Soha Khalid

BWT – Data Engineering

Task 04

Using the same database previously created for Task 3.

1). Write a query to calculate the percentage contribution of each item's amount to its order's total amount, grouped by order_id. (Topics: Partition BY)

```
SELECT
   item_id,
   order_id,
   product_id,
   amount,
   (amount / SUM(amount) OVER (PARTITION BY order_id)) * 100 AS
percentage_contribution
FROM
   sales.items;
```

	item_id [PK] character varying (100)	order_id character varying (100)	product_id character varying (100)	amount double precision	percentage_contribution double precision
1	caadf311-7efb-47b9-bd48-ccd4d0e9d628	0077622c-f789-402f-8f27-a8ef29b92f99	64ffc99c-e5a3-4f70-91b2-fa31222f8d86	32.05	100
2	d7c40e3c-3c7c-48d1-a657-03e72e34e8...	007c6893-fc40-44f8-a794-741ad1bfd9c7	450f053d-08b4-49ae-924c-f912bbe02888	52.99	100
3	ccc44ebb-07d3-4d71-91c6-22c52bba1c...	00860b6c-6b06-4694-8708-f7aa4375d5...	cc85db23-9f26-48cd-8ab0-38a4371a6d...	99.77	46.78765709998124
4	d2d2243f-1e68-4e2d-8fb9-31c8d2862416	00860b6c-6b06-4694-8708-f7aa4375d5...	4d044ae3-3ad8-45ee-bcaf-8cfacd176a9c	39.54	18.542487338210467
5	ed82300c-05b2-468f-8056-5a61c89a39...	00860b6c-6b06-4694-8708-f7aa4375d5...	ace1822f-f4f6-4efa-a817-75aa06114d18	73.93	34.66985556180829
6	68e9bbd1-10c4-4518-8320-e7cf83dcb93a	00871b7a-6c23-4916-aeff-e22ee8e27ea9	46813cb4-184b-4a92-9812-241e549b79...	65.86	100
7	da44883b-5b94-4107-b7e8-18dd3a6c2b...	00aa2373-5f66-4165-8ebf-7724b31402...	86ccaa00-c144-499a-af8b-75ca06d9d546	10.07	27.51366120218579
8	90563a9f-0c7b-4e55-b7aa-3f3d7231bf15	00aa2373-5f66-4165-8ebf-7724b31402...	2c563c3a-10b0-4b40-85b0-d0b207e328...	26.53	72.48633879781421
9	52d92662-c37f-488b-a57c-e6ec730533d6	00ce4abc-b40a-4918-a245-5489bea007...	57820e03-7cd2-4846-a534-46138e9704...	91.49	50.558134394341295
10	351553bf-2cd9-446a-ad36-0242fca9f064	00ce4abc-b40a-4918-a245-5489bea007...	01f7c6ae-b37a-4925-bfa2-0c3899a15a49	89.47	49.44186560565871
11	fb5ec1aa-433a-4d12-85f3-a91822e6caf3	01ae2353-d4b0-4d78-aed1-8601b1dd35...	87de697e-e78d-45b9-a089-24b740e748...	22.43	100
12	caedbb47-c41b-405c-bf9b-82b1695ce87f	01c88a63-a876-47fc-a466-3b6a935d91...	cf8d4b15-0790-4f32-9c03-3ea95b58e022	86.03	100
13	f08cb216-3e39-40ba-baf8-6bcfffaf2316	02708129-1014-4295-a762-b45381239...	fe594eb7-1402-4766-833b-2dc00d0bdfc5	86.68	78.1957600360848
14	ada4e915-d826-4bd5-b119-60feb666a3e1	02708129-1014-4295-a762-b45381239...	5c475ac0-10c8-4119-aa8e-46558c2f6974	24.17	21.8042399639152
15	5692018c-2c02-4d59-b8e9-750c3d7b76...	02a76bfd-d417-4c03-9ab2-2bd69d21e0...	635f04cc-8e22-4668-bf13-e3226ddba8de	8.46	100
16	920e08d5-336f-4813-a147-48ebd17045...	02d24f1c-8fe7-4e46-92ed-e53063cd98f1	db2feb72-eaa9-40ab-8deb-1c18766328...	1.24	100
17	0fdafa02-f998-4db4-ad75-b8bb34e992bd	02ec7b3b-bff5-4b91-ab34-fdbdbc684533	be19c519-553c-4bc7-971f-fa7ae20bb1b1	48.42	100
18	f445a4e6-61c5-4d38-bf64-1409cb06ed0a	04042ddd-2771-4c45-9c65-f1bf3108d0f8	47faba99-0c8a-4fe0-911a-3650d4aab8ab	3.11	100

