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**	**23CSBTB39**
Assignment Number: 04			

Q. No.	Question	Expected Time to complete
1	**Bank Marketing (Binary Classification)**	

Objectives:

- Apply Permutation Importance to identify predictors of marketing success.
- Use SHAP to explain why some customers subscribe and others don't.
- Use LIME for local explanations of two contrasting customer outcomes.
- Compare across methods for consistency.

Assignment Details:

- Goal: Interpret which customer and campaign features influence subscription outcomes.
- Data: UCI Bank Marketing dataset.
- Model: GradientBoostingClassifier

Steps:

- Train GradientBoostingClassifier.
- Permutation Importance: Compute global feature importance.
- SHAP: Create global summary plot + force plot for one subscribed customer.
- LIME: Produce explanations for one subscribed vs. one unsubscribed customer.
- Compare the three methods.

Deliverables:

- PI chart.
- SHAP summary + local explanation.
- LIME plots for two customers.
- Comparative analysis.

Submission Requirements:

- Short methods summary (3–5 lines).
- Clean, runnable code/notebook.
- All required plots (PI, SHAP global + local, LIME local).
- 5–10 bullet insights highlighting consistencies and differences.