Stochastics is a type of technical analysis indicator used in the stock market to evaluate the momentum of a stock or other financial asset. It helps traders and investors identify potential buy or sell signals based on the asset's price action. The Stochastic Oscillator compares a security's closing price to its price range over a specific period.

Key Components of Stochastics

1. **%K Line**: This is the main line of the stochastic oscillator. It represents the current closing price relative to the range of prices over a set period.

$$\%K = \frac{(\text{Last Close Price} - \text{Lowest Price})}{\text{Highest Price} - \text{Lowest Price}} \times 100$$

2. **%D Line**: This is a smoothed version of the %K line, often a moving average of %K. The %D line is used to generate trading signals.

%D=SMA of %K over 3 periods

To calculate the %K and %D values from a stock dataset using Pandas, you typically need historical price data (typically Open, High, Low, Close) over a specified period. Here's a step-by-step Python code example using Pandas:

In Pandas, the `rolling()` function is used to create rolling window calculations on time series or sequential data. It's particularly useful for calculating statistics over a specified window of observations. Here’s a breakdown of how it works and its common parameters:

In This task i took default value of period and smoothing period

Explanation:

1. **Import Pandas**: Import the Pandas library for data manipulation.

2. **Example Data**: Create or load your stock dataset into a Pandas DataFrame (`df` in this example).

3. **Parameters**:
   - `period`: Number of days to look back for calculating the Stochastic Oscillator (%K).
   - `smoothing_period`: Number of days to use for the simple moving average (SMA) of %K to calculate %D.

4. **Calculate %K**:
   - Compute the rolling minimum (`Lowest Low`) and maximum (`Highest High`) prices over the specified `period`.
   - Use these to calculate the %K value for each row in the DataFrame.

5. **Calculate %D**:
   - Compute the rolling mean (SMA) of %K over `smoothing_period` days to get the %D line.

6. **Print Output**:
   - Display the last 10 rows (or adjust the number) of the DataFrame with columns for Date, Close price, %K, and %D.