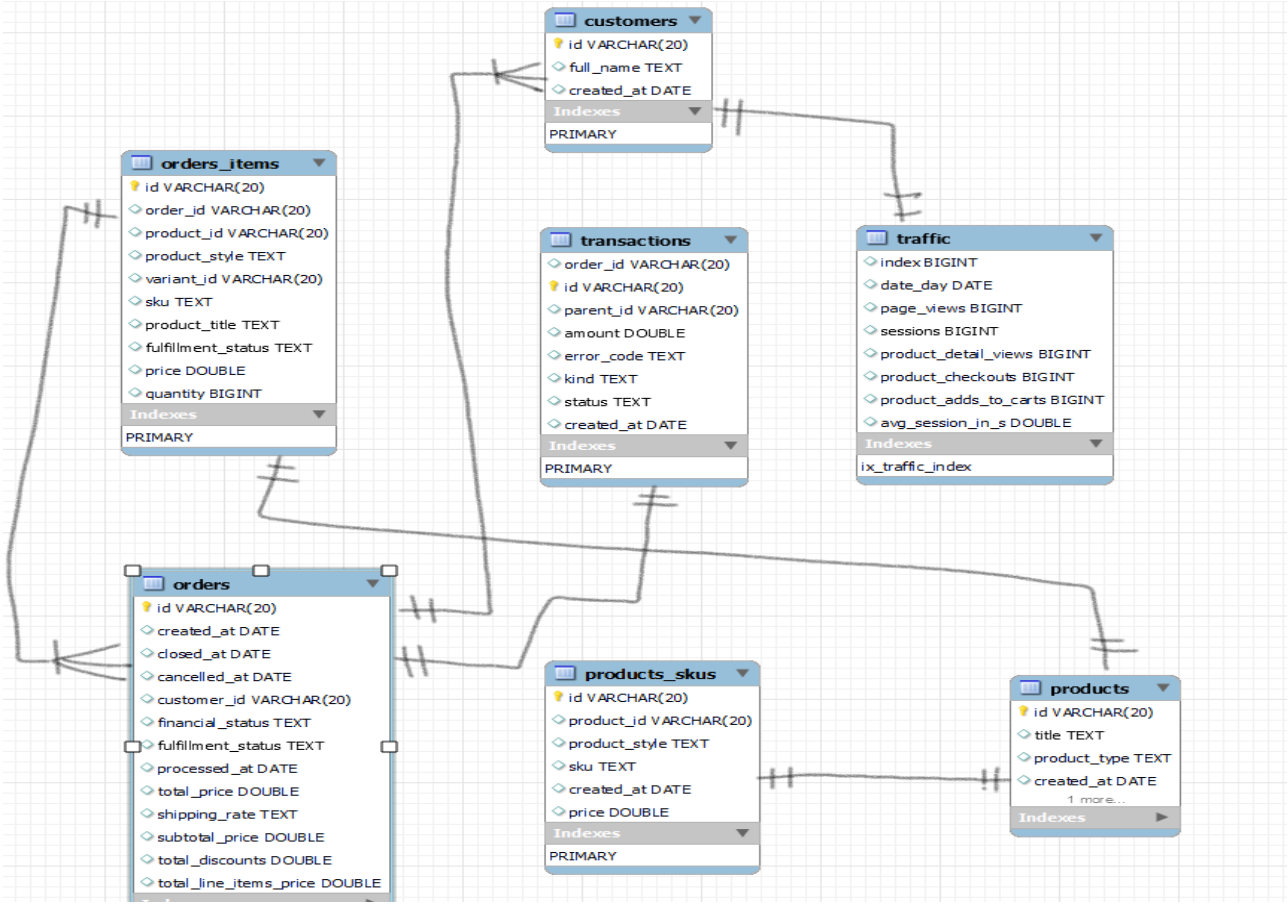
1. Describe the relationship between each table.



