Simple Queries

Learn by Example



**Date Functions**

datediff()

year(), month()

dateadd()

getdate()

Queries:

* For each person, list the name of the person and how many years has the person been working for the company

Answer:

|  |
| --- |
| SELECT  CONCAT(FirstName, ' ', LastName) AS Name,  DATEDIFF(YEAR, HireDate, GETDATE()) AS YearsWorked  FROM Employees; |

* For each person, how old was the person when he was hired.

Answer:

|  |
| --- |
| SELECT  CONCAT(FirstName, ' ', LastName) AS Name,  DATEDIFF(YEAR, BirthDate, HireDate) -  CASE  WHEN MONTH(HireDate) < MONTH(BirthDate) OR  (MONTH(HireDate) = MONTH(BirthDate) AND DAY(HireDate) < DAY(BirthDate))  THEN 1  ELSE 0  END AS AgeAtHire  FROM Employees; |

* For each person, list the name of the person and how old the person is now

Answer:

|  |
| --- |
| SELECT  CONCAT(FirstName, ' ', LastName) AS Name,  DATEDIFF(YEAR, BirthDate, GETDATE()) -  CASE  WHEN MONTH(GETDATE()) < MONTH(BirthDate) OR  (MONTH(GETDATE()) = MONTH(BirthDate) AND DAY(GETDATE()) < DAY(BirthDate))  THEN 1  ELSE 0  END AS CurrentAge  FROM Employees; |

* For each person, list the name of the person and the month during which he was born

Answer:

|  |
| --- |
| SELECT  CONCAT(FirstName, ' ', LastName) AS Name,  MONTH(BirthDate) AS BirthMonth  FROM Employees; |

**String concatenation operators and string functions**

+

isnull(field , ‘replacement value’)

substring(field, start , length)

upper()

len(), rtrim(), charindex()

* List the full name of each person including his title (if one is available)

Answer:

|  |
| --- |
| SELECT  CONCAT(ISNULL(Title, ''), ' ', FirstName, ' ', LastName) AS FullName  FROM Employees; |

* List the last name , first name of each person in one field

Answer:

|  |
| --- |
| SELECT  CONCAT(LastName, ', ', FirstName) AS LastNameFirstName  FROM Employees; |

* List the first initial . last initial . for each person

Answer:

|  |
| --- |
| SELECT  CONCAT(UPPER(SUBSTRING(FirstName, 1, 1)), '. ', UPPER(SUBSTRING(LastName, 1, 1)), '.') AS Initials  FROM Employees; |

* List using capital letters (uppercase) the first name and last name of each person

Answer:

|  |
| --- |
| SELECT  CONCAT(UPPER(FirstName), ' ', UPPER(LastName)) AS FullNameUppercase  FROM Employees; |

**Case statement**

Case fieldname

When value then value

When value the value

End

* List the first name, last name and marital status Married if M, Single if S

Answer:

|  |
| --- |
| SELECT  FirstName,  LastName,  CASE  WHEN MaritalStatus = 'M' THEN 'Married'  WHEN MaritalStatus = 'S' THEN 'Single'  ELSE 'Unknown'  END AS MaritalStatus  FROM Employees; |

* List the first name, last name and salaried status Salaried if 1, Wages if 0

Answer:

|  |
| --- |
| SELECT  FirstName,  LastName,  CASE  WHEN SalariedFlag = 1 THEN 'Salaried'  WHEN SalariedFlag = 0 THEN 'Wages'  ELSE 'Unknown'  END AS SalariedStatus  FROM Employees; |

* List the first name, last name and month during which he/she was born. Convert the numeric month to the name of the month i.e. 1 – January 2-February etc.

