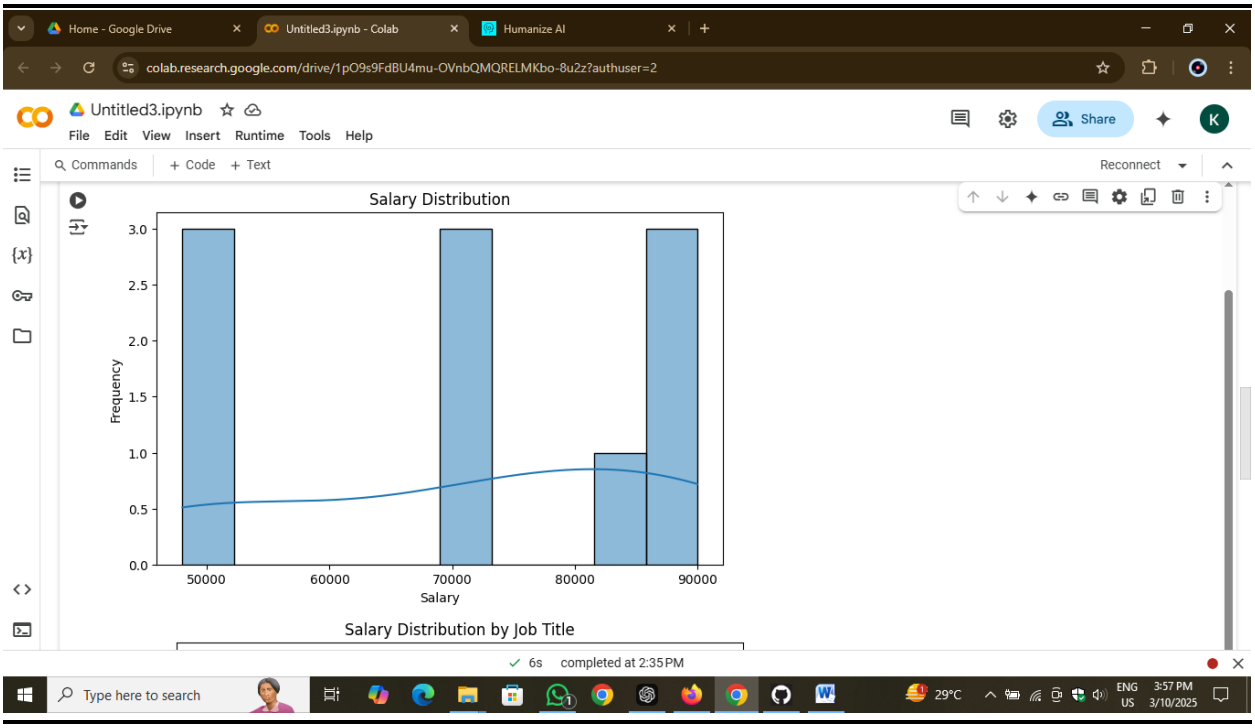
- A correlation matrix was generated to measure the strength of the relationship between salary and experience.
- Patterns were identified to determine if higher experience leads to increased salary.

5. Insights and Interpretation

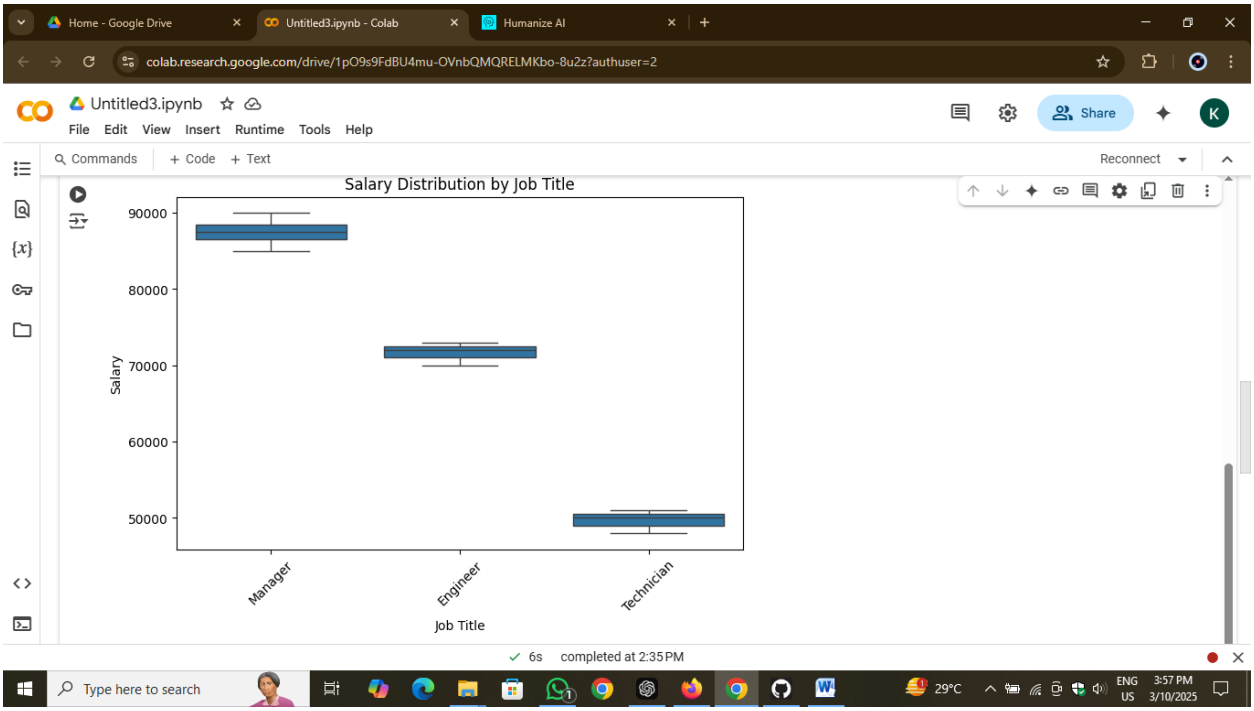
- The results from visualizations and statistical analysis were interpreted to understand salary trends.
- Recommendations were provided based on observed salary disparities and trends.