2. Find the Product type, Product style, and SKU number for each product. (You may join different tables together to get your proper result)

```
1  SELECT *
2  FROM onlineshop.products
3  LEFT JOIN onlineshop.products_skus
4  ON products.id = products_skus.product_id
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: | Fetch rows:

id	title	product_type	created_at	published_at	id	product_id	product_style	sku	created_at	price
12927633311	6d1eeb39ae340f8d01d93779f80595ed	Dress	2016-08-18	2016-08-18	50547148895	12927633311	d510a563d66df17daf05e72a6af123b7	f3f40edb94bf3d322f28784d2c452154	2016-08-18	29
12927633311	6d1eeb39ae340f8d01d93779f80595ed	Dress	2016-08-18	2016-08-18	50547148575	12927633311	d510a563d66df17daf05e72a6af123b7	349731a6ba64020654b6d93ec0ba7d27	2016-08-18	29
12927633311	6d1eeb39ae340f8d01d93779f80595ed	Dress	2016-08-18	2016-08-18	50547148383	12927633311	d510a563d66df17daf05e72a6af123b7	b3682e875274baa457fecb1b6e12707d	2016-08-18	29
12927633311	6d1eeb39ae340f8d01d93779f80595ed	Dress	2016-08-18	2016-08-18	50547148127	12927633311	d510a563d66df17daf05e72a6af123b7	9f320e1be7f83e727ba066c6c4f75c66	2016-08-18	29
12927633311	6d1eeb39ae340f8d01d93779f80595ed	Dress	2016-08-18	2016-08-18	50547147871	12927633311	d510a563d66df17daf05e72a6af123b7	0ecbe4277237cb1207b31815166d37b9	2016-08-18	29
12927632095	0e6e45ad42707e9732119f4b98aec7ce	Bomber	2016-08-18	2016-08-18	52581995807	12927632095	dd804c4025d230467823200aa82e9219	10f1e0b561d1d72c65b3af51e0a802b2	2016-09-13	39.5
12927632095	0e6e45ad42707e9732119f4b98aec7ce	Bomber	2016-08-18	2016-08-18	52581988639	12927632095	dd804c4025d230467823200aa82e9219	2efe288ebfb60d8e6345410c50b00d3d	2016-09-13	39.5
12927632095	0e6e45ad42707e9732119f4b98aec7ce	Bomber	2016-08-18	2016-08-18	52581958367	12927632095	dd804c4025d230467823200aa82e9219	4ab3d723ac9a841a2c7ecc5d476db842	2016-09-13	39.5
12927632095	0e6e45ad42707e9732119f4b98aec7ce	Bomber	2016-08-18	2016-08-18	52581945503	12927632095	dd804c4025d230467823200aa82e9219	66b8a2dcd518917680dd05c225b54d3b	2016-09-13	39.5
12927632095	0e6e45ad42707e9732119f4b98aec7ce	Bomber	2016-08-18	2016-08-18	52581927327	12927632095	dd804c4025d230467823200aa82e9219	9f46b905d97698e3bba29a231f1c57b9	2016-09-13	39.5
12927632095	0e6e45ad42707e9732119f4b98aec7ce	Bomber	2016-08-18	2016-08-18	50547118495	12927632095	dd804c4025d230467823200aa82e9219	a1a57ecb0ac3a97b1df2a24cde30c80b	2016-08-18	39.5
12927632095	0e6e45ad42707e9732119f4b98aec7ce	Bomber	2016-08-18	2016-08-18	50547118303	12927632095	dd804c4025d230467823200aa82e9219	e26c77e84b91c9939c23c3e3ef66475a	2016-08-18	39.5
12927632095	0e6e45ad42707e9732119f4b98aec7ce	Bomber	2016-08-18	2016-08-18	50547118111	12927632095	dd804c4025d230467823200aa82e9219	1cb56f6cbfb366d1bc0031297b3e07a5	2016-08-18	39.5
12927632095	0e6e45ad42707e9732119f4b98aec7ce	Bomber	2016-08-18	2016-08-18	50547117919	12927632095	dd804c4025d230467823200aa82e9219	14ee8594f2f8f9e0ffea747e9f62af9f	2016-08-18	39.5
12927632095	0e6e45ad42707e9732119f4b98aec7ce	Bomber	2016-08-18	2016-08-18	50547117727	12927632095	dd804c4025d230467823200aa82e9219	f8e9bf1495c45676e8822e7ad4c97a93	2016-08-18	39.5
12927625695	27d598cb953eff3667f7d051fe795284	Shirts	2016-08-18	2018-02-05	50547004383	12927625695	08ba660ec5643520a73108bef6f3ddd6	878cddb2f377e2787dea8075d3f56954	2016-08-18	25
12927625695	27d598cb953eff3667f7d051fe795284	Shirts	2016-08-18	2018-02-05	50547004127	12927625695	08ba660ec5643520a73108bef6f3ddd6	ab9f91a5910ce7f309a79d59f8272867	2016-08-18	25
12927625695	27d598cb953eff3667f7d051fe795284	Shirts	2016-08-18	2018-02-05	50547003935	12927625695	08ba660ec5643520a73108bef6f3ddd6	e15cad320fd96d17302ae4c531400e8a	2016-08-18	25
12927625695	27d598cb953eff3667f7d051fe795284	Shirts	2016-08-18	2018-02-05	50547002591	12927625695	08ba660ec5643520a73108bef6f3ddd6	c5b63ade8eba850c6b2f0c85a4757cec	2016-08-18	25
12927625695	27d598cb953eff3667f7d051fe795284	Shirts	2016-08-18	2018-02-05	50547002143	12927625695	08ba660ec5643520a73108bef6f3ddd6	3f9bc744a58310bdd1c7e5c91afdf6fe	2016-08-18	25

Result 2

3. What's the total number of orders for each product type? What's the most popular product type?

