EXP NO: **VISUALIZATION: IMPLEMENT BINNING VISUALIZATIONS FOR ANY REAL TIME DATASET, IMPLEMENT**
DATE: **LINEAR REGRESSION TECHNIQUES**

AIM:

BACKGROUND THEORY:

BINNING:

Binning is a data preprocessing step where continuous data is divided into intervals or "bins." This can be useful for visualizing data distributions or simplifying models.

LINEAR REGRESSION:

Linear regression is a data analysis technique that predicts the value of unknown data by using another related and known data value. It mathematically models the unknown or dependent variable and the known or independent variable as a linear equation.

PROCEDURE:

A) Steps to Implement Binning Visualization:
    1. Load Data:
        o Drag the "File" widget to the canvas.
        o Select your dataset file (e.g., real_time_data.csv).
    2. Binning Data:
        o Drag the "Discretize" widget to the canvas.
        o Connect the "File" widget to the "Discretize" widget.
        o Configure the "Discretize" widget to specify the number of bins or the binning method (e.g., equal-width, equal-frequency).
    3. Visualize Binned Data:
        o Drag the "Box-plot" widget to the canvas.
        o Connect the "Discretize" widget to the "Box-plot" widget.
        o Configure the "Box-plot" widget to select the binned variable and visualize its distribution.

B) Steps to Implement Linear Regression:
    1. Load Data:
        o Drag the "File" widget to the canvas.
        o Select your dataset file (e.g., real_time_data.csv).
    2. Select Columns:
        o Drag the "Select Columns" widget to the canvas. Connect the "File" widget to the "Select Columns" widget.
        o Select the dependent variable (e.g., y) and independent variables (e.g., x1, x2).
    3. Linear Regression:
        o Drag the "Linear Regression" widget to the canvas.
        o Connect the "Select Columns" widget to the "Linear Regression" widget.
    4. Evaluate Model:
        o Connect the "Linear Regression" widget to the "Test & Score" widget. Connect the "File" widget to the "Test & Score" widget for evaluation.

5. Visualize Results:
   - o Drag the "Scatter Plot" widget to the canvas.
   - o Connect the "Linear Regression" widget to the "Scatter Plot" widget.
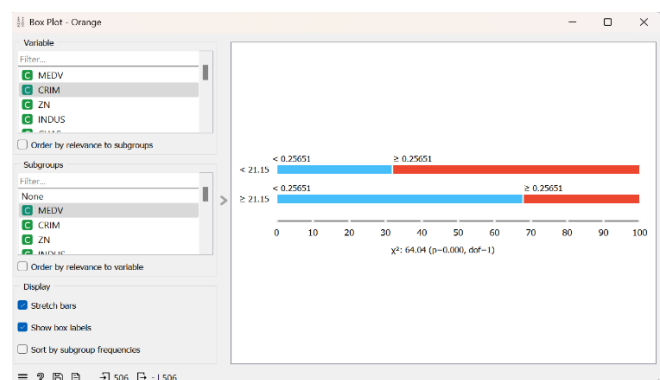   - o Configure the "Scatter Plot" widget to visualize the regression line and the data points.
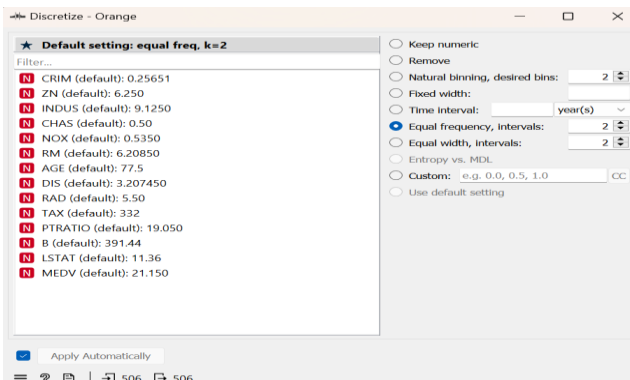
OUTPUT

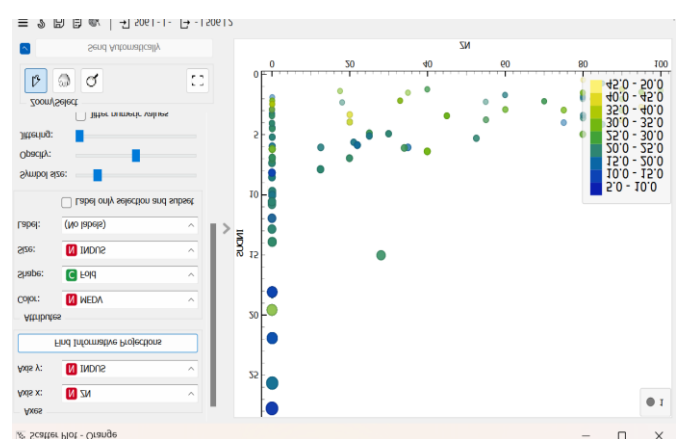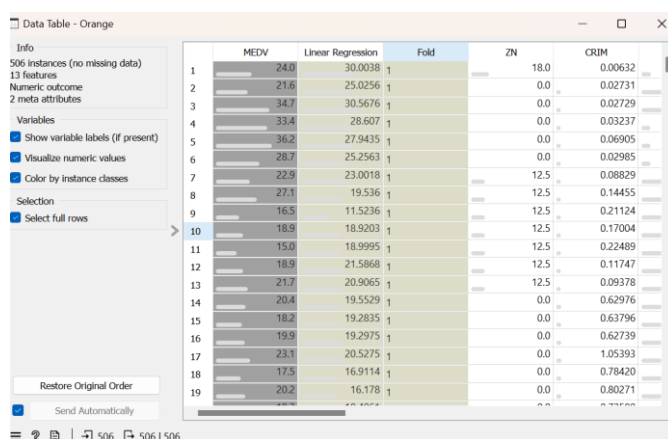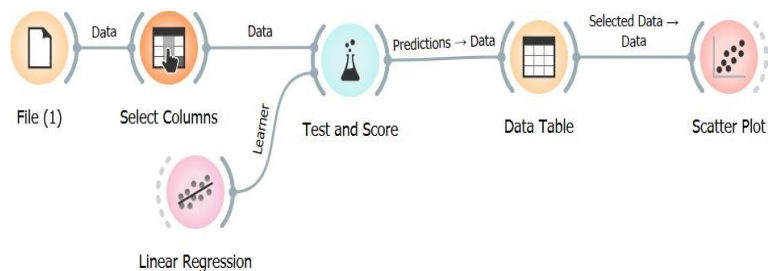FIG: 7.1: IMPLEMENTATION OF BINNING VISUALIZATIONS

FIG: 7.2: IMPLEMENTATION OF LINEAR REGRESSION TECHNIQUES

RESULT: