**Introduction and Background:**

Provide context on Bank Nifty as an index representing the banking sector in the National Stock Exchange of India, explaining its significance and how it's calculated.

**Descriptive Statistics:**

Present descriptive statistics for the returns data, including measures like mean, median, skewness, kurtosis, and Jarque-Bera test for normality.

**Correlation Analysis:**

We analysed the correlation between current returns and lagged returns, indicating weak correlations between current returns and returns at lag 1 and lag 2.

**Normality Test for Variables:**

We perform normality tests like Jarque-Bera test, correlogram, and Augmented Dickey-Fuller (ADF) test to check the normal distribution of returns data.

**Autoregressive Model (AR(2)):**

We define the autoregressive model, specify the coefficients, and evaluate the model's performance using metrics like R-squared, adjusted R-squared, F-statistic, and Durbin-Watson statistic.

**Normality Test for Errors:**

We conduct tests to check the normality of errors from the model, including Jarque-Bera test, correlogram, and ADF test.

**Heteroscedasticity Test**:

We test for heteroscedasticity using the Glejser test and interpret the results.

**Multicollinearity Test:**

We assess multicollinearity among variables using coefficient variance and centered VIF.

**Conclusion:**

Based on the analysis, we conclude on the effectiveness of the AR(2) model for predicting Nifty Bank returns, highlighting its limitations and suggesting areas for further improvement or exploration.

Overall, our project provides a thorough examination of the data, model, and statistical tests, offering valuable insights into the predictability of Nifty Bank returns and potential avenues for future research or refinement of predictive models.