select \* from apple;

select AVG([Close]) AS Avg\_Close from apple;

select MAX([Close]) AS Max\_Close, MIN([Close]) AS Min\_Close from apple;

----select AVG(Volume) AS Avg\_Volume from apple;

select AVG(Volume) AS Avg\_Volume from apple;

select Date, ([Close] - [Open]) AS Daily\_Change from apple;

select Date, (([Close] - [Open]) / [Open] \* 100) AS Daily\_Percentage\_Change from apple;

select

CONVERT(VARCHAR(7), [Date], 126) AS Month,

AVG([Close]) AS Avg\_Monthly\_Close

from apple

GROUP BY

CONVERT(VARCHAR(7), [Date], 126);

SELECT

CONVERT(VARCHAR(7), [Date], 126) AS Month,

SUM(Volume) AS Total\_Monthly\_Volume

FROM apple

GROUP BY CONVERT(VARCHAR(7), [Date], 126)

ORDER BY CONVERT(VARCHAR(7), [Date], 126);

--- Average yearly closing price

SELECT YEAR(Date) AS Year, AVG([Close]) AS Avg\_Yearly\_Close

FROM apple

GROUP BY YEAR(Date);

-- Standard deviation of the daily closing prices

SELECT STDEV([Close]) AS StdDev\_Value FROM apple;

-- Average daily range (High - Low)

SELECT AVG(High - Low) AS Avg\_Daily\_Range FROM apple;

SELECT TOP 10 Date, Volume

FROM apple

ORDER BY Volume DESC;

SELECT DATENAME(WEEKDAY, Date) AS Day, AVG(Volume) AS Avg\_Volume

FROM apple

GROUP BY DATENAME(WEEKDAY, Date);

WITH Price\_Increase AS (

SELECT Date, [Close],

CASE WHEN LAG([Close]) OVER (ORDER BY Date) < [Close] THEN 1 ELSE 0 END AS Increase\_Flag

FROM apple

),

Consecutive\_Increase AS (

SELECT Date, [Close], Increase\_Flag,

SUM(Increase\_Flag) OVER (ORDER BY Date ROWS BETWEEN UNBOUNDED PRECEDING AND CURRENT ROW) AS Consecutive\_Increase

FROM Price\_Increase

)

SELECT MAX(Consecutive\_Increase) AS Longest\_Increase\_Streak FROM Consecutive\_Increase;

-- Longest consecutive days of price decrease

WITH Price\_Decrease AS (

SELECT Date, [Close],

CASE WHEN LAG([Close]) OVER (ORDER BY Date) > [Close] THEN 1 ELSE 0 END AS Decrease\_Flag

FROM apple

),

Consecutive\_Decrease AS (

SELECT Date, [Close], Decrease\_Flag,

SUM(Decrease\_Flag) OVER (ORDER BY Date ROWS BETWEEN UNBOUNDED PRECEDING AND CURRENT ROW) AS Consecutive\_Decrease

FROM Price\_Decrease

)

SELECT MAX(Consecutive\_Decrease) AS Longest\_Decrease\_Streak FROM Consecutive\_Decrease;

----------Correlation Between Daily Trading Volume and Closing Price

-- Step 1: Calculate the means of Volume and Close

WITH MeanValues AS (

SELECT

AVG(CAST(Volume AS FLOAT)) AS Avg\_Volume,

AVG(CAST([Close] AS FLOAT)) AS Avg\_Close

FROM apple

),

-- Step 2: Calculate the covariance of Volume and Close

Covariance AS (

SELECT

SUM((CAST(Volume AS FLOAT) - mv.Avg\_Volume) \* (CAST([Close] AS FLOAT) - mv.Avg\_Close)) / (COUNT(\*) - 1) AS Cov\_Volume\_Close

FROM apple, MeanValues mv

),

-- Step 3: Calculate the standard deviations of Volume and Close

StandardDeviations AS (

SELECT

SQRT(SUM(POWER(CAST(Volume AS FLOAT) - mv.Avg\_Volume, 2)) / (COUNT(\*) - 1)) AS StdDev\_Volume,

SQRT(SUM(POWER(CAST([Close] AS FLOAT) - mv.Avg\_Close, 2)) / (COUNT(\*) - 1)) AS StdDev\_Close

FROM apple, MeanValues mv

)

-- Step 4: Calculate the correlation coefficient

SELECT

cov.Cov\_Volume\_Close / (std.StdDev\_Volume \* std.StdDev\_Close) AS Corr\_Volume\_Close

FROM Covariance cov, StandardDeviations std;

----2. Correlation Between Opening Price and Closing Price

-- Step 1: Calculate the means of Open and Close

WITH MeanValues AS (

SELECT

AVG(CAST([Open] AS FLOAT)) AS Avg\_Open,

AVG(CAST([Close] AS FLOAT)) AS Avg\_Close

FROM apple

),

-- Step 2: Calculate the covariance of Open and Close

Covariance AS (

SELECT

SUM((CAST([Open] AS FLOAT) - mv.Avg\_Open) \* (CAST([Close] AS FLOAT) - mv.Avg\_Close)) / (COUNT(\*) - 1) AS Cov\_Open\_Close

FROM apple, MeanValues mv

),

-- Step 3: Calculate the standard deviations of Open and Close

StandardDeviations AS (

SELECT

SQRT(SUM(POWER(CAST([Open] AS FLOAT) - mv.Avg\_Open, 2)) / (COUNT(\*) - 1)) AS StdDev\_Open,

SQRT(SUM(POWER(CAST([Close] AS FLOAT) - mv.Avg\_Close, 2)) / (COUNT(\*) - 1)) AS StdDev\_Close

FROM apple, MeanValues mv

)

-- Step 4: Calculate the correlation coefficient

SELECT

cov.Cov\_Open\_Close / (std.StdDev\_Open \* std.StdDev\_Close) AS Corr\_Open\_Close

FROM Covariance cov, StandardDeviations std;

---- Step 1: Calculate the means of Open and Close

WITH MeanValues AS (

SELECT

AVG(CAST([Open] AS FLOAT)) AS Avg\_Open,

AVG(CAST([Close] AS FLOAT)) AS Avg\_Close

FROM apple

),

-- Step 2: Calculate the covariance of Open and Close

Covariance AS (

SELECT

SUM((CAST([Open] AS FLOAT) - mv.Avg\_Open) \* (CAST([Close] AS FLOAT) - mv.Avg\_Close)) / (COUNT(\*) - 1) AS Cov\_Open\_Close

FROM apple, MeanValues mv

),

-- Step 3: Calculate the standard deviations of Open and Close

StandardDeviations AS (

SELECT

SQRT(SUM(POWER(CAST([Open] AS FLOAT) - mv.Avg\_Open, 2)) / (COUNT(\*) - 1)) AS StdDev\_Open,

SQRT(SUM(POWER(CAST([Close] AS FLOAT) - mv.Avg\_Close, 2)) / (COUNT(\*) - 1)) AS StdDev\_Close

FROM apple, MeanValues mv

)

-- Step 4: Calculate the correlation coefficient

SELECT

Cov\_Open\_Close / (StdDev\_Open \* StdDev\_Close) AS Corr\_Open\_Close

FROM Covariance, StandardDeviations;