✅ Task 14: Model Comparison & Best Model Selection

Dataset:
- Titanic / Breast Cancer / Fraud dataset

Tools:
- Python
- Scikit-learn
- Pandas
- Alternatives: MLflow, W&B free tier

Hints / Mini Guide:

1. Choose a dataset and apply necessary preprocessing steps once.
2. Split into train-test sets and keep the same split for all models.
3. Train multiple models such as Logistic Regression, Decision Tree, Random Forest, SVM.
4. Predict test results for all models.
5. Evaluate each model using accuracy, precision, recall, F1-score.
6. Store all metric values in a Pandas comparison table.
7. Plot bar chart comparing performance across models.
8. Identify which model generalizes best by comparing train vs test scores.
9. Select best model based on business requirement and save it..

Deliverables:

- Model comparison table
- Comparison plot
- Best saved model

Final Outcome:
- Intern gains practical skill in algorithm selection like industry ML teams.

Interview Questions Related To Above Task:

- Why compare multiple models?
- What is overfitting detection method?
- Which metrics matter in imbalanced problems?
- How do you choose best model?
- What is model generalization?

📌 **Task Submission Guidelines**

- ⏰ **Time Window:**

Youcan complete the task anytime between 10:00 AM to 10:00 PM on the given day. Submission link closes at 10:00 PM

- 🔍 **Self-Research Allowed:**

Youare free to explore, Google, or refer to tutorials to understand concepts and complete the task effectively.

- 🛠️ **Debug Yourself:**

Tryto resolve all errors by yourself. This helps you learn problem-solving and ensures you don't face the same issues in future tasks.

- 💸 **No Paid Tools:**

Ifthe task involves any paid software/tools, do not purchase anything. Just learn the process or find free alternatives.

- 📁 **GitHub Submission:**

Create a new GitHub repository for each task.
Add everything you used for the task — code, datasets, screenshots (if any), and a short README.md explaining what you did.

📤 **Submit Here:**

After completing the task, paste your GitHub repo link and submit it using the link below:

- 👉 [Submission Link]