CODE BASICS

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Ad_Hoc_Insights

Consumer Goods

BACKGROUND

- **AtliQ Hardware** is a leading computer hardware producer based in India with significant international expansion.
- The company is known for its innovative products and **high quality hardware solutions**
- AtliQ Hardware established itself as a key player in both **domestic and global hardware market.**

PROBLEM STATEMENT

- The management has noticed **lack of quick, actionable insights** for making data-informed decisions.

- To address this, the company plans to **expand its data analytics team** by hiring junior data analysts.

- **Tony Sharma,** The Data Analytics Director, has devised a **SQL Challenge** to assess both the technical and soft skills of potential candidates.

ESSENTIAL ELEMENT

September 2019 - August 2020

FY 2020

September 2020 - August 2021

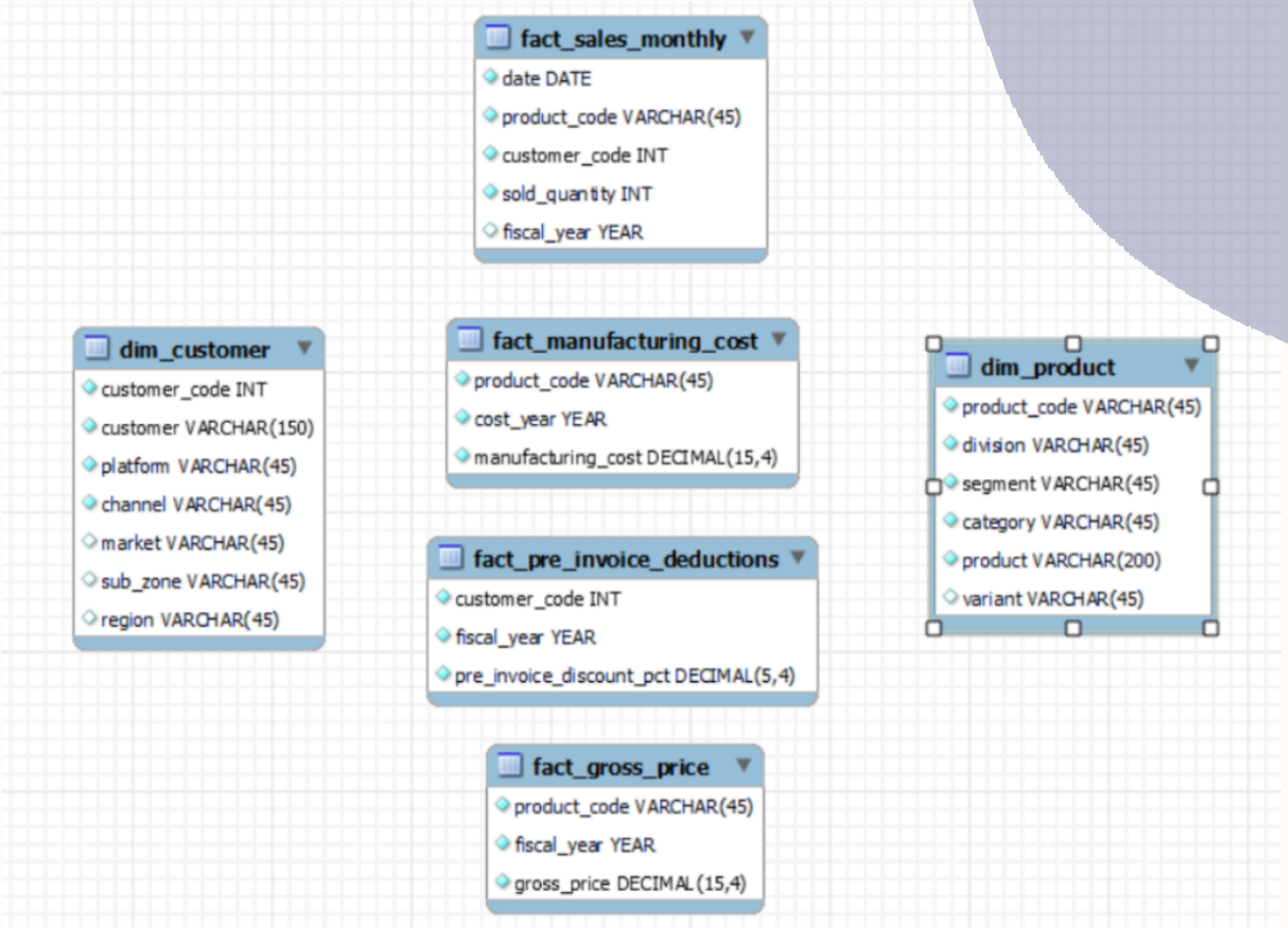
FY 2021

ER Diagram

Star Schema

Dimension Table

Fact Table



INSIGHTS

1.Provide the list of markets in which customer “**AtliQ Exclusive**” operates its business in the **APAC** region

