Data Engineering Case- Retviews

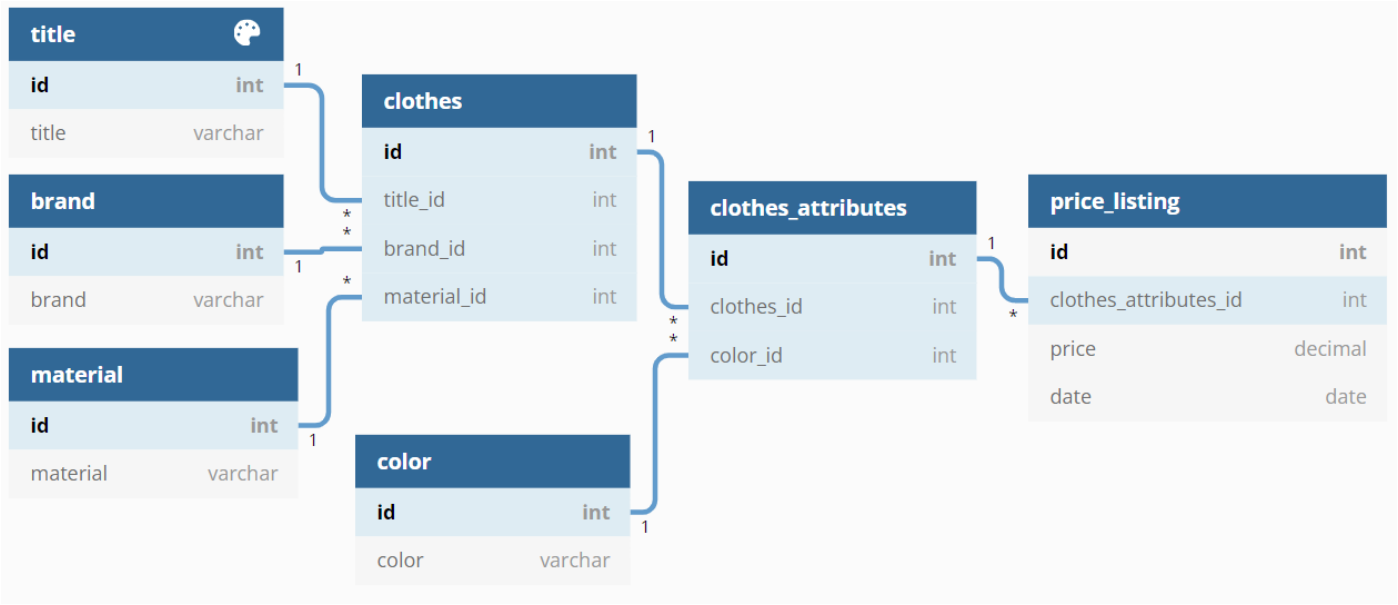
1) Data Model Try to make a normalized data model with the following characteristics:

- **We gather data about clothes that are sold online**
- **We keep track of the title, brand, material, colors, and price**
- **The price can vary per color. We get daily updates of the price, and need to keep track of the whole price history. The rest of the data (title, brand, material & colors) stay the same.**

The data model should contain:

- **the primary keys**
- **the foreign keys**
- **the cardinalities**

This would be the graphical representation of the model. In a data warehousing context, the fact table would be price listing and the remaining tables would be dimensions. In the real world the date field in price_listing should be implemented as its own dimension.



2) Queries Write a query for your data model that gives us the following:

- **Get all brands that have a clothes item with title 'Baggy Trousers'**

```
SELECT DISTINCT brand.brand
FROM clothes
INNER JOIN title ON clothes.title_id = title.id
INNER JOIN brand ON clothes.brand_id = brand.id
WHERE title = 'Baggy Trousers';
```

- **Get the highest price per color of a clothes item with title 'Sleeveless Shirt' from the brand Zara**

```
SELECT MAX(lp.last_price)
FROM clothes
INNER JOIN title ON clothes.title_id = title.id
INNER JOIN brand ON clothes.brand_id = brand.id
INNER JOIN clothes_attributes ON clothes.id = clothes_attributes.clothes_id
INNER JOIN color ON clothes_attributes.color_id = color.id
INNER JOIN (
    SELECT
        price_listing.clothes_attributes_id
           ,price AS last_price
    FROM price_listing
    INNER JOIN (
           SELECT
             clothes_attributes_id
                 ,MAX(DATE) AS max_date
           FROM price_listing
           GROUP BY clothes_attributes_id
           ) md
    ON price_listing.clothes_attributes_id = md.clothes_attributes_id
    AND price_listing.date = md.max_date
    ) lp ON clothes_attributes.id = lp.clothes_attributes_id
WHERE
    title = 'Sleeveless Shirt'
AND brand = 'Zara';
```

3) Indexes

- **What indexes would you put, assuming that the 2 queries above are the ones executed mostly?**

  clothes.title_id, clothes.brand_id and title.title

- **What are the disadvantages of putting an index on every single column?**

  Increased disk usage and performance decrease for write operations.

4) Elaborate the data model

What would you change about the model if we want to keep track of the sizes of the clothes? The sizes can be different per color, and the prices can be different per size as well

I would add a new 'size' dimension under clothes_attributes, as in the following diagram.