* **Data Types in SQL Server**
* **Approximate Numeric**

#### 1. ****Scenario: Sales Performance Analysis****

* **Problem:** You have a **Sales** table with columns **SalesID** (int), **SalesAmount** (float), and **SalesDate** (datetime). Write a query to calculate the average sales amount for all sales that occurred in the last 12 months. Return the average sales amount rounded to two decimal places.
* **Task:** Write the SQL query to achieve this.

**Solution -** select round(avg(SalesAmount), 2) as AverageSalesAmount

From Sales

where SalesDate >= dateadd(month, -12, getdata());

#### 2. ****Scenario: Employee Performance Ratings****

* **Problem:** In the **Employees** table, there are columns **EmployeeID** (int), **Name** (varchar), and **PerformanceScore** (float). Write a query to find all employees with a performance score above the average score across all employees. Return **EmployeeID**, **Name**, and **PerformanceScore**.
* **Task:** Write the SQL query to retrieve these employees.

**Solution -** select EmployeeID, Name, PerformanceScore

from Employees

where PerformanceScore > (select avg(PerformanceScore) from Employees);

#### 3. ****Scenario: Research Data Analysis****

* **Problem:** The **ResearchData** table contains columns **ExperimentID** (int), **Measurement** (real), and **DateMeasured** (datetime). Write a query to calculate the sum of measurements recorded in the last 30 days. Return the total measurement value rounded to three decimal places.
* **Task:** Write the SQL query to calculate the total measurement.

**Solution -** select round(sum(Measurement), 3) as TotalMeasurement

from ResearchData

where DateMeasured >= dateadd(day, -30, getdate());

#### 4. ****Scenario: Flight Distance Calculation****

* **Problem:** In the **Flights** table, you have columns **FlightID** (int), **DistanceTraveled** (float), and **FlightDate** (datetime). Write a query to find the total distance traveled by all flights that occurred in the last year. Return the total distance rounded to two decimal places.
* **Task:** Write the SQL query to retrieve the total distance.

**Solution -** select round(sum(DistanceTraveled), 2) as TotalDistance

from Flights

where FlightDate >= dateadd(year, -1, getdate());

#### 5. ****Scenario: Customer Satisfaction Survey****

* **Problem:** The **CustomerFeedback** table includes columns **FeedbackID** (int), **SatisfactionRating** (real), and **FeedbackDate** (datetime). Write a query to find the average satisfaction rating for feedback submitted in the last 60 days. Return the average rating rounded to one decimal place.
* **Task:** Write the SQL query to analyze customer satisfaction ratings.

**Solution -** select round(avg(SatisfactionRating), 1) as AverageSatisfactionRating

from CustomerFeedback

where FeedbackDate >= dateadd(day, -60, getdate());

#### 1. ****Scenario: Monthly Sales Forecast****

* **Problem:** You have a **SalesForecast** table with columns **ForecastID** (int), **ExpectedSales** (float), and **ForecastDate** (datetime). Write a query to calculate the total expected sales for the current month. Return the total expected sales rounded to two decimal places.
* **Task:** Write the SQL query to achieve this.

**Solution -** select round(sum(ExpectedSales), 2) as TotalExpectedSales

from SalesForecast

where year(ForecastDate) = year(getdate())

and month(ForecastDate) = month(getdate());

#### 2. ****Scenario: Employee Salary Analysis****

* **Problem:** In the **Employees** table, there are columns **EmployeeID** (int), **Name** (varchar), **BaseSalary** (float), and **PerformanceBonus** (float). Write a query to find all employees whose total compensation (BaseSalary + PerformanceBonus) exceeds the average total compensation of all employees. Return **EmployeeID**, **Name**, and the calculated **TotalCompensation**.
* **Task:** Write the SQL query to retrieve these employees.

**Solution -** select EmployeeID, Name, (BaseSalary + PerformanceBonus) as

TotalCompensation

from Employees

where (BaseSalary + PerformanceBonus) > ( select avg(BaseSalary +

PerformanceBonus)

from Employees

);

#### 3. ****Scenario: Laboratory Experiment Results****

* **Problem:** The **ExperimentResults** table contains columns **ExperimentID** (int), **MeasurementValue** (real), and **MeasurementDate** (datetime). Write a query to calculate the average measurement value for experiments conducted in the last 90 days. Return the average value rounded to three decimal places.
* **Task:** Write the SQL query to calculate the average measurement.

**Solution -** select round(avg(MeasurementValue), 3) as AverageMeasurementValue

from ExperimentResults

where MeasurementDate >= dateadd(day, -90, getdate());

#### 4. ****Scenario: Flight Performance Metrics****

* **Problem:** In the **Flights** table, you have columns **FlightID** (int), **FuelConsumption** (float), **DistanceTraveled** (float), and **FlightDate** (datetime). Write a query to find the average fuel consumption per distance traveled (FuelConsumption / DistanceTraveled) for all flights in the last year. Return the average value rounded to two decimal places.
* **Task:** Write the SQL query to retrieve the average fuel consumption per distance.

**Solution -** select round(avg(FuelConsumption / DistanceTraveled), 2) as

AverageFuelConsumptionPerDistance

from Flights

where FlightDate >= dateadd(year, -1, getdate());

#### 5. ****Scenario: Customer Review Ratings****

* **Problem:** The **CustomerReviews** table includes columns **ReviewID** (int), **Rating** (real), **ReviewDate** (datetime), and **ProductID** (int). Write a query to calculate the overall average rating for products that received reviews in the last 30 days. Return the average rating rounded to one decimal place.
* **Task:** Write the SQL query to analyze customer review ratings.

**Solution -** select round(avg(Rating), 1) as AverageRating

from CustomerReviews

where ReviewDate >= dateadd(day, -30, getdate());