Answer:

|  |
| --- |
| SELECT  FirstName,  LastName,  CASE  WHEN MONTH(BirthDate) = 1 THEN 'January'  WHEN MONTH(BirthDate) = 2 THEN 'February'  WHEN MONTH(BirthDate) = 3 THEN 'March'  WHEN MONTH(BirthDate) = 4 THEN 'April'  WHEN MONTH(BirthDate) = 5 THEN 'May'  WHEN MONTH(BirthDate) = 6 THEN 'June'  WHEN MONTH(BirthDate) = 7 THEN 'July'  WHEN MONTH(BirthDate) = 8 THEN 'August'  WHEN MONTH(BirthDate) = 9 THEN 'September'  WHEN MONTH(BirthDate) = 10 THEN 'October'  WHEN MONTH(BirthDate) = 11 THEN 'November'  WHEN MONTH(BirthDate) = 12 THEN 'December'  ELSE 'Unknown'  END AS BirthMonth  FROM Employees; |

**Math operators**

+ , - , / , \*

* For each person, list first name, last name and the total amount of vacation and sick days that he/she has accumulated

Answer:

|  |
| --- |
| SELECT  FirstName,  LastName,  (VacationHours + SickLeaveHours) AS TotalVacationSickDays  FROM Employees; |

* For each person, list first name and last name and the amount of sick day if they are reduced by 5%

Answer:

|  |
| --- |
| SELECT  FirstName,  LastName,  SickLeaveHours \* 0.95 AS ReducedSickDays  FROM Employees; |

**Distinct**

* List each job title once

**Answer:**

|  |
| --- |
| **SELECT DISTINCT**  **JobTitle**  **FROM Employees;** |

* List each year during which a person in our database was born (each year should be listed once)

**Answer:**

|  |
| --- |
| **SELECT DISTINCT**  **YEAR(BirthDate) AS BirthYear**  **FROM Employees;** |

Retrieve a **subset** of the original set of data -- **where clause**

Comparison

Range

Set membership

Pattern match

null

**Comparison**

* List the names of all persons who have accumulated less than 10 sick days

Answer:

|  |
| --- |
| SELECT  CONCAT(FirstName, ' ', LastName) AS Name  FROM Employees  WHERE SickLeaveHours < 10; |

* List the names of all persons who have accumulated less than 10 sick days **or** vacation days

Answer:

|  |
| --- |
| SELECT  CONCAT(FirstName, ' ', LastName) AS Name  FROM Employees  WHERE SickLeaveHours < 10 OR VacationHours < 10; |

* List the names of all persons who have accumulated less than 10 sick days **and** vacation days

Answer:

|  |
| --- |
| SELECT  CONCAT(FirstName, ' ', LastName) AS Name  FROM Employees  WHERE SickLeaveHours < 10 AND VacationHours < 10; |

* List the names of all persons who were hired in 2008

Answer:

|  |
| --- |
| SELECT  CONCAT(FirstName, ' ', LastName) AS Name  FROM Employees  WHERE YEAR(HireDate) = 2008; |

* List the names of all persons who were born in December

Answer:

|  |
| --- |
| SELECT  CONCAT(FirstName, ' ', LastName) AS Name  FROM Employees  WHERE MONTH(BirthDate) = 12; |

* List the names of all female employees who were hired in 2008

Answer:

|  |
| --- |
| SELECT  CONCAT(FirstName, ' ', LastName) AS Name  FROM Employees  WHERE YEAR(HireDate) = 2008 AND Gender = 'F'; |

**Range**

* List the names of all employees who were hired between 12/20/2007 – 3/30/2008

Answer:

|  |
| --- |
| SELECT  CONCAT(FirstName, ' ', LastName) AS Name  FROM Employees  WHERE HireDate BETWEEN '2007-12-20' AND '2008-03-30'; |

* List the names of all employees who have accumulated 30-40 sick days

Answer:

|  |
| --- |
| SELECT  CONCAT(FirstName, ' ', LastName) AS Name  FROM Employees  WHERE SickLeaveHours BETWEEN 30 AND 40; |

* List the names of all employees born from 1975-1980

Answer:

|  |
| --- |
| SELECT  CONCAT(FirstName, ' ', LastName) AS Name  FROM Employees  WHERE YEAR(BirthDate) BETWEEN 1975 AND 1980; |