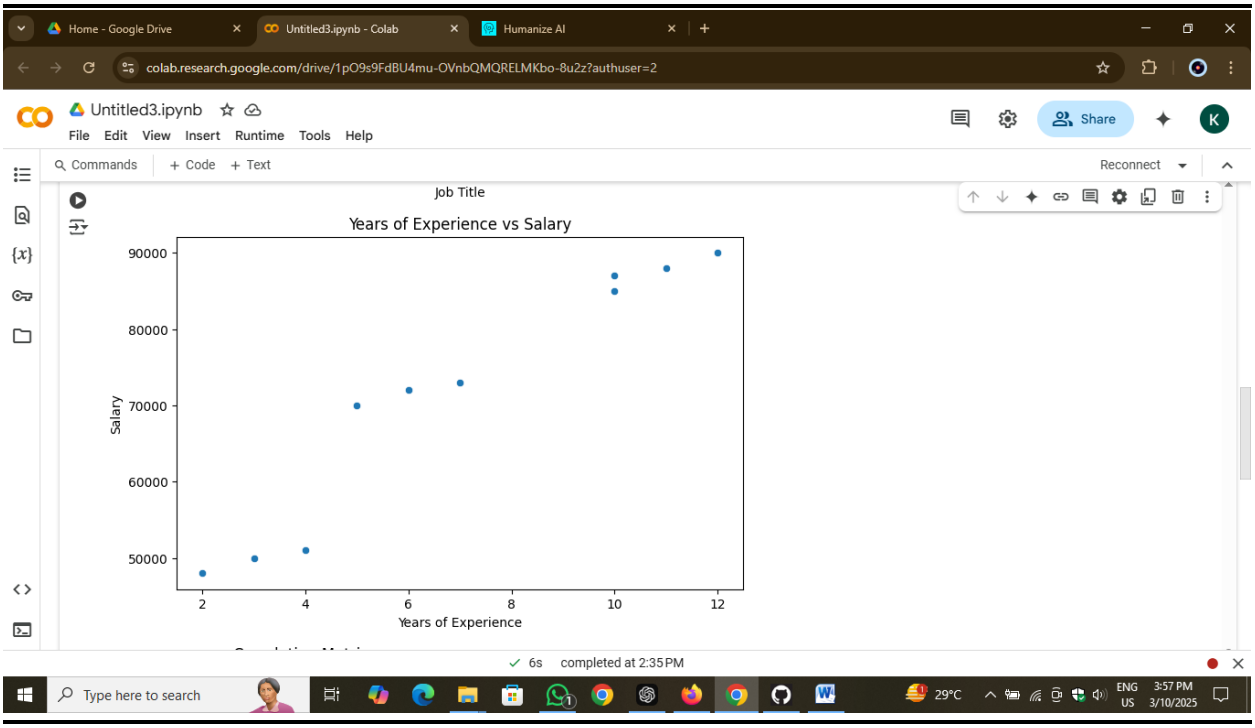
OUTPUT


Home - Google Drive
Untitled3.ipynb - Colab
Humanize AI
colab.research.google.com/drive/1pO9s9FdBU4mu-OVnbQMQRELMKbo-8u2z?authuser=2
Untitled3.ipynb
File Edit View Insert Runtime Tools Help
Share
Commands + Code + Text
Reconnect
Employee Job Title Salary Years of Experience
0 Alice Manager 85000 10
1 Bob Engineer 70000 5
2 Charlie Technician 50000 3
3 David Manager 90000 12
4 Eve Engineer 72000 6
Salary Years of Experience
count 10.000000 10.000000
mean 71400.000000 7.000000
std 16587.813465 3.559026
min 48000.000000 2.000000
25% 55750.000000 4.250000
50% 72500.000000 6.500000
75% 86500.000000 10.000000
max 90000.000000 12.000000
Salary Distribution
3.0
2.5
2.0
1.5
equency
6s completed at 2:35PM
Type here to search
29°C
ENG US
3:57 PM 3/10/2025

