

ETW2001 Assignment 1

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Section A

Question 1

Total 50032 transactions in year 2020.

```
> transaction_2020
count2020transaction
1          50032
```

Question 2

The product id having highest total revenue is 248. After filter the product name from product data and filter store id from inventory data, the product name of this id is Sultanas, and its corresponding store id is 21724.

```
> max_revenue_product
# A tibble: 1 × 2
  ProductId TotalRevenue
    <int>         <dbl>
1     248      223612.
```

```
> product_name
  ProductName
1    Sultanas
```

```
> store_id
  StoreId
1    21724
```

Question 3

The store id that having lowest quantity is 22914, which only have 5.

```
> lowest_quantity_store
# A tibble: 1 × 2
  StoreId AvgQuantityAvailable
    <int>         <dbl>
1    22914             5
```

Question 4

The total count in 'High' category sales is 101742.

```
> high_sales_count
  CountHighSales
1         101742
```

Question 5

The third most expensive product is flour with brand Rye.

```
> third_most_expensive_product  
[1] "Flour - Rye"
```

Question 6

Products with a PriceElasticity value close to infinity (Inf) or negative infinity (-Inf) are highly sensitive to price changes. This means that small changes in price will cause significant changes in quantity demanded. These products are likely to be considered luxury items or have readily available substitutes. While products with a PriceElasticity value close to zero are less sensitive to price changes. This means that changes in price have small impact on quantity demanded. These products are usually necessities or have few substitutes in the market.

For those products with high price elasticity, businesses need to be very cautious when considering price adjustments. While lowering prices could boost demand but increment in revenue might not match the extent of the price reduction. Conversely, increasing prices might lead to significant drops in demand, potentially offsetting any gains from higher prices. For those products with low price elasticity (close to zero), businesses have more flexibility in pricing. Small price changes are unlikely to significantly affect demand, allowing businesses to adjust prices to optimize profit margins without risking substantial changes in sales volume.

But in the dataset given, all the products prices are not changes over the time period, it means that there are no changes in price to assess how the quantity demanded responds to those changes. Price elasticity essentially quantifies the percentage change in quantity demanded in response to a percentage change in price. If prices do not change, there is no basis for calculating this elasticity because there are no price changes to observe the corresponding changes in quantity demanded. In a practical scenario where prices remain constant, businesses may still use other metrics and analytics to understand customer behavior, preferences, and demand patterns. However, the analysis of price elasticity would not be relevant during periods of price stability.

ProductId	PriceChange	QuantityChange	PriceElasticity
Min. : 1.0	Min. : 0	Min. : -98.20229	Min. : -Inf
1st Qu.: 250.0	1st Qu.: 0	1st Qu.: -49.48461	1st Qu.: -Inf
Median : 501.0	Median : 0	Median : 0.09023	Median : Inf
Mean : 500.6	Mean : 0	Mean : 0.00000	Mean : NaN
3rd Qu.: 751.0	3rd Qu.: 0	3rd Qu.: 49.32339	3rd Qu.: Inf
Max. : 1000.0	Max. : 0	Max. : 124.85641	Max. : Inf
			NA's : 8

Section B

Question 1

Starbucks stores have an average transaction level of 'Medium' transactions per store per week according to the data given in video.

```
> cat("Starbucks stores have an average transaction level of", round(average_transactions_per_store_per_week, 2), "transactions per store per week, which is categorized as", category, ".")
Starbucks stores have an average transaction level of 3333.33 transactions per store per week, which is categorized as Medium .
```

Question 2

By using the 5 variables given in the video, after assigning value by myself, the location of Starbucks new store has been categorized as 'Ideal location'.

```
> cat("The location is classified as", classification, "for opening a new Starbucks store.")
The location is classified as Ideal location for opening a new Starbucks store.
```

Question 3

By setting the weather and time of day as hot day afternoon, after calculation, it should be providing promotion of cold beverages.

```
> cat("Based on the factors, the promotion should be for", product_to_promote)
Based on the factors, the promotion should be for Cold beverages
```