

# AGGREGATION IN ADVENTUREWORKS



- Some of the Adventure Works Employees were hired using the new Adventure Works recruitment system. These are the employees whose employee ID is found in the **Job Candidate table**. Write a query to count the number of successful recruits.
  - Using a WHERE clause.
  - Without a WHERE clause. (Hint: In SQL, what are you able to count?)
- How many records are in the **employee table**?
- Join the **employee table** with the **department table**. Count the number of records for each department name and include a rollup. How does this rollup compare with the result in question 2? What is going on here?
- Redo query 3, but instead of counting records, count the number of distinct employee ids. Did this solve the problem?
- Now you have seen how misleading aggregate statistics can be. Doing any calculations depends on the correct logic of the table joins. Remembering that employees can change departments, redo query 3 once again to display the correct information.
- Modify this query to only show departments having 10 or more staff.
- Produce the report on the right, showing the current and former members of the Purchasing Department.
- Display the number of employees that live in each US state or Canadian province. Use column CountryRegionCode for 'US' or 'CA'; use column Name to display the state or province name. Display intermediate rollups.
- In Adventure Works, vendors also have addresses. Using the **Vendor** and **VendorAddress tables** as well as the employee tables, list all the employees and the vendors in the Mid-Atlantic region which consists of states: MA, CT, NY, PA, and NJ. Display the state abbreviation associated each vendor or employee. Show the first and last name of employees and the name of the vendor. Make sure you distinguish employees from vendors.
- Write a query to see if the EmployeePayHistory table has one row for every employee, or multiple rows for every employee. (Hint: use the count function.)
- Display Rob Walters' salary history (all fields from the EmployeePayHistory table). Include Rob's current job title.
- Adventure Works has a role (title) for both the 'Tool Designer' and the 'Senior Tool Designer'. Modify query 11 to display the salary history for all tool designers both junior and senior.
- Display the lowest amount, highest amount, and historical average that Adventure Works has ever paid any tool designer
- Adventure Works also hires engineers, who will have the word 'Engineer' in their job title. Create the report below, which lists every engineer's pay rate, but also the minimum, average, and maximum pay rates for all engineers. (Hint: You will have to use variables to get the min, max and average...then reuse those variables in another query.)

FirstName	LastName	Title	Status
Sheela	Word	Purchasing Manager	Current Member
Annette	Hill	Purchasing Assistant	Current Member
Reinout	Hillmann	Purchasing Assistant	Current Member
David	Bradley	Marketing Manager	Former Member
Erin	Hagens	Buyer	Current Member
Gordon	Hee	Buyer	Current Member
Eric	Kurjan	Buyer	Current Member
Linda	Meisner	Buyer	Current Member
Ben	Miller	Buyer	Current Member
Fukiko	Ogisu	Buyer	Current Member
Frank	Pellow	Buyer	Current Member
Arvind	Rao	Buyer	Current Member
Mikael	Sandberg	Buyer	Current Member

Report 7 - Purchasing Staff

FirstName	LastName	Title	Employee Rate	Minimum Engineer Rate	Average Engineer Rate	Maximum Engineer Rate
Gail	Erickson	Design Engineer	32.6923	32.6923	40.3245125	63.4615
Jossef	Goldberg	Design Engineer	32.6923	32.6923	40.3245125	63.4615
Sharon	Salavaria	Design Engineer	32.6923	32.6923	40.3245125	63.4615
Roberto	Tamburello	Engineering Manager	43.2692	32.6923	40.3245125	63.4615
Diane	Margheim	Research and Development Engineer	40.8654	32.6923	40.3245125	63.4615
Gigi	Matthew	Research and Development Engineer	40.8654	32.6923	40.3245125	63.4615
Michael	Sullivan	Senior Design Engineer	36.0577	32.6923	40.3245125	63.4615
Terri	Duffy	Vice President of Engineering	63.4615	32.6923	40.3245125	63.4615

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15. Boolean expressions can also be selected. Try out this query:

```
select EmployeeID, Gender, Gender = 'M'
from Employee
limit 20;
```

How did the third column represent males? How did it represent females? SQL uses values 1 and 0 for True and False. Which value corresponds to "true"?

16. Modify the above query to do some more calculations. Use the technique you learned in question 15. FYI, the Compa-Ratio of an Employee is defined as the ratio of their current pay rate against a relevant average.

Produce the report below:

FirstName	LastName	Title	Employee Rate	Compa-Ratio	At Minimum Salary?	At Maximum Salary?
Sharon	Salavaria	Design Engineer	32.6923	81.0730197916218	1	0
Gail	Erickson	Design Engineer	32.6923	81.0730197916218	1	0
Jossef	Goldberg	Design Engineer	32.6923	81.0730197916218	1	0
Roberto	Tamburello	Engineering Manager	43.2692	107.30247513841613	0	0
Diane	Margheim	Research and Development Engineer	40.8654	101.34133673655695	0	0
Gigi	Matthew	Research and Development Engineer	40.8654	101.34133673655695	0	0
Michael	Sullivan	Senior Design Engineer	36.0577	89.41881194471972	0	0
Teri	Duffy	Vice President of Engineering	63.4615	157.3769800688849	0	1

#### Report 16 - Engineering Salary Report 1

17. List the employee IDs, first and last names of employees who have worked in multiple departments.
18. List the employee IDs, first and last names of employees who have had compensation changes as shown below.

EmployeeID	FirstName	LastName	Number of Pay Changes
4	Rob	Walters	2
6	David	Bradley	2
24	David	Johnson	2
62	George	Li	2

#### Report 18 (Note: only first 4 rows displayed here, but you should show all.)

19. List the employee ID, first name, last name, job title and salary rate of the ten highest paid employees of AdventureWorks.
20. List the five most staffed departments of Adventure Works. (Remember how to exclude non-current department records.)
21. At Adventure Works, a "small" department is considered to be a department that has 15 or less employees. List the five most staffed **small** departments.