**Set Membership**

* List the names of all employees born in 1986, 1987, 1988, 1990

**Answer:**

|  |
| --- |
| **SELECT**  **CONCAT(FirstName, ' ', LastName) AS Name**  **FROM Employees**  **WHERE YEAR(BirthDate) IN (1986, 1987, 1988, 1990);** |

* List the names of all employees who have 10, 20, 30 or 40 vacation days

**Answer:**

|  |
| --- |
| **SELECT**  **CONCAT(FirstName, ' ', LastName) AS Name**  **FROM Employees**  **WHERE VacationHours IN (10, 20, 30, 40);** |

**Pattern Match**

* List the names of all persons who are managers

Answer:

|  |
| --- |
| SELECT  CONCAT(FirstName, ' ', LastName) AS Name  FROM Employees  WHERE JobTitle LIKE '%Manager%'; |

* List the names of all persons whose last name begins with an S

Answer:

|  |
| --- |
| SELECT  CONCAT(FirstName, ' ', LastName) AS Name  FROM Employees  WHERE LastName LIKE 'S%'; |

**null**

* List the name of each employee who doesn’t have a title listed

Answer:

|  |
| --- |
| SELECT  CONCAT(FirstName, ' ', LastName) AS Name  FROM Employees  WHERE JobTitle IS NULL; |

* List the full name of each employee including his/her title. Only list the employees who have a title.

Answer:

|  |
| --- |
| SELECT  CONCAT(FirstName, ' ', LastName, ' - ', JobTitle) AS FullNameWithTitle  FROM Employees  WHERE JobTitle IS NOT NULL; |

**Sorting**

* List the name of each employee sorted by lastname, firstname

Answer:

|  |
| --- |
| SELECT  CONCAT(FirstName, ' ', LastName) AS Name  FROM Employees  ORDER BY LastName, FirstName; |

* List the name and birthdate of each employee sorted by birthdate

Answer:

|  |
| --- |
| SELECT  CONCAT(FirstName, ' ', LastName) AS Name,  BirthDate  FROM Employees  ORDER BY BirthDate; |

* List the name and hiredate of each employee sorted by hiredate

Answer:

|  |
| --- |
| SELECT  CONCAT(FirstName, ' ', LastName) AS Name,  HireDate  FROM Employees  ORDER BY HireDate; |

* List the name and vacation days of each employee sorted by accumulated vacation days in descending order

Answer:

|  |
| --- |
| SELECT  CONCAT(FirstName, ' ', LastName) AS Name,  VacationHours  FROM Employees  ORDER BY VacationHours DESC; |

**Aggregate Functions**

sum(), count(), max(), min(), avg()

Aggregate all the data in a set(*lose the details*)

* How many employees are in the database?

Answer:

|  |
| --- |
| SELECT COUNT(\*) AS TotalEmployees  FROM Employees; |

* What is the maximum number of vacation days that have been accumulated?

Answer:

|  |
| --- |
| SELECT MAX(VacationHours) AS MaxVacationDays  FROM Employees; |

* What is the total number of sick days that have been accumulated?

Answer:

|  |
| --- |
| SELECT SUM(SickLeaveHours) AS TotalSickDays  FROM Employees; |

* What is the avg() number of vacation days that have been accumulated?

Answer:

|  |
| --- |
| SELECT AVG(VacationHours) AS AvgVacationDays  FROM Employees; |

* What is the most recent hire date of any employee?

Answer:

|  |
| --- |
| SELECT MAX(HireDate) AS MostRecentHireDate  FROM Employees; |

* Which birthdate is the longest time ago?

Answer:

|  |
| --- |
| SELECT MIN(BirthDate) AS OldestBirthDate  FROM Employees; |

Aggregate a subset of data

* How many women employees are in the database?

Answer:

|  |
| --- |
| SELECT COUNT(\*) AS TotalWomenEmployees  FROM Employees  WHERE Gender = 'F'; |

* How many sick days have been accumulated by the women?

