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ROLL NO: 11

PRACTICAL:5

```python
import pandas as pd
from sklearn.datasets import load_breast_cancer
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
from sklearn.metrics import mean_squared_error, r2_score

# Load the Breast Cancer dataset
breast_cancer = load_breast_cancer()
X = pd.DataFrame(breast_cancer.data,
columns=breast_cancer.feature_names)
y = breast_cancer.target

# Split the data into training and testing sets (80% training, 20%
testing)
X_train, X_test, y_train, y_test = train_test_split(X, y,
test_size=0.2, random_state=42)

# Instantiate the Linear Regression model
model = LinearRegression()

# Train the model on the training set
model.fit(X_train, y_train)

# Make predictions on the testing set
y_pred = model.predict(X_test)

# Evaluate the model
mse = mean_squared_error(y_test, y_pred)
r2 = r2_score(y_test, y_pred)

# Display the evaluation metrics
print("Breast Cancer Dataset:")
print(f"Mean Squared Error (MSE): {mse:.4f}")
print(f"R-squared (R2): {r2:.4f}")

# Display the coefficients for each feature
coefficients = pd.DataFrame({'Feature': X.columns, 'Coefficient':
model.coef_})
```

```
print("\nCoefficients:")
print(coefficients)
```

```
Breast Cancer Dataset:
Mean Squared Error (MSE): 0.0641
R-squared (R2): 0.7271

Coefficients:
                     Feature  Coefficient
0                mean radius     0.197130
1               mean texture    -0.002795
2             mean perimeter    -0.022776
3                  mean area    -0.000329
4            mean smoothness     0.411490
5           mean compactness     5.001712
6             mean concavity    -1.005870
7        mean concave points    -4.915704
8              mean symmetry     0.338394
9     mean fractal dimension    -5.814256
10              radius error    -0.432262
11             texture error     0.012633
12           perimeter error     0.008247
13                area error     0.001245
14          smoothness error   -18.078509
15         compactness error     2.207987
16           concavity error     4.273759
17      concave points error   -18.158953
18            symmetry error     1.194494
19   fractal dimension error     3.012037
20              worst radius    -0.214439
21             worst texture    -0.009617
22           worst perimeter     0.008712
23                worst area     0.000961
24          worst smoothness    -0.132385
25         worst compactness    -0.762670
26           worst concavity    -0.615743
27      worst concave points     1.326198
28            worst symmetry    -1.021132
29   worst fractal dimension    -1.273638
```