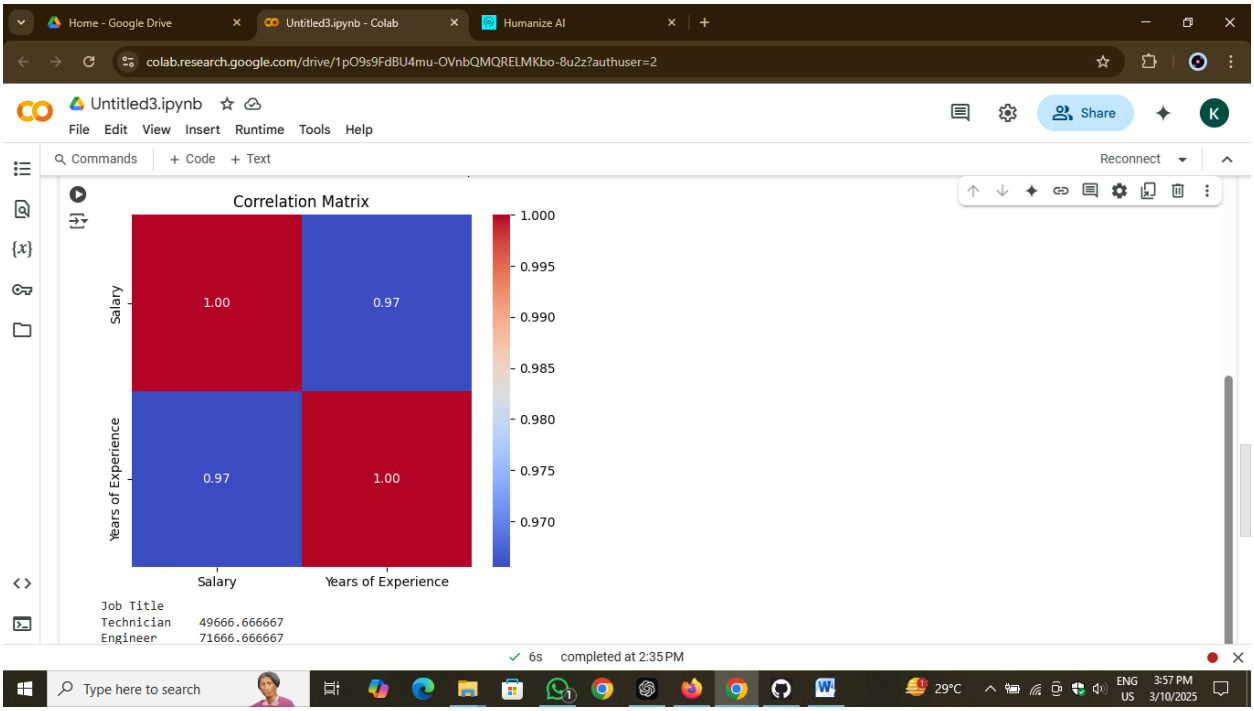

Home - Google Drive
Untitled3.ipynb - Colab
Humanize AI
colab.research.google.com/drive/1pO9s9FdBU4mu-OVnbQMQRELMKbo-8u2z?authuser=2
Untitled3.ipynb
File Edit View Insert Runtime Tools Help
Share
Commands + Code + Text
Reconnect
Salary Distribution
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Frequency
50000
60000
70000
80000
90000
Salary
Salary Distribution by Job Title
6s completed at 2:35PM
Type here to search
29°C
ENG US
3:57 PM 3/10/2025

