

- What's the best-selling product based on the data provided
 - Figure out what's the 'best-selling' meaning, one is 'highest sales amount', the other one is 'most product quantity'
 - By product category, order by quantity

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```

1 SELECT
2   Base_Category,
3   Category,
4   SUM( amount ) AS total_m,
5   SUM( quant ) AS total_q /*select what we need to show in the result*/
6 FROM
7   sony_sales AS s
8   INNER JOIN sony_product ON s.product_id = sony_product.Product_ID
9   /*table_sales join with table_product as product_id equal*/ |
10 GROUP BY
11   Base_Category,
12   Category /*classify product*/
13 ORDER BY
14   total_q DESC
15 LIMIT 10

```

信息 结果 1 剖析 状态

Base_Category	Category	total_m	total_q
Digital Camera	WX series	20067237	11388
Digital Camera	HX series	28653263	11087
Digital Video	HD series	22898460	8572
Game CD	PS4	1478103	8521
Headset	WF series	10066758	5742
Headset	WH series	14819106	5694
Phone	Xperia	20983379	5581
Camera lens	ZA OSS series	36613000	5467

- By product category, order by amount

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```

1 SELECT
2   Base_Category,
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4   SUM( amount ) AS total_m,
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9   /*table_sales join with table_product as product_id equal*/
10 GROUP BY
11   Base_Category,
12   Category /*classify product*/
13 ORDER BY
14   total_m DESC |
15 LIMIT 10

```

信息 结果 1 剖析 状态

Base_Category	Category	total_m	total_q
TV	Z9G series	336048966	1034
Camera lens	GM series	79360800	2580
TV	X9000F series	46436904	3096
Camera lens	ZA OSS series	36613000	5467
TV	X9500G series	30680912	2088
Digital Camera	HX series	28653263	11087
TV	A9F series	25848966	1034
Digital Camera	RX series	23551080	2020

- More details, add product id, order by quantity and amount

```

1 SELECT
2   s.product_id,
3   Base_Category,
4   Category,
5   Price,
6   SUM( amount ) AS total_m,
7   SUM( quant ) AS total_q /*select what we need to show in the result*/
8 FROM
9   sony_sales s
10  INNER JOIN sony_product p ON s.product_id = p.Product_ID
11 GROUP BY
12   s.product_id /*classify product*/
13 ORDER BY
14   total_q DESC
15 LIMIT 10

```

product_id	Base_Category	Category	Price	total_m	total_q
DSC-WX700	Digital Camera	WX series	2799	8198271	2929
WF-SP900	Headset	WF series	1999	5835081	2919
CUH-2109B B01	Game Console	PlayStation 4	2199	6412284	2916
HDR-CX450	Digital Video	HD series	2580	7512960	2912
DSC-WX220	Digital Camera	WX series	1084	3149020	2905
PCH-2009B ZA22	Game Console	PlayStation Vita	1099	3175011	2889
WH-1000XM3	Headset	WH series	2899	8352019	2881
PCCS-75011	Game CD	PS4	173	497548	2876

```



1 SELECT
2   s.product_id,
3   Base_Category,
4   Category,
5   Price,
6   SUM( amount ) AS total_m,
7   SUM( quant ) AS total_q /*select what we need to show in the result*/
8 FROM
9   sony_sales s
10  INNER JOIN sony_product p ON s.product_id = p.Product_ID
11 GROUP BY
12   s.product_id /*classify product*/
13 ORDER BY
14   total_m DESC
15 LIMIT 10

```

product_id	Base_Category	Category	Price	total_m	total_q
KD-98Z9G	TV	Z9G series	529999	274009483	517
KD-85Z9G	TV	Z9G series	119999	62039483	517
SEL400F28GM	Camera lens	GM series	95000	49020000	516
KD-85X9000F	TV	X9000F series	46999	24251484	516
KD-65A9F	TV	A9F series	29999	15509483	517
KD-75X9500G	TV	X9500G series	25999	13441483	517
SEL1670Z	Camera lens	ZA OSS series	4600	13206600	2871
Xperia XZ3	Phone	Xperia	4739	13098596	2764

- (1) Based on quantity can see the top 10 products are:
DSC-WX700, WF-SP900, CUH-2109B B01, HDR-CX450, DSC-WX220, PCH-2009B ZA22, WH-1000XM3, PCCS-75011, SEL1670Z, HDR-CX405
- (2) Based on amount can see the top 10 are:
KD-98Z9G, KD-85Z9G, SEL400F28GM, KD-85X9000F, KD-65A9F, KD-75X9500G, SEL1670Z, Xperia XZ3, SEL35F14Z, KD-55A9F
- (3) We can easily see TV has the highest sale amount, the most quantity belong to Digital Camera

- So, we can select TV and Digital Camera to make a further investigation on how product unit price influence sales amount and quantity




