

# Introduction and revenue

ANALYZING BUSINESS DATA IN SQL



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# Course overview

- **Chapter 1:** Revenue, cost, and profit
- **Chapter 2:** User-centric metrics
- **Chapter 3:** Unit economics and distributions
- **Chapter 4:** Generating an executive report



- Food delivery startup, similar to Uber Eats
- Stocks meals from eateries in bulk
- Offers users these meals through its app
- Users can order meals from several eateries in one order

# Revenue, cost, and profit

- **Profit:** The money a company makes minus the money it spends
- **Revenue:** The money a company makes
- **Cost:** The money a company spends
- $\text{Profit} = \text{Revenue} - \text{Cost}$

# Tables you'll need

## meals

meal_id	eatery	meal_price	meal_cost
-----	-----	-----	-----
0	'Leaning Tower of Pizza'	4	2
1	'Leaning Tower of Pizza'	3.5	1.25
2	'Leaning Tower of Pizza'	4.5	1.75
...	...	...	...

## orders

order_date	user_id	order_id	meal_id	order_quantity
-----	-----	-----	-----	-----
2018-06-01	0	0	4	3
2018-06-01	0	0	14	2
2018-06-01	0	0	15	1
...	...	...	...	...

# Calculating revenue

- **Example order**
  - Three (3) burgers at \$5 each
  - Two (2) sandwiches at \$3 each
  - **Total price:**  $3 \times \$5 + 2 \times \$3 = \$21$
- **Revenue:** Multiply each meal's price times its ordered quantity, then sum the results

## Query

```
SELECT
  order_id,
  SUM(meal_price * order_quantity) AS revenue
FROM meals
JOIN orders ON meals.meal_id = orders.meal_id
GROUP BY order_id;
```

# Working with dates

- `DATE_TRUNC(date_part, date)`
- **Examples**
  - `DATE_TRUNC('week', '2018-06-12') :: DATE` → `'2018-06-11'`
  - `DATE_TRUNC('month', '2018-06-12') :: DATE` → `'2018-06-01'`
  - `DATE_TRUNC('quarter', '2018-06-12') :: DATE` → `'2018-04-01'`
  - `DATE_TRUNC('year', '2018-06-12') :: DATE` → `'2018-01-01'`

# Revenue

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# Cost and Common Table Expressions (CTEs)

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# Cost

- The money that a company spends
- **Examples**
  - Employee salaries
  - Delivery fleet acquisition and maintenance
  - Meal costs

# Tables you'll need

## meals

meal_id	eatery	meal_price	meal_cost
-----	-----	-----	-----
0	'Leaning Tower of Pizza'	4	2
1	'Leaning Tower of Pizza'	3.5	1.25
2	'Leaning Tower of Pizza'	4.5	1.75
...	...	...	...

## stock

stocking_date	meal_id	stocked_quantity
-----	-----	-----
2018-06-01	0	76
2018-06-01	1	42
2018-06-01	2	56
...	...	...

# Calculating cost

## Query

```
SELECT
  meals.meal_id,
  SUM(meal_cost * stocked_quantity) AS cost
FROM meals
JOIN stock ON meals.meal_id = stock.meal_id
GROUP BY meals.meal_id
ORDER BY meals.cost DESC
LIMIT 3;
```

## Result

meal_id	cost
9	3820.0
7	3592.5
8	2332.5

# How do you combine revenue and cost?

- Profit = Revenue - Cost
- The individual queries for revenue and cost have been written

# Common Table Expressions (CTEs)

- Store a query's results in a temporary table
- Reference the temporary table in a following query

## Query

```
WITH table_1 AS
  (SELECT ...
   FROM ...),
table_2 AS
  (SELECT ...
   FROM ...)

SELECT ...
FROM table_1
JOIN table_2 ON ...
...
```

# CTEs in action

## Query

```
WITH costs_and_quantities AS (  
  SELECT  
    meals.meal_id,  
    SUM(stocked_quantity) AS quantity,  
    SUM(meal_cost * stocked_quantity) AS cost  
  FROM meals  
  JOIN stock ON meals.meal_id = stock.meal_id  
  GROUP BY meals.meal_id)  
  
SELECT  
  meal_id,  
  quantity,  
  cost  
FROM costs_and_quantities  
ORDER BY cost DESC  
LIMIT 3;
```

## Result

meal_id	quantity	cost
5	3062	12248
4	3142	10211.5
6	2989	8219.75

# Cost and Common Table Expressions (CTEs)

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# Profit

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# Recap

- **Revenue:** The money a company makes
  - Multiply each meal's price times its ordered quantity, then sum the results
- **Cost:** The money a company spends
  - Multiply each meal's cost times its stocked quantity, then sum the results
- Profit = Revenue - Cost

# Why is profit important?

- **Key Performance Indicator (KPI):** A metric with some value that a company use to measure its performance
- Profit per user: Identify the "best" users
- Profit per meal: Identify the most profitable meals
- Profit per month: Tracks profit over time

# Revenue vs profit

meal_id	meal_price	order_quantity	revenue	cost	profit
21	8	100	800	500	300
22	5	80	400	80	320

- Meal ID 21 has a higher price (8), ordered quantity (100), and revenue (800)
- However, meal ID 22 brings in more profit (320) for Delivr

# Bringing revenue and cost together

## Query

```
WITH revenue AS (  
  SELECT  
    meals.meal_id,  
    SUM(meal_price * meal_quantity) AS revenue  
  FROM meals  
  JOIN orders ON meals.meal_id = orders.meal_id  
  GROUP BY meals.meal_id),  
cost AS (  
  SELECT  
    meals.meal_id,  
    SUM(meal_cost * stocked_quantity) AS cost  
  FROM meals  
  JOIN stock ON meals.meal_id = stock.meal_id  
  GROUP BY meals.meal_id)
```

# Calculating profit

## Query

```
WITH revenue AS (...),
     cost AS (...)

SELECT
  revenue.meal_id,
  revenue,
  cost,
  revenue - cost AS profit
FROM revenue
JOIN cost ON revenue.meal_id = cost.meal_id
ORDER BY profit DESC
LIMIT 3;
```

## Results

meal_id	revenue	cost	profit
-----	-----	-----	-----
11	17664.0	3072	14592.0
10	16769.5	4573.5	12196.0
8	13995.0	2332.5	11662.5

# Profit

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