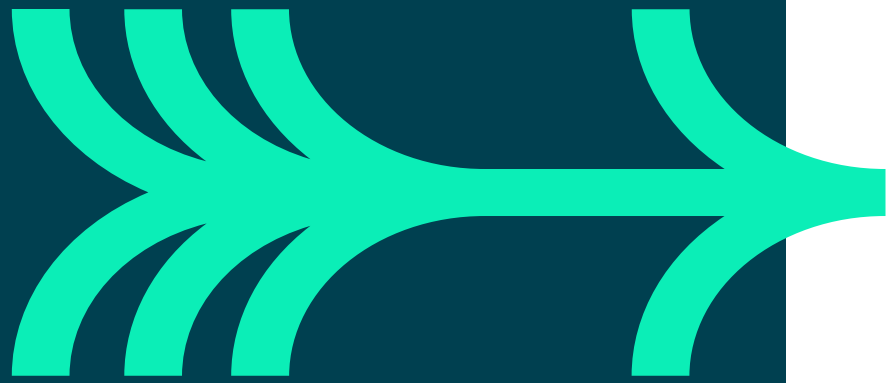
POWERING POTENTIAL

Grouping and Aggregation

OVERVIEW

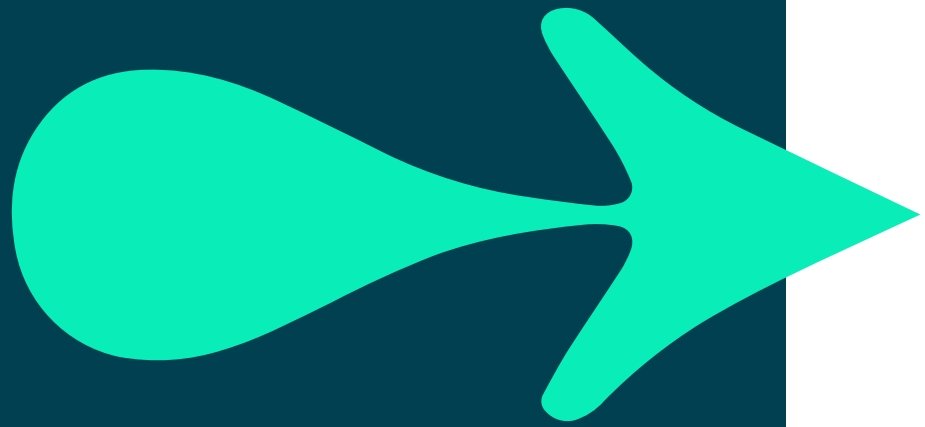
- Aggregate functions
- GROUP BY clause
- HAVING clause
- Hands-on lab



OBJECTIVES

At the end of this module you will be able to:

- write a query that calculates single aggregates.
- write a query that calculates aggregates for grouped information.
- write a query that aggregates, groups, and filters on calculated values.

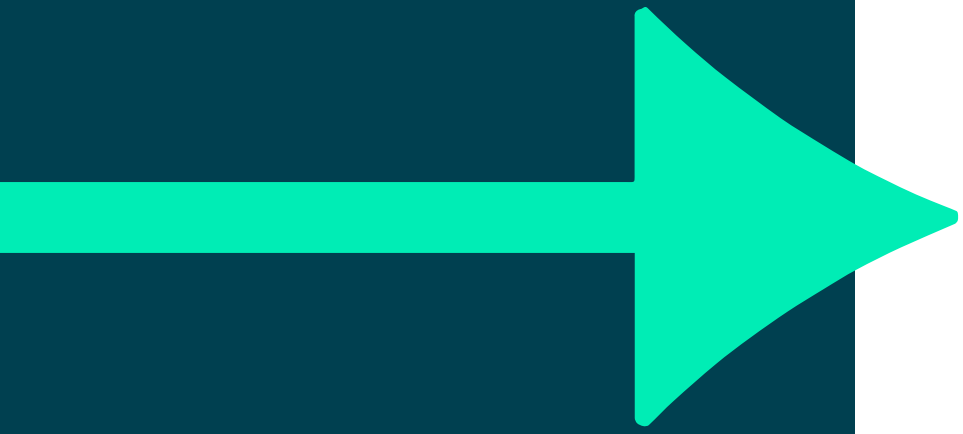


AGGREGATE FUNCTIONS

- **COUNT(*)**
- **COUNT(***<<expression>>***)**
- **SUM(***<<expression>>***)**
- **AVG(***<<expression>>***)**
- **MIN(***<<expression>>***) / MAX(***<<expression>>***)**
- **Statistical aggregates**
  → STDEV / STDEVP / VAR / VARP