Answer:

|  |
| --- |
| SELECT SUM(SickLeaveHours) AS TotalSickDaysForWomen  FROM Employees  WHERE Gender = 'F'; |

* How many vacation days have been accumulated by the men?

Answer:

|  |
| --- |
| SELECT SUM(VacationHours) AS TotalVacationDaysForMen  FROM Employees  WHERE Gender = 'M'; |

* What is the most recent hire date of an employee whose title is some type of “Manager”?

Answer:

|  |
| --- |
| SELECT MAX(HireDate) AS MostRecentManagerHireDate  FROM Employees  WHERE JobTitle LIKE '%Manager%'; |

* What is the minimum number of sick days accumulated by employees born in the 1970’s?

Answer:

|  |
| --- |
| SELECT MIN(SickLeaveHours) AS MinSickDaysFor1970s  FROM Employees  WHERE YEAR(BirthDate) BETWEEN 1970 AND 1979; |

* How many employees were born in the 1970’s?

Answer:

|  |
| --- |
| SELECT COUNT(\*) AS TotalEmployeesBornIn1970s  FROM Employees  WHERE YEAR(BirthDate) BETWEEN 1970 AND 1979; |

Aggregate groups of data -- **Group by clause**

* For each hire year, how many employees were hired that year

select year(hiredate) As [HireYear],count(businessentityid) As [Qty Hired] from Employees

group by year(hiredate)

HireYear Qty Hired

2006 1

2007 6

2008 14

2009 19

2010 5

2011 4



Data was sorted by HireDate to make it easier to visualize the grouping of the data

* How many employees have each title?

Answer:

|  |
| --- |
| SELECT Title, COUNT(\*) AS EmployeeCount  FROM Employees  GROUP BY Title  ORDER BY EmployeeCount DESC; |

* How many men and how many women are currently hired?

Answer:

|  |
| --- |
| SELECT Gender, COUNT(\*) AS EmployeeCount  FROM Employees  GROUP BY Gender; |

* How many employees are salaried and how many aren’t?

Answer:

|  |
| --- |
| SELECT SalariedFlag, COUNT(\*) AS EmployeeCount  FROM Employees  GROUP BY SalariedFlag; |

* For each age, how many employees are currently that age?

Answer:

|  |
| --- |
| SELECT DATEDIFF(YEAR, BirthDate, GETDATE()) AS Age, COUNT(\*) AS EmployeeCount  FROM Employees  GROUP BY DATEDIFF(YEAR, BirthDate, GETDATE())  ORDER BY Age; |

* How many vacation days have been accumulated by men, women?

Answer:

|  |
| --- |
| SELECT Gender, SUM(VacationHours) AS TotalVacationHours  FROM Employees  GROUP BY Gender; |

Restricting groups ----**Having clause**

* List the years during which at least 5 employees were hired. *Will 2006 be included*? *Why not*?

Answer:

|  |
| --- |
| SELECT YEAR(HireDate) AS HireYear, COUNT(\*) AS EmployeeCount  FROM Employees  GROUP BY YEAR(HireDate)  HAVING COUNT(\*) >= 5  ORDER BY HireYear; |

Whether or not it is included will depend on how many staff were employed in 2006. If less than five employees were employed in 2006, the results will not be displayed.

* For each age, how many employees are currently that age? Only list ages that have at least 5 employees

Answer:

|  |
| --- |
| SELECT DATEDIFF(YEAR, BirthDate, GETDATE()) AS Age, COUNT(\*) AS EmployeeCount  FROM Employees  GROUP BY DATEDIFF(YEAR, BirthDate, GETDATE())  HAVING COUNT(\*) >= 5  ORDER BY Age; |

* For which titles are there at least 5 employees listed?

Answer:

|  |
| --- |
| SELECT Title, COUNT(\*) AS EmployeeCount  FROM Employees  GROUP BY Title  HAVING COUNT(\*) >= 5  ORDER BY EmployeeCount DESC; |

**Select, From , Where, Group by, Having**

Starting from 2008, list the years that more than 10 employees were hired