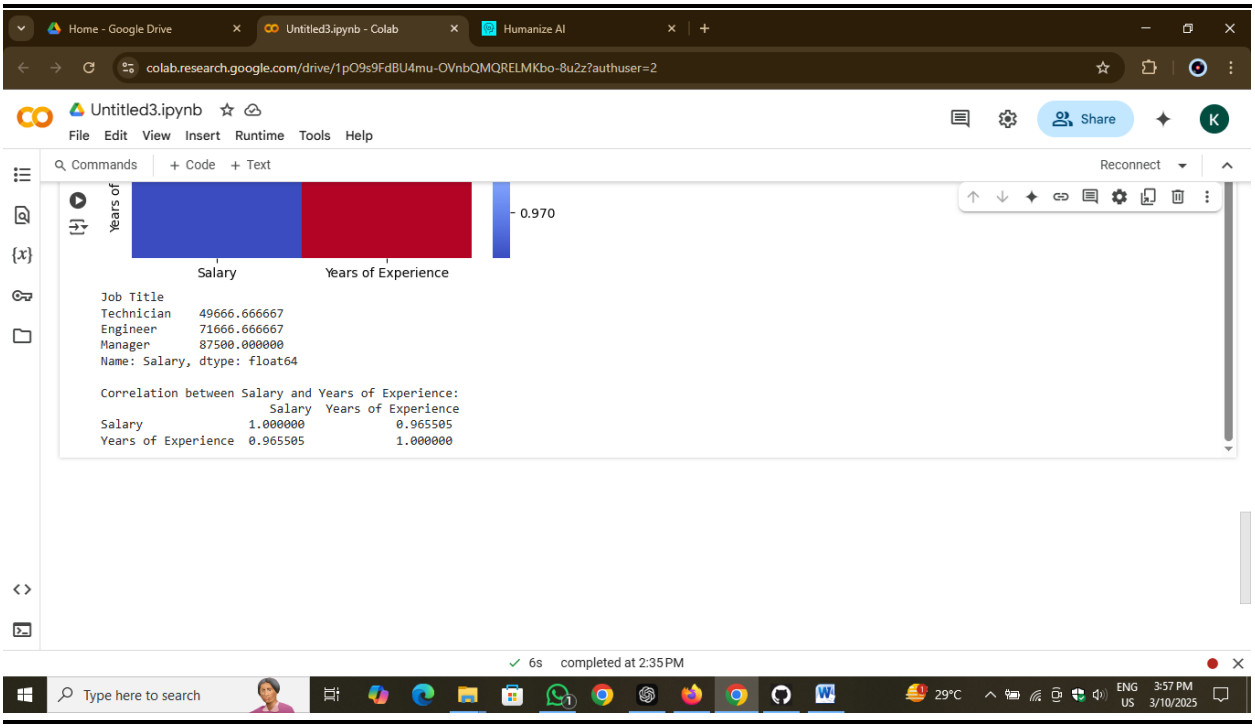
OUTPUT


Home - Google Drive
Untitled3.ipynb - Colab
Humanize AI
colab.research.google.com/drive/1pO9s9FdBU4mu-OVnbQMQRELMKbo-8u2z?authuser=2
Untitled3.ipynb
File Edit View Insert Runtime Tools Help
Share
Commands + Code + Text
Reconnect
Salary Distribution by Job Title
90000
80000
70000
60000
50000
Salary
Manager
Engineer
Technician
Job Title
6s completed at 2:35PM
Type here to search
29°C
ENG US
3:57 PM 3/10/2025


Home - Google Drive
Untitled3.ipynb - Colab
Humanize AI
colab.research.google.com/drive/1pO9s9FdBU4mu-OVnbQMQRELMKbo-8u2z?authuser=2
Untitled3.ipynb
File Edit View Insert Runtime Tools Help
Share
Commands + Code + Text
Reconnect
Job Title
Years of Experience vs Salary
90000
80000
70000
60000
50000
Salary
2
4
6
8
10
12
Years of Experience
6s completed at 2:35PM
Type here to search
29°C
ENG US
3:57 PM 3/10/2025

OUTPUT


Home - Google Drive
Untitled3.ipynb - Colab
Humanize AI
colab.research.google.com/drive/1pO9s9FdBU4mu-OVnbQMQRELMKbo-8u2z?authuser=2
Untitled3.ipynb
File Edit View Insert Runtime Tools Help
Share
Commands + Code + Text
Reconnect
Correlation Matrix
Salary
Years of Experience
1.00
0.97
0.97
1.00
1.000
0.995
0.990
0.985
0.980
0.975
0.970
Salary
Years of Experience
Job Title
Technician 49666.666667
Engineer 71666.666667
6s completed at 2:35PM
Type here to search
29°C
ENG US
3:57 PM 3/10/2025


Home - Google Drive
Untitled3.ipynb - Colab
Humanize AI
colab.research.google.com/drive/1pO9s9FdBU4mu-OVnbQMQRELMKbo-8u2z?authuser=2
Untitled3.ipynb
File Edit View Insert Runtime Tools Help
Share
Commands + Code + Text
Reconnect
Years of
0.970
Salary
Years of Experience
Job Title
Technician 49666.666667
Engineer 71666.666667
Manager 87500.000000
Name: Salary, dtype: float64
Correlation between Salary and Years of Experience:
Salary Years of Experience
Salary 1.000000 0.965505
Years of Experience 0.965505 1.000000
6s completed at 2:35PM
Type here to search
29°C
ENG US
3:57 PM 3/10/2025