GROUP BY CLAUSE

- SELECT <<field(s)>>
- FROM <<table(s)>>
- WHERE <<condition(s)>>
- **GROUP BY** *<<field(s)>>*
- HAVING *<<condition(s)>>*
- ORDER BY <<field(s)>>



Grouping aggregates

```
SELECT
   CategoryID,
   AVG(UnitPrice)
FROM
   dbo.Products
GROUP BY
   CategoryID
```

Results | Messages

	CategoryID	(No column name)
1	1	37.9791
2	2	23.0625
3	3	25.16
4	4	28.73
5	5	20.25
6	6	54.0066
7	7	32.37
8	8	20.6825

ent (55) | Northwind | 00:00:00 | 8 rows

```
SELECT
   CategoryID,
   AVG(UnitPrice)
FROM
   dbo.Products
GROUP BY
   CategoryID
ORDER BY 2 DESC
```

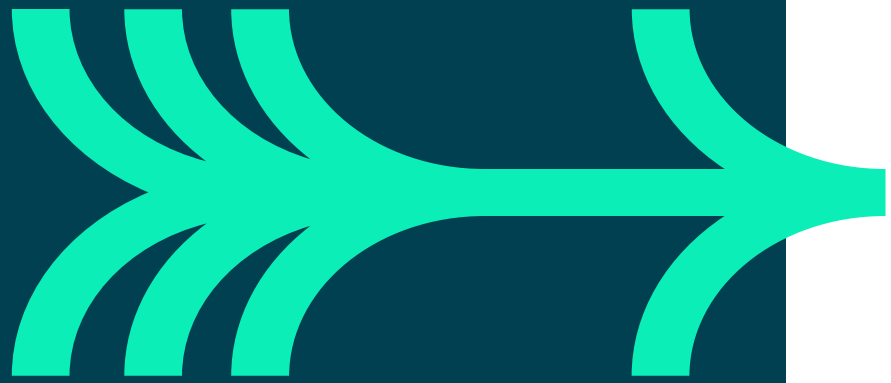
Results | Messages

	CategoryID	(No column name)
1	6	54.0066
2	1	37.9791
3	7	32.37
4	4	28.73
5	3	25.16
6	2	23.0625
7	8	20.6825
8	5	20.25

dent (55) | Northwind | 00:00:00 | 8 rows

HAVING CLAUSE

- SELECT <<field(s)>>
- FROM <<table(s)>>
- WHERE *<<row-level filter(s)>>*
- **GROUP BY** *<<field(s)>>*
- **HAVING** *<<group-level filters(s)>>*
- ORDER BY <<field(s)>>



Filtering grouped aggregates

```
SELECT
  CategoryID,
  AVG(UnitPrice)
FROM
  dbo.Products
GROUP BY
  CategoryID
HAVING
  AVG(UnitPrice) > 30
```

Results | Messages

	CategoryID	CategoryAvg
1	1	37.9791
2	6	54.0066
3	7	32.37

(52) | Northwind | 00:00:00 | 3 rows

```
SELECT
  CategoryID,
  AVG(UnitPrice)
FROM
  dbo.Products
GROUP BY
  CategoryID
HAVING
  CategoryID > 5
```

Results | Messages

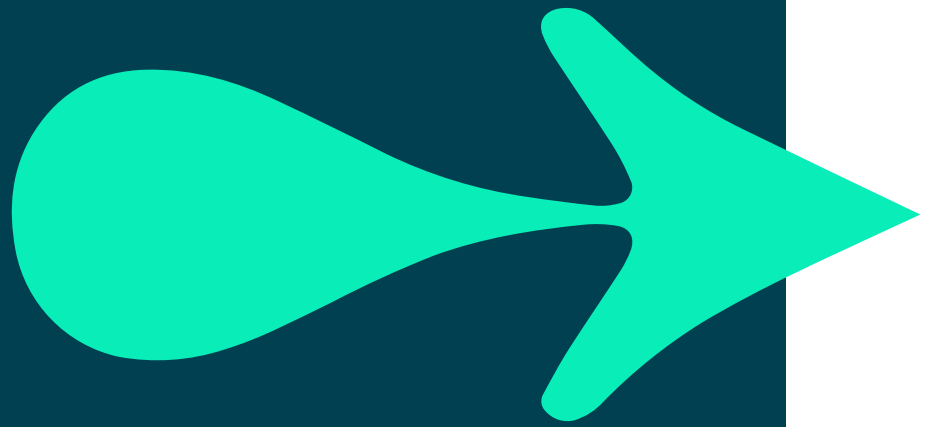
	CategoryID	CategoryAvg
1	6	54.0066
2	7	32.37
3	8	20.6825

nt (52) | Northwind | 00:00:00 | 3 rows

Hands-on lab

HANDS-ON LAB

- Single aggregates
- GROUP BY
- HAVING



Review

- Aggregate functions
- GROUP BY
- HAVING