Total rows: 1000 of 1000 Query complete 00:00:00.307 Ln 8, Col 17

2). Write a query to rank orders by their total amount within each customer, ordering them from highest to lowest total amount. (Topics: Window functions like RANK, PARTITION BY, and ORDER BY)

```
SELECT
    order_id,
    customer_id,
    total_amount,
    RANK() OVER (PARTITION BY customer_id ORDER BY total_amount DESC) AS rank_within_customer
FROM
    sales.orders;
```

	order_id [PK] character varying (100)	customer_id character varying (100)	total_amount double precision	rank_within_customer bigint
1	a2f7c3af-4f45-413a-951a-aaf4a8f35c95	003ee86f-4e17-4b39-bb6a-30897fe0a1...	380.06	1
2	e8e664fb-189a-48f6-8815-9075fc391b83	00d40438-5bf3-4f1b-aaa9-32130a7cd6...	691.4	1
3	e0aeaf57-5169-4300-bc73-cbd81c52b9...	01624052-d9dc-4150-bd53-255b82ce6...	903.59	1
4	df8c9be5-054e-462f-8d10-0a1f906f72d4	01624052-d9dc-4150-bd53-255b82ce6...	414.86	2
5	40d3d4b8-4f19-415a-a027-b08fd264e7...	01624052-d9dc-4150-bd53-255b82ce6...	322.84	3
6	a234d0cc-04dd-4e98-822c-bb44d5833d...	01624052-d9dc-4150-bd53-255b82ce6...	242.15	4
7	4baad587-2be9-463e-bd5c-db912ad70b...	01624052-d9dc-4150-bd53-255b82ce6...	188.72	5
8	0b346353-a7af-471c-bd6d-46a2d07f2d...	017058e3-3c0b-4f2f-a359-06cba4a8b5ff	950.95	1
9	483bc108-36ae-431d-9591-95a71189a...	017058e3-3c0b-4f2f-a359-06cba4a8b5ff	700.13	2
10	1e6ee7e4-dbb6-4604-b9b5-aebdbbd417...	017058e3-3c0b-4f2f-a359-06cba4a8b5ff	353.06	3
11	8327ea9e-8830-4a6b-81f0-64ab25c6bd...	01e21aec-f14b-4290-b2c5-365415aa91...	455.66	1
12	0a99496a-9f49-4b9e-8859-f644a7d621...	02330f3a-f0ff-48b8-93a2-708dac55911c	613.23	1
13	14d70d83-5b80-4d0d-b744-ac4887f350...	02330f3a-f0ff-48b8-93a2-708dac55911c	213.92	2
14	06ad59be-4f04-40f6-b631-f59ae57bd193	02330f3a-f0ff-48b8-93a2-708dac55911c	40.31	3
15	16bd3583-07cd-453e-b4c5-50b2ce3c18...	0342d88c-2518-424b-9c52-65bd1c623...	788.54	1
16	f8969532-55d2-44e3-92f3-d67418ee15...	0342d88c-2518-424b-9c52-65bd1c623...	757.15	2
17	aded0df5-801e-4810-9ad1-15185808a4...	0367e393-082e-4db3-bea7-b8f222184f...	574.78	1
18	3a87b3a8-1d97-4b95-9dd9-e13e313cd9...	04fabd69-1813-4b77-bafc-6bcc02ecaed6	841.13	1