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```

1 SELECT
2   p.product_id,
3   Price,
4   Category,
5   Base_Category,
6   SUM( amount ) AS total_m,
7   SUM( quant ) AS total_q
8 FROM
9   sony_sales AS s
10  INNER JOIN sony_product p ON s.product_id = p.Product_ID
11 WHERE Base_Category='TV '
12 GROUP BY
13   product_id
14 ORDER BY
15   total_m DESC
16 LIMIT 10

```

product_id	Price	Category	Base_Category	total_m	total_q
KD-98Z9G	529999	Z9G series	TV	274009483	517
KD-85Z9G	119999	Z9G series	TV	62039483	517
KD-85X9000F	46999	X9000F series	TV	24251484	516
KD-65A9F	29999	A9F series	TV	15509483	517
KD-75X9500G	25999	X9500G series	TV	13441483	517
KD-55A9F	19999	A9F series	TV	10339483	517
KD-75X8588G	18999	X8588G series	TV	9822483	517
KD-55X9500G	8999	X9500G series	TV	9484946	1054
KD-49X9000F	7499	X9000F series	TV	7776463	1037
KD-65X9500G	14999	X9500G series	TV	7754483	517


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```

1 SELECT
2   p.product_id,
3   Price,
4   Category,
5   Base_Category,
6   SUM( amount ) AS total_m,
7   SUM( quant ) AS total_q
8 FROM
9   sony_sales AS s
10  INNER JOIN sony_product p ON s.product_id = p.Product_ID
11 WHERE Base_Category='Digital Camera '
12 GROUP BY
13   product_id
14 ORDER BY
15   total_q DESC |
16 LIMIT 10

```

product_id	Price	Category	Base_Category	total_m	total_q
DSC-WX700	2799	WX series	Digital Camera	8198271	2929
DSC-WX220	1084	WX series	Digital Camera	3149020	2905
DSC-HX350	2199	HX series	Digital Camera	6293538	2862
DSC-WX350	1349	WX series	Digital Camera	3812274	2826
DSC-HX90	2449	HX series	Digital Camera	6820465	2785
DSC-HX99	3399	HX series	Digital Camera	9371043	2757
DSC-WX500	1799	WX series	Digital Camera	4907672	2728
DSC-HX400	2299	HX series	Digital Camera	6168217	2683
DSC-RX100M6	7999	RX series	Digital Camera	7887014	986
DSC-RX10M4	10799	RX series	Digital Camera	5583083	517

In conclusion, for TV: the unit price>10000 for the quantity is around 520, the highest amount is KD-98Z9G as its price is 529999; for Digital Camera: the price is around 3000 as the quantity is between 2500 and 3000, the unit price>5000 the quantity get much lower.

2. What's the difference between member and non-member in sales amount and product category

- Create a new table containing the info if the customer is member or not

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```
1 CREATE TABLE member_2 AS
2 SELECT product_id, SUM(amount) AS total, a.member_id, SUM(quant) AS T_quant,
3 CASE WHEN b.Member_id=a.member_id
4 THEN 'yes'
5 ELSE 'no'
6 END AS true_member
7 FROM sony_sales a
8 LEFT JOIN sony_members b ON a.member_id=b.Member_id
9 GROUP BY product_id, member_id;
```

信息 剖析 状态

CREATE TABLE member_2 AS
SELECT product_id, SUM(amount) AS total, a.member_id, SUM(quant) AS T_quant,
CASE WHEN b.Member_id=a.member_id
THEN 'yes'
ELSE 'no'
END AS true_member
FROM sony_sales a
LEFT JOIN sony_members b ON a.member_id=b.Member_id
GROUP BY product_id, member_id
> OK
> 时间: 1.226s

member_id	product_id	total	T_quant	true_member
30132990738	PCCS-75022	447	3	yes
30388108493	PCCS-75011	1730	10	yes
30244392790	DSC-RX100M6	23997	3	no
30275342052	KD-65X9000F	12999	1	yes
30176024140	DSC-RX100M6	23997	3	yes
30176024140	DSC-RX10M4	10799	1	yes
50007312888	SEL135F18GM	13500	1	yes
30387963523	FDR-AX45	17640	3	no
50077572071	KD-65X9500G	14999	1	no
50070330248	SEL1670Z	36800	8	yes
50058755494	CUH-2109B B01	15393	7	yes
30274029712	SEL100400GM	17500	1	yes
30145342319	PCCS-75011	519	3	no
30230426975	HDR-CX680	21480	6	yes
30121317659	Xperia XZ3	18956	4	yes
50070330248	SEL50F14Z	11000	1	yes
30388051621	KD-65X9000F	7499	1	yes

- Inner join the table member_2 and table sony_product

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```
1 SELECT a.*, T_amount/number AS avg_amount
2 FROM
3 (SELECT true_member, COUNT(DISTINCT member_id) AS number,
4 SUM(total) AS T_amount
5 FROM member_2
6 GROUP BY true_member) a
7 ORDER BY T_amount DESC
```

信息 结果 1 剖析 状态

true_member	number	T_amount	avg_amount
yes	5434	609755902	112211.2444
no	1769	178450912	100876.7168

From the result can see the number of member is about 3 times more than non-member, and the total purchase amount is much larger than non-number, while the average purchase amount per person got little difference.

