✅ Task 9: Random Forest – Credit Card Fraud Detection

Dataset:
- Primary: Kaggle Credit Card Fraud Dataset
- Alternative: Any fraud dataset from Kaggle (smaller sample)

Tools:
- Python
- Scikit-learn
- Pandas
- Alternatives: XGBoost, LightGBM

Hints / Mini Guide:

1. Load dataset and check fraud vs non-fraud counts to understand imbalance.
2. Separate features and target column and remove non-useful identifiers.
3. Split dataset using stratified sampling so fraud ratio stays similar in train and test.
4. Train a baseline model like Logistic Regression for comparison.
5. Train Random Forest model with parameters like n_estimators=100.
6. Predict and evaluate using precision, recall, F1-score instead of accuracy.
7. Plot feature importances to identify key fraud indicators.
8. Compare Random Forest performance against baseline model.
9. Save best model using joblib for reuse.

Deliverables:

- Notebook
- Feature importance plot
- Saved model (.pkl)

Final Outcome:
- Intern learns ensemble learning and handling imbalanced data.

Interview Questions Related To Above Task:

- Why accuracy is misleading in fraud detection?
- What is Random Forest?
- What is ensemble learning?
- What is n_estimators?
- What is SMOTE?

📌 **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]