Total rows: 1000 of 1000 Query complete 00:00:00.289 Ln 10, Col 1

3). Write a query to calculate the average price of products supplied by each supplier. Exclude suppliers who have no products in the result. (Topics: JOINS, AGGREGATE FUNCTIONS, GROUP BY)

```
SELECT
    s.supplier_id,
    s.name,
    AVG(p.price) AS average_price
FROM
    sales.suppliers s
JOIN
    sales.products p ON s.supplier_id = p.supplier_id
GROUP BY
    s.supplier_id, s.name
HAVING
    COUNT(p.product_id) > 0;
```

	supplier_id [PK] character varying (100)	name character varying (100)	average_price double precision
1	08e2b063-f6fa-4ab1-90c9-e384fa1e957f	Romero Inc	135.04333333333332
2	2584a949-df20-4453-8bdf-5223c451176e	Robinson-Harris	273.07
3	72921f5a-c981-4f2a-9558-ed71d7c4502e	Romero-Holland	30.62
4	8d11deee-bb85-42f3-bf3a-cf0a7438875d	Murphy, Watts and Mcgrath	318.6
5	1ddfcc5d-bb48-454b-9ac7-a09f663a8aaa	Miller, Moore and Collins	35.58
6	54457ba9-f426-4867-bc80-f479aa1815dd	Short, Johnson and Smith	344.62
7	6c98c4d8-8056-4fff-8483-1d413a3e0b42	Olsen, Stanton and Thompson	222.53
8	469c598f-5d17-48d4-ae52-845bcaeba6...	Pearson-Kelley	263.135
9	cb02444f-0889-426e-ac49-6d20e2f381cf	Walker, Graham and Hernandez	279.5833333333333
10	8a0ca381-b7ed-4a10-ab5f-8d9707fc60b6	Kelly Group	170.12
11	d43a5bd5-56ca-493c-9739-3baf745941ef	Reyes-Heath	428.68
12	34469e07-707f-4321-b6ef-d5778d54bce5	Clayton Inc	170.54
13	a0499a71-84c3-4e5d-94d8-02c4854a22...	Pineda and Sons	306.39
14	13ccc02c-b49d-4e48-8cd1-73b07adf39ff	Duffy Inc	167.07
15	51ec6577-56be-4f98-8e00-6764cb67de...	Anderson-Gutierrez	184.5
16	ee31fcfc-5162-4e2e-ad26-b563dcbd3097	Bauer-Branch	251.36
17	3e8ab5e7-9d53-4201-93bd-1162d09770...	Cowan-Cuevas	263.08
18	52c2191c-e401-4fbb-96e9-432f35496e04	Burke, Munoz and Henderson	475.02

Total rows: 639 of 639 Query complete 00:00:00.173 Ln 26, Col 6

4). Write a query to count the number of products in each category. Include categories with zero products in the result set. (WINDOW FUNCTIONS, AGGREGATE FUNCTIONS, JOINS, GROUP BY)

```
SELECT
    c.category_id,
    c.name AS category_name,
    COUNT(p.product_id) AS product_count
FROM
    sales.categories c
LEFT JOIN
    sales.products p ON c.category_id = p.category
GROUP BY
    c.category_id, c.name;
```