Query

```
select distinct market from dim_customer

 where customer = "Atliq Exclusive" and region = "APAC"
```

Output

	market
▶	India
	Indonesia
	Japan
	Philiphines
	South Korea
	Australia
	Newzealand
	Bangladesh

2.What is the percentage of unique product increase in 2021 Vs 2020?
The final output contains these fields,

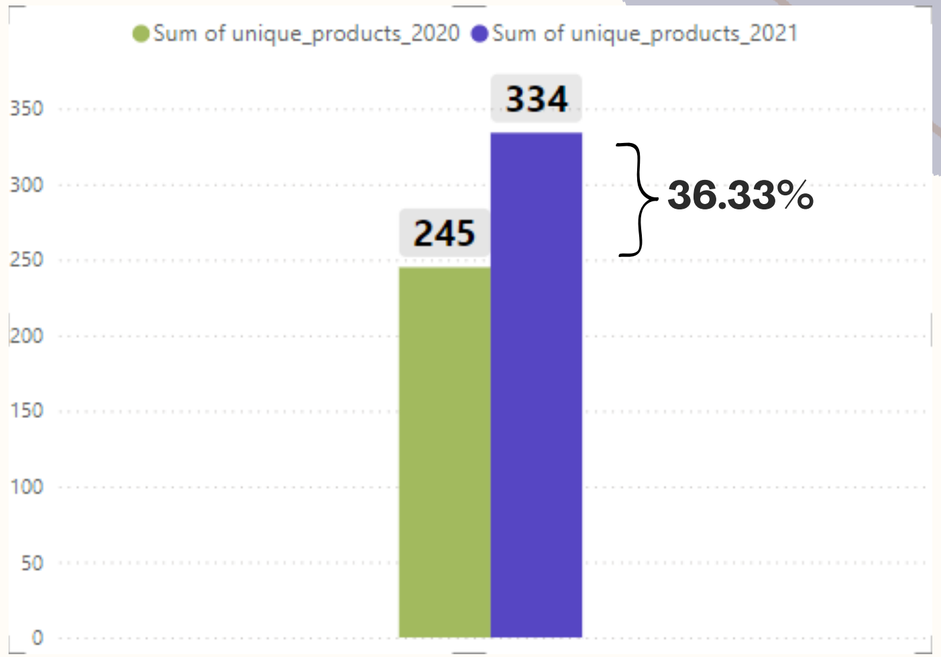
unique_products_2020,
unique_products_2021,
Percentage_change.

Query

```
with cte1 as (select
        count(distinct product_code) as unique_products_2020,
            (select
               count(distinct product_code)
              from fact_sales_monthly
        where fiscal_year='2021') as unique_products_2021
    from fact_sales_monthly
  where fiscal_year='2020')
select *,
  round(((unique_products_2021-unique_products_2020)/unique_products_2020)*100,2) as pct_chnge
from cte1;
```

	unique_products_2020	unique_products_2021	pct_chnge
▶	245	334	36.33

Output



3.Provide a report with all the unique product counts for each segment and sort them in descending order of product counts.

