MACHINE LEARNING PROJECT:
BREAST CANCER DETECTION

INTRODUCTION:

Breast cancer detection plays a critical role in early diagnosis and effective treatment, which significantly improves patient outcomes. In this project, a machine learning model is developed to classify breast tumours as either benign or malignant using key diagnostic features.

DATA PREPROCESSING AND ALGORITHMS USED:

The model employs logistic regression, a robust classification algorithm, for predictive analysis. To enhance the reliability and generalizability of the model, KStratifiedFold cross-validation is used to ensure that each fold maintains the proportionate distribution of classes. The dataset is pre-processed, with categorical features encoded using OrdinalEncoder, and hyperparameter tuning conducted to optimize the model's performance.

PERFORMANCE OF THE MODEL:

Accuracy: Achieved an accuracy of 98%

Precision: Recorded a precision of 97%, indicating the proportion of true positive predictions among all positive predictions.

Recall (Sensitivity): Achieved a recall of 100%, showing the model's ability to correctly identify positive cases.

APPLICATIONS:

The results demonstrate the model's ability to accurately predict tumor classifications, showing potential for aiding medical professionals in preliminary breast cancer assessments. This project highlights the importance of machine learning applications in healthcare and underscores the necessity of rigorous evaluation techniques to achieve reliable predictions.