SCHOOL OF COMPUTER SCIENCE AND ARTIFICIAL INTELLIGENCE		DEPARTMENT OF COMPUTER SCIENCE ENGINEERING	
Program Name: B. Tech		**Assignment Type:** Lab	**Academic Year:** 2025-26
Course Coordinator Name	Dr.Vairachilai Shenbagavel		
Instructor(s) Name	Srinivas Komakula		
Course Code	23CA201SE402	**Course Title**	Explainable AI (P)
Year/Sem	III/V	**Regulation**	R24
Date and Day of Assignment	28-08-2025	**Time(s)**	09:00AM -05:00PM
Duration	2 Hours	**Applicable to Batch**	**23CSBTB40**
Assignment Number: 04			

Q. No.	Question	Expected Time to complete
1	**Credit Default (Binary Classification)**	

Objectives:

- Use Permutation Importance to rank financial features in predicting default.
- Apply SHAP to visualize why some customers are predicted to default.
- Use LIME to generate local explanations for two contrasting cases.
- Compare and evaluate method consistency.

Assignment Details:

- Goal: Explain which financial indicators drive credit default predictions.
- Data: Kaggle 'Default of Credit Card Clients'.
- Model: CatBoostClassifier (handles categorical features).

Steps:

- Train CatBoostClassifier.
- Permutation Importance: Rank features such as limit balance, bill amount, and payment history.
- SHAP: Create summary plot + force plot for one defaulter.
- LIME: Generate explanations for one defaulter and one non-defaulter.
- Compare methods.

Deliverables:

- PI plot.
- SHAP summary + local plot.
- LIME explanations for 2 customers.
- Comparative analysis.

Submission Requirements:

- Short methods summary (3–5 lines).
- Clean, runnable code/notebook.
- All required plots (PI, SHAP global + local, LIME local).