The final output contains 2 fields,

Segment

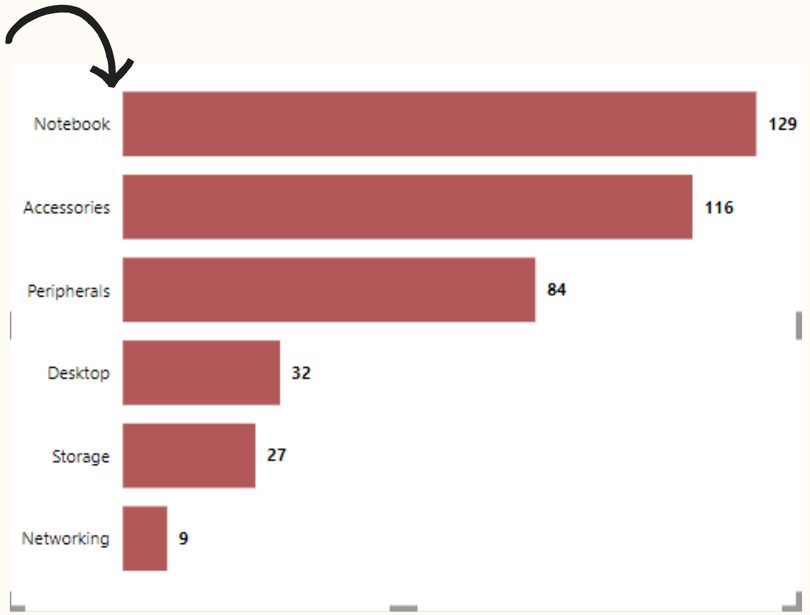
Product_count

Query

```sql
SELECT
    segment,
    COUNT(product_code) AS product_count
FROM
    dim_product
GROUP BY
    segment
ORDER BY
    product_count DESC;
```

Output

segment	product_count
Notebook	129
Accessories	116
Peripherals	84
Desktop	32
Storage	27
Networking	9



4. FOLLOW UP**:** Which segment had the most increase in unique products in 2021 Vs 2020?
The final output contains these fields,

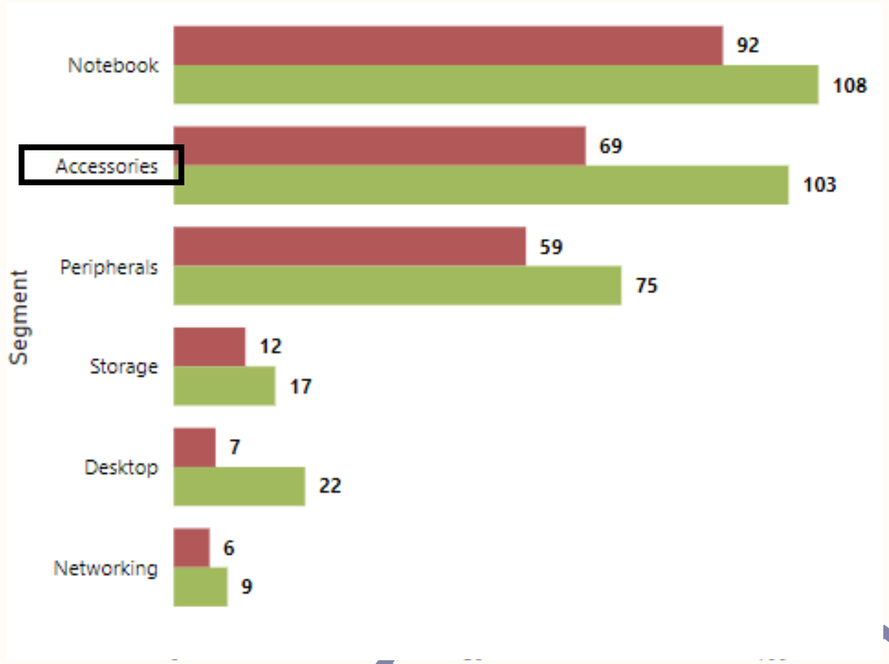
Segment, Product_count_2020, Product_count_2021, Difference.