```
1 •    SELECT p.product_type,
2          COUNT(p.product_type) AS Num_of_Product
3      FROM onlineshop.products p
4      JOIN onlineshop.orders_items oi
5      ON oi.product_id = p.id
6      GROUP BY p.product_type
7      HAVING COUNT(p.product_type) > 0
8      ORDER BY Num_of_Product DESC
9
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

product_type	Num_of_Product
Top	6952
Shirts	5183
Dress	4481
Trousers	2677
Sweater	2135
Hooide	1996
Skirt	1727
Jacket	1678
TANK	1140
Tunic	1112
Blouse	984
Shorts	939
Jumpsuit	922
Blazer	874
Cardigan	846
hoodie	764
Bomber	672
mini	328
Pullover	316
Tousers	303
Bodysuit	277

4. What are the monthly total sales and monthly total orders? How about the total orders for each product over time?

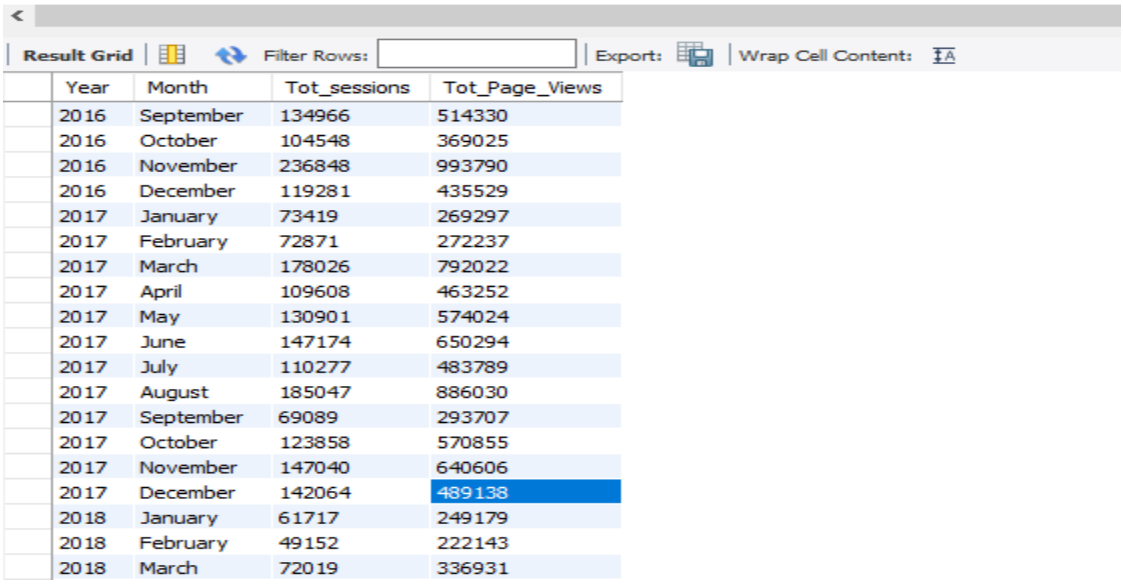
```
1 •    SELECT DISTINCT YEAR(created_at) AS Year,
2          MONTH(created_at) AS Month,
3          COUNT(id) AS Tot_Order_Per_Month,
4          FORMAT(SUM(subtotal_price), 2) AS Tot_Sales_Per_Month
5      FROM onlineshop.orders o
6      GROUP BY YEAR(created_at), MONTH(created_at)
7      ORDER BY YEAr(created_at), month(created_at)
8
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Year	Month	Tot_Order_Per_Month	Tot_Sales_Per_Month
2016	8	1554	119,367.00
2016	9	1298	83,954.50
2016	10	854	55,099.90
2016	11	2514	158,107.54
2016	12	774	52,407.30
2017	1	511	28,647.70
2017	2	824	44,054.92
2017	3	1387	95,833.55
2017	4	1334	68,156.98
2017	5	1150	76,009.10
2017	6	1502	112,354.78
2017	7	929	52,915.10
2017	8	1686	132,750.41
2017	9	661	40,384.88
2017	10	974	87,252.46
2017	11	1045	73,055.81
2017	12	342	20,469.84
2018	1	600	35,019.56
2018	2	580	31,726.39
2018	3	839	53,625.77

5. How about traffic over time e.g. page views, sessions? Do you see any relationship between traffic and orders over time?

