HR Analytics- Predict Employee Attrition

Objective:
To analyze HR data and develop a predictive model that can identify employees at risk of leaving the company.

Tools Used:
- Python
- Pandas, Seaborn, Matplotlib
- Scikit-learn (ML modeling)

Steps Involved:
1. Loaded and explored the IBM HR dataset.
2. Performed Exploratory Data Analysis (EDA) showing high attrition in R&D and Sales departments.
3. Encoded categorical features using Label Encoding.
4. Built a Decision Tree model to predict attrition.
5. Evaluated the model using confusion matrix, accuracy, and classification report.
6. Accuracy achieved: 76.5%. The model performs well in identifying employees who are not likely to leave, but further optimization is needed to improve recall on actual leavers.

Conclusion:
This project provides actionable insights into attrition trends and demonstrates how predictive modeling can assist HR in employee retention strategies. Future improvements include advanced model tuning and feature explainability using SHAP.