Query

```
WITH cte1 AS(
    SELECT
      segment,
      COUNT(DISTINCT f.product_code) AS product_count_2020
  FROM dim_product d
  JOIN fact_sales_monthly f
    ON d.product_code=f.product_code
  WHERE fiscal_year=2020
  GROUP BY d.segment
),
cte2 AS(
  SELECT
    segment ,
    COUNT(DISTINCT f.product_code) AS product_count_2021
  FROM dim_product d
  JOIN fact_sales_monthly f
    ON d.product_code=f.product_code
  WHERE fiscal_year=2021
  GROUP BY d.segment
)
  select
   cte1.segment,
   cte1.product_count_2020,
   cte2.product_count_2021,
   product_count_2021-product_count_2020 as difference
     from cte1
  join cte2
  using(segment)
```

Output

	segment	product_count_2020	product_count_2021	difference
▶	Accessories	69	103	34
	Desktop	7	22	15
	Networking	6	9	3
	Notebook	92	108	16
	Peripherals	59	75	16
	Storage	12	17	5



5. Get the products that have the highest and lowest manufacturing costs.
The final output contain these fields,

Product_code,
Product,
Manufacturing_cost

Query

```
SELECT
   d.product_code,
   d.product,
   f.manufacturing_cost
FROM
   dim_product d
JOIN
   fact_manufacturing_cost f
   ON d.product_code=f.product_code
WHERE
   manufacturing_cost= (SELECT MAX(manufacturing_cost) AS max_ FROM fact_manufacturing_cost) OR
   manufacturing_cost= (SELECT MIN(manufacturing_cost) AS min_ FROM fact_manufacturing_cost)
ORDER BY
   manufacturing_cost DESC;
```

Output

	product_code	product	manufacturing_cost	
▶	A6121110208	AQ HOME Allin1 Gen 2	263.4207	**MAX**
	A2118150101	AQ Master wired x1 Ms	0.8654	**MIN**

6.Generate a report which contains the top **5** customers who received an average high pre_invoice_discount_pct for the fiscal year 2021 and in the Indian market.
The final output contains these fields,

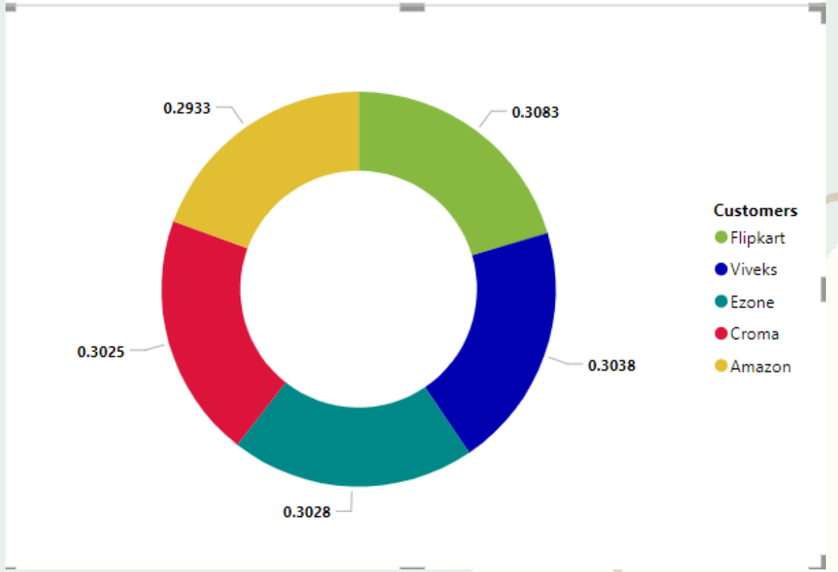
Customer_code,
Customer,
Avg_discount_pct.

Query

```
select
    c.customer_code,
    c.customer,
    concat(round(avg(pre_invoice_discount_pct)*100,2),"%") as avg_discount_pt
 from dim_customer c
 join fact_pre_invoice_deductions f
    on c.customer_code=f.customer_code
 where fiscal_year=2021
    and market = "India"
    and pre_invoice_discount_pct>(
      select avg(pre_invoice_discount_pct)
      from fact_pre_invoice_deductions
)
GROUP BY c.customer_code, c.customer
ORDER BY avg_discount_pt DESC
LIMIT 5;
```

Output

customer_code	customer	avg_discount_pt
90002009	Flipkart	30.83%
90002006	Viveks	30.38%
90002003	Ezone	30.28%
90002002	Croma	30.25%
90002016	Amazon	29.33%



7. Get the complete report of the Gross Sales Amount for the customer "**AtliQ Exclusive**" for each month. This analysis helps to get an idea of low and high-performing months and take strategic decisions.

