Model Development Phase

Date	18 June 2025
Team ID	SWTID1749620488
Project Title	Early Prediction for Chronic Kidney Disease Detection: A Progressive Approach to Health Management
Maximum Marks	6 Marks

Model Selection Report:

Model	Description	Hyperparameters	Performance Metric
Logistic Regression	Linear model for binary classification; interpretable and efficient for linearly separable data.	'C': 1, 'penalty': 'l2', 'solver': 'liblinear'	Accuracy score= 92.5% F1 Score = 93%
Gradient Boosting	Boosted decision trees; sequentially minimizes errors for better accuracy.	'learning_rate': 0.2, 'max_depth': 3, 'n_estimators': 100	Accuracy score= 100% F1 Score = 100%
Decision Tree	Simple and interpretable; useful for understanding key predictors in CKD.	'criterion': 'entropy', 'max_depth': None, 'min_samples_leaf': 1, 'min_samples_split': 5, 'splitter': 'random'	Accuracy score= 97.5% F1 Score = 98%

Random Forest	Ensemble of decision trees; reduces overfitting and handles complex patterns.	'bootstrap': True, 'max_depth': None, 'max_features': 'sqrt', 'n_estimators': 200	Accuracy score= 100% F1 Score = 100%