```
1 •  SELECT YEAR(date_day) AS Year,
2        MONTHNAME(date_day) AS Month,
3        SUM(sessions) as Tot_sessions,
4        SUM(page_views) AS Tot_Page_Views
5    FROM onlineshop.traffic
6    GROUP BY YEAR(date_day), MONTH(date_day);
```



Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Year	Month	Tot_sessions	Tot_Page_Views
2016	September	134966	514330
2016	October	104548	369025
2016	November	236848	993790
2016	December	119281	435529
2017	January	73419	269297
2017	February	72871	272237
2017	March	178026	792022
2017	April	109608	463252
2017	May	130901	574024
2017	June	147174	650294
2017	July	110277	483789
2017	August	185047	886030
2017	September	69089	293707
2017	October	123858	570855
2017	November	147040	640606
2017	December	142064	489138
2018	January	61717	249179
2018	February	49152	222143
2018	March	72019	336931

To: XXX Online Shop

From: Te Hsin Kung

Date: 20/09/22

Subject: Recommendation for Improving other sales and website traffic

This Recommends

1. Boost gift cards sales
2. Give some seasonal discount
3. Figure out why total sessions are lower than page views

Background

Database is a collection of structured information that is electronically stored in the computer system. For eCommerce database mainly focused more on the presentation and how the data behavior goes.

Recommendation

1. Gift cards are beneficial to both customers and owners. Here are several benefits including increased brand awareness, boosting turnover, and loyalty, it is also easy to give away, etc.

2. Some of the reasons why the sales declined hard between each month could be not fulfilling the customer's needs, the product or service isn't unique, or no organic web traffic to support sales.

3. Talk to the marketing team and website development department to see why the page views are declining while the total sessions are higher during the year 2018.

Discussion

1. There are only 3 gift card orders from 2016 to 2018.

2. I noticed that the sales between seasons to season drop hard. For instance, in November 2017 the sales were 73,000 but declined straight to 20,000.

3. The total session in December 2017 was 142,064 and the total page views were 489,138. However, the total order in that month is only 342 which is the lowest between 2016 to 2018.

Next Steps

1. Invest some time creating gift card-centric banners on the website in order to make your customers or visitors aware that you are selling them. Create them with specific themes or events to boost sales.

2. I would recommend you try using the Google Analytics tool to maintain these problems. Also, have some seasonal events and discounts to catch customers' eyes.

3. Google analytics has the ability to visualize the conversion rate, turnover rate, sessions, pageviews, etc. It is a very useful and powerful tool for your website. Try to figure out why users only click on the website but didn't view more pages. (Ex: is the user not satisfied with the user interface or the products didn't catch customers' eye?)

Exhibits

Exhibit 1

```
1 •  SELECT p.product_type,
2        COUNT(p.product_type) AS Num_of_Product
3    FROM onlineshop.products p
4    JOIN onlineshop.orders_items oi
5    ON oi.product_id = p.id
6    GROUP BY p.product_type
7    HAVING COUNT(p.product_type) > 0
8    ORDER BY Num_of_Product ASC
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

product_type	Num_of_Product
Gift Card	3
Accessory	15
midi	16
Pants	30
maxi	74
crop top	136
romper	222
Bodysuit	277
Tousers	303
Pullover	316
mini	328
Bomber	672
hoodie	764
Cardigan	846
Blazer	874
Jumpsuit	922
Shorts	939
Blouse	984

Exhibit 2

```
1 •  SELECT DISTINCT YEAR(created_at) AS Year,
2        MONTH(created_at) AS Month,
3        COUNT(id) AS Tot_Order_Per_Month,
4        FORMAT(SUM(subtotal_price), 2) AS Tot_Sales_Per_Month
5    FROM onlineshop.orders o
6    GROUP BY YEAR(created_at), MONTH(created_at)
7    ORDER BY YEAr(created_at), month(created_at)
8
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Year	Month	Tot_Order_Per_Month	Tot_Sales_Per_Month
2016	8	1554	119,367.00
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2017	8	1686	132,750.41
2017	9	661	40,384.88
2017	10	974	87,252.46
2017	11	1045	73,055.81
2017	12	342	20,469.84
2018	1	600	35,019.56
2018	2	580	31,726.39
2018	3	839	53,625.77

Exhibit 3

```
1 •  SELECT YEAR(date_day) AS Year,
2        MONTHNAME(date_day) AS Month,
3        SUM(sessions) as Tot_sessions,
4        SUM(page_views) AS Tot_Page_Views
5    FROM onlineshop.traffic
6    GROUP BY YEAR(date_day), MONTH(date_day);
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Year	Month	Tot_sessions	Tot_Page_Views
2016	September	134966	514330
2016	October	104548	369025
2016	November	236848	993790
2016	December	119281	435529
2017	January	73419	269297
2017	February	72871	272237
2017	March	178026	792022
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2017	May	130901	574024
2017	June	147174	650294
2017	July	110277	483789
2017	August	185047	886030
2017	September	69089	293707
2017	October	123858	570855
2017	November	147040	640606
2017	December	142064	489138
2018	January	61717	249179
2018	February	49152	222143
2018	March	72019	336931

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