	category_id [PK] character varying (100)	category_name character varying (100)	product_count bigint
1	ad342bd3-ec42-4115-8a37-3476ec44d8...	knowledge	0
2	9f64dc0c-cbb7-49cb-a1e5-21c8d0a3cc36	include	0
3	5e4884dd-1933-464e-976e-e5edabc906...	teacher	0
4	bdd851fc-67d3-4f41-a999-aca6c9a76bb3	surface	0
5	c82498fa-df83-4eb0-b5a6-1fae0c1514a8	enjoy	0
6	f94cb2c2-3c01-40e6-8725-8c5af78dc759	college	0
7	7fa5275b-accb-406c-8062-5a84c7a4ce9c	happy	0
8	f9635372-aebd-468b-be4e-67ded597e9...	ask	0
9	13329aba-afd2-435b-a623-899bf75c8fa4	play	0
10	2592b1fa-8c94-469b-8042-8f9e517be7b9	dinner	0
11	e3d349bc-3a2d-47f4-ac83-e986b8ce4a64	hotel	0
12	03362bf4-2039-491f-9c20-4609467a851e	able	0
13	3e9ec414-89fc-4a20-a693-1e42001ca22e	room	0
14	a9b86361-fe42-4778-89a9-2ccdbfbee435	however	0
15	4617245f-37ef-4460-b7b5-8fa932bf8297	third	0
16	0b6a73f1-f94e-4118-8d65-ee625c0fec37	attorney	0
17	2382f65b-1691-40ca-abd5-d6507b64a9...	by	0
18	488f17b6-4012-4515-985e-d81cc79e8a...	property	0

Total rows: 1000 of 1000 Query complete 00:00:00.257 Ln 43, Col 27

5). Write a query to retrieve the total amount spent by each customer, along with their name and phone number. Ensure customers with no orders also appear with a total amount of 0. (WINDOW FUNCTIONS, AGGREGATE FUNCTIONS, JOINS, GROUP BY)

```
SELECT
    c.customer_id,
    c.name,
    c.phone,
    COALESCE(SUM(o.total_amount), 0) AS total_amount_spent
FROM
    sales.customers c
LEFT JOIN
```

```
    sales.orders o ON c.customer_id = o.customer_id
GROUP BY
    c.customer_id, c.name, c.phone;
```

	customer_id [PK] character varying (100)	name character varying (100)	phone character varying (50)	total_amount_spent double precision
1	90830a3a-690e-4daf-b077-b2fc61d54d84	Teresa Wolfe	936.961.0396	0
2	c795518f-d41e-4d3b-9207-e39bae958700	Mr. Joshua Mccarty	814-775-5211	0
3	8fc06916-4990-4ae5-b7fc-746b7d1cc363	Paul Reed	622-311-9552x47655	0
4	b467d22c-d62b-45fa-8eda-2f25efdbeb50	Lisa Chambers	428.472.0348	887.97
5	8a077b9f-df3d-4167-be01-29aafea4e06e	James Harris	836-620-6948	1274.18
6	319103d7-a567-4c7d-bc17-edf1ee97e262	Victoria Mann	445-494-8288x92895	498.67
7	2f166832-4955-45c2-abec-67f735bd05bb	Gregory Larsen MD	(554)253-9728	61.81
8	d4bd16a9-0564-44e8-853f-3a41d05809c3	Jennifer Jones	646-986-4472x46376	0
9	b5c67a28-97fc-4346-9f88-1088b4d1eb5f	Richard Brown	6429614509	0
10	f79a8ea0-1c24-489b-bb66-6b6d8245648d	Nicholas Jensen	+1-658-472-4841x311	0
11	d56b852b-3bf6-4bbd-873c-1668c6be4dcd	Angela Macias	971-797-7508x189	635.44
12	6f926c93-c26f-49c6-b680-8875fe6b9678	Victoria Hernandez	+1-761-658-9499	253.87
13	46d28a98-5845-45e8-83e3-f16160d28ac1	Dr. Alyssa Sawyer PhD	963.735.4946	0
14	15868797-081c-4787-98d7-f322eb8a8282	Jasmine Caldwell	335-508-7069	568.8
15	e2fdd902-2b5e-4ddd-b1ac-50b40d3f5890	Danielle Foster	(877)385-7715x00829	0
16	58a275a7-0059-47c8-b5ca-8dd81f9b3f6e	Lee Yu	323-733-8316x6995	841.3799999999999
17	d6f0e587-c036-46c0-b49b-fde192723178	Ebony Johnson	308.414.3857x6517	0
18	d816deb2-f88a-4c67-bb15-6fac8feadbc2	Carolyn Benton	844-517-9989x7185	0

Total rows: 1000 of 1000 Query complete 00:00:00.349 Ln 56, Col 36