- Figure out the most popular product among the member and non-member

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```
1 SELECT
2   m.product_id,
3   Base_Category,
4   true_member,
5   SUM(T_quant) AS sum_tq,
6   SUM( total ) AS T_amount
7 FROM
8   sony_product p
9   INNER JOIN member_2 m ON p.Product_ID = m.product_id
10 WHERE
11   true_member = 'yes'
12 GROUP BY
13   product_id
14 ORDER BY
15   sum_tq DESC
16 LIMIT 10;
```

product_id	Base_Category	true_member	sum_tq	T_amount
WF-SP900	Headset	yes	2307	4611693
DSC-HX350	Digital Camera	yes	2263	4976337
DSC-WX700	Digital Camera	yes	2259	6322941
HDR-CX450	Digital Video	yes	2254	5815320
DSC-WX220	Digital Camera	yes	2245	2433580
PCCS-75011	Game CD	yes	2245	388385
CUH-2109B B01	Game Console	yes	2241	4927959
CUH-7209B	Game Console	yes	2236	6258564
PCH-2009B ZA22	Game Console	yes	2225	2445275
WH-1000XM3	Headset	yes	2222	6441578

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```
1 SELECT
2   m.product_id,
3   Base_Category,
4   true_member,
5   SUM(T_quant) AS sum_tq,
6   SUM( total ) AS T_amount
7 FROM
8   sony_product p
9   INNER JOIN member_2 m ON p.Product_ID = m.product_id
10 WHERE
11   true_member = 'no'
12 GROUP BY
13   product_id
14 ORDER BY
15   sum_tq DESC
16 LIMIT 10;
```

product_id	Base_Category	true_member	sum_tq	T_amount
CUH-2109B B01	Game Console	no	675	1484325
DSC-WX700	Digital Camera	no	670	1875330
DSC-WX350	Digital Camera	no	669	902481
PCCS-70032	Game CD	no	666	132534
HDR-CX405	Digital Video	no	664	1248320
PCH-2009B ZA22	Game Console	no	664	729736
DSC-WX220	Digital Camera	no	660	715440
WH-1000XM3	Headset	no	659	1910441
HDR-CX450	Digital Video	no	658	1697640
SEL1670Z	Camera lens	no	657	3022200

Members' favorite is Headset WF-SP900; while non-member prefer Game Console CUH-2109B B01.

3. What's the main difference in sales amount and product category according to register channel

```

1 SELECT b.*, total/transaction_num AS ave
2 FROM (SELECT channel,
3          SUM(amount) AS total,
4          COUNT(transaction_id) AS transaction_num
5        FROM sony_members m
6        LEFT JOIN sony_sales s ON m.member_id=s.member_id
7        GROUP BY channel
8        ORDER BY total DESC) b

```

信息	结果 1	剖析	状态
channel	total	transaction_num	ave
Online	223648076	8089	27648.4208
APP	190170752	7098	26792.1600
WeChat	137037966	5176	26475.6503
Product	58899108	2013	29259.3681

Among these 4 channels, online channel got the highest total sales amount, product got the highest average sales amount.

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```

1 SELECT Base_Category, Category, channel, SUM(amount) AS total, COUNT(transaction_id) AS transaction_num
2 FROM sony_product p
3 INNER JOIN (SELECT product_id,
4                channel,
5                amount,
6                transaction_id
7              FROM sony_members m
8              LEFT JOIN sony_sales s ON m.member_id=s.member_id) b ON p.Product_ID=b.product_id
9 GROUP BY channel, Category
10 ORDER BY total DESC;

```

信息	结果 1	剖析	状态	
Base_Category	Category	channel	total	transaction_num
TV	Z9G series	Online	97379701	299
TV	Z9G series	APP	80259748	252
TV	Z9G series	WeChat	54699838	162
TV	Z9G series	Product	27249913	87
Camera lens	GM series	Online	22490500	731
Camera lens	GM series	APP	18015100	600
Camera lens	GM series	Wechat	14899400	483
TV	X9000F series	Online	12660648	569
TV	X9000F series	APP	11197763	484
Camera lens	ZA OSS series	Online	9848400	555
Camera lens	ZA OSS series	APP	9580700	530
TV	X9000F series	Wechat	9030892	404

For these 4 channels the best-selling product all is TV Z9G series. From the top 10 result, each kind of product can be bought by different register channel, there are more kinds of product were bought by online and APP, less by product channel. No significant correlation between register channel and product category.