The final report contains these columns,

Month
Year
Gross_sales_amount.

Query

```
SELECT
      MONTHNAME(s.date) AS month,
      s.fiscal_year as year,
      ROUND(SUM((gross_price*sold_quantity)/1000000),3) AS gross_sales_amount
      FROM fact_gross_price f
   JOIN fact_sales_monthly s
ON f.product_code=s.product_code and
f.fiscal_year=s.fiscal_year
   JOIN dim_customer d
ON d.customer_code=s.customer_code
WHERE customer="Atliq Exclusive" and
s.fiscal_year>2019 and
s.fiscal_year<2022
GROUP BY month, s.fiscal_year;
```

Output

month	year	gross_sales_amount
September	2020	4.496
October	2020	5.136
November	2020	7.523
December	2020	4.830
January	2020	4.741
February	2020	3.996
March	2020	0.379
April	2020	0.395
May	2020	0.784
June	2020	1.695
July	2020	2.551
August	2020	2.787
September	2021	12.354
October	2021	13.219
November	2021	20.465
December	2021	12.945
January	2021	12.399
February	2021	10.130
March	2021	12.144
April	2021	7.312
May	2021	12.150
June	2021	9.825
July	2021	12.092
August	2021	7.179

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Query

```
SELECT
      MONTHNAME(s.date) AS month,
      s.fiscal_year as year,
      ROUND(SUM((gross_price*sold_quantity)/1000000),3) AS gross_sales_amount
      FROM fact_gross_price f
   JOIN fact_sales_monthly s
ON f.product_code=s.product_code and
f.fiscal_year=s.fiscal_year
   JOIN dim_customer d
ON d.customer_code=s.customer_code
WHERE customer="Atliq Exclusive" and
s.fiscal_year>2019 and
s.fiscal_year<2022
GROUP BY month, s.fiscal_year;
```

Output

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8. In which quarter of 2020, got the maximum total_sold_quantity?
The final output contains these fields sorted by the total_sold_quantity,

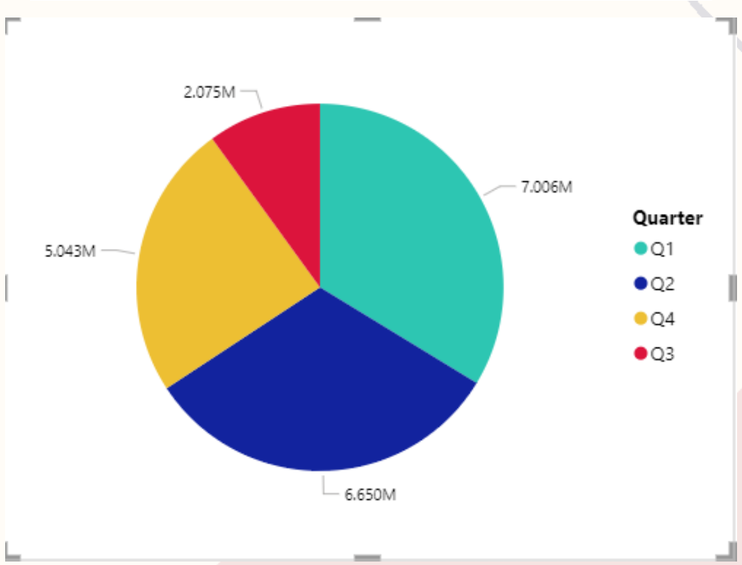
Quarter,
total_sold_quantity

Query

```
    select
        case
            when month(s.date) between 9 and 11 then 'Q1'
            when month(s.date) between 12 and 2 then 'Q2'
            when month(s.date) between 3 and 5 then 'Q3'
            when month(s.date) between 6 and 8 then 'Q4'
        end AS quarter,
        sum(sold_quantity) as total_sold_qty
from fact_sales_monthly s
where fiscal_year= 2020
group by quarter
order by total_sold_qty DESC
```

Output

quarter	total_sold_qty
Q1	7005619
Q2	6649642
Q4	5042541
Q3	2075087



9. Which channel helped to bring more gross sales in the fiscal year 2021 and percentage of contribution?

The final output contains these fields,

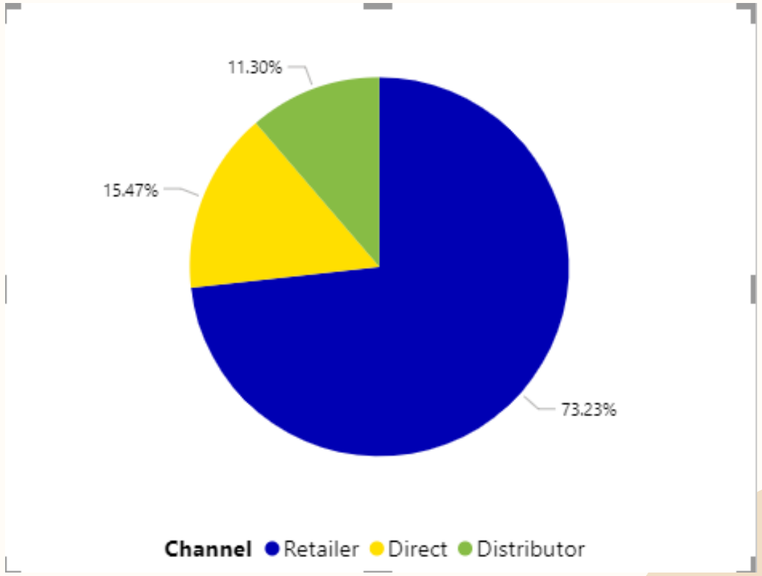
Channel,
gross_sales_mln, pct_contribution.

Query

```
with cte1 as (
 select
   channel,
      round(sum(sold_quantity*gross_price/1000000),2) as gross_price_mln
  from fact_sales_monthly s
join fact_gross_price g
   on g.product_code=s.product_code and
      g.fiscal_year=s.fiscal_year
join dim_customer c
   on c.customer_code=s.customer_code
 where s.fiscal_year=2021
group by channel)
select *,
   concat(round(gross_price_mln*100/sum(gross_price_mln) over(),2), "%") as pct_contribution
 from cte1
group by channel
order by gross_price_mln desc
```

Output

channel	gross_price_mln	pct_contribution
Retailer	1219.08	73.23%
Direct	257.53	15.47%
Distributor	188.03	11.30%



10. Get the top 3 products in each division that have a high total_sold_quantity in fiscal year 2021? The final output contains these fields,

Division, Product_code, Product, Total_sold_quantity, Rank.

Query

```
with cte1 as (
     select division,
            p.product_code,
            p.product,
            sum(sold_quantity) as total_sold_qty
       from fact_sales_monthly s
  join dim_product p
       on p.product_code=s.product_code
    where fiscal_year=2021
  group by division, p.product_code, p.product),
cte2 as(select *,
             dense_rank() over (partition by division order by total_sold_qty desc) as rank_order
        from cte1)
select * from cte2
   where rank_order<=3;
```

Output

division	product_code	product	total_sold_qty	rank_order
N & S	A6720160103	AQ Pen Drive 2 IN 1	701373	1
N & S	A6818160202	AQ Pen Drive DRC	688003	2
N & S	A6819160203	AQ Pen Drive DRC	676245	3
P & A	A2319150302	AQ Gamers Ms	428498	1
P & A	A2520150501	AQ Maxima Ms	419865	2
P & A	A2520150504	AQ Maxima Ms	419471	3
PC	A4218110202	AQ Digit	17434	1
PC	A4319110306	AQ Velocity	17280	2
PC	A4218110208	AQ Digit	17275	3