Database Design: eCommerce Products

A guide for a database design for the products within an eCommerce website

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This guide is a companion to my YouTube video on designing the product area of an eCommerce website. The video used the website asos.com as an example, but the design should work for other eCommerce solutions.
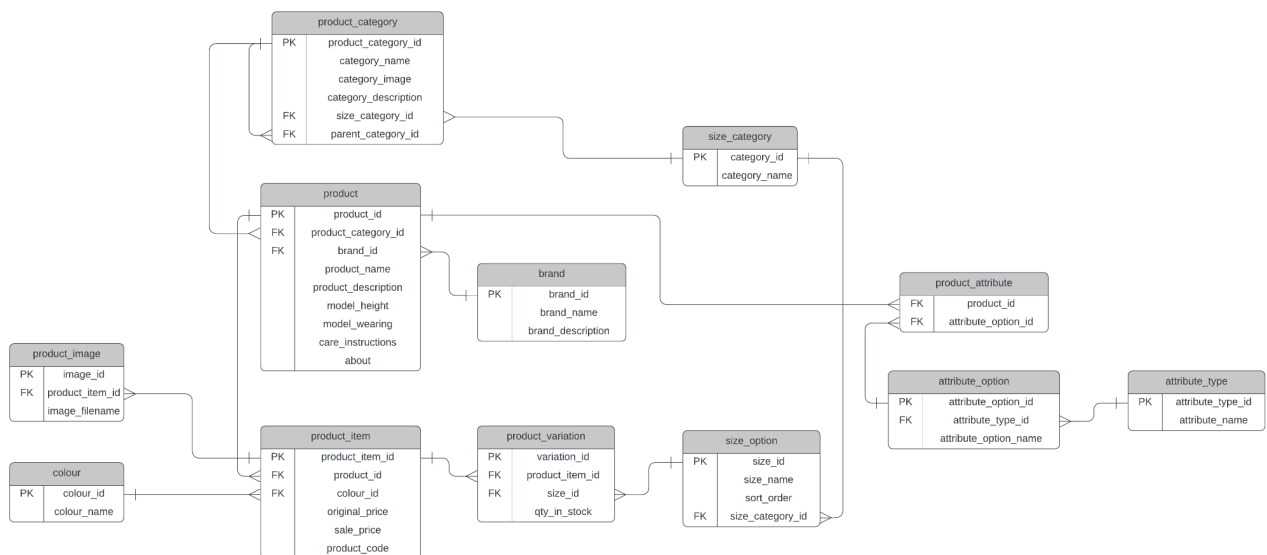
In this guide, you'll see:

- An Entity Relationship Diagram for the product area of an eCommerce website, from my YouTube video.
- An explanation of the purpose of each table and field, with sample data.
- SQL scripts to create each of these tables with some sample data.

Let's get into it.

Entity Relationship Diagram

Here's the ERD for this database:

A PNG file of this ERD is available here:

https://dbshostedfiles.s3.us-west-2.amazonaws.com/dbs/erd_ecommerce_products.png

SQL Scripts

The SQL Script to create this database, and populate some sample data, is available on GitHub here:

https://github.com/bbrumm/databasestar/tree/main/videos/127_ecommerce

The script has been written for MySQL, but with some minor tweaks (such as data types), it should work for all other databases.

Database Definition

This section explains each of these tables and fields.

product_image

A record for each image that exists for a product.

Column	Description	Sample Data
image_id	Primary key. A unique identifier for the row.	1, 2, 3
product_item_id	A foreign key that refers to the ID in the product_item table for the related product_item	4, 2, 12
image_filename	The location on the server where the filename is stored and the name of the file	/images/product1092_32.png

colour

A lookup table for all of the possible colours for a product.

Column	Description	Sample Data
colour_id	Primary key. A unique identifier for the row.	1, 2, 3
colour_name	The name of the colour, which is shown on the web page.	Black, Blue, White

product_category

A record for each of the product categories. This table contains a self-join, so it contains many levels of categories and subcategories.

Column	Description	Sample Data
product_category_id	Primary key. A unique identifier for the row.	1, 2, 3
category_name	The name of the category, which is short and is shown on the website	Coats and Jackets Shoes Gym
category_image	The location and filename of the image for the category	/images/category05.png
category_description	A description for the category which is shown on the web page	Check out our collection of shoes from a range of brands, and find….
size_category_id	The size category that applies to this category (because different categories have different size options: shoes are different to clothes)	21, 4, 10
parent_category_id	The product_category_id of this record's parent, if it exists	3, 5, 1

product

A record for each product, which is shown on the product listing page.

Column	Description	Sample Data
product_id	Primary key. A unique identifier for the row.	1, 2, 3
product_category_id	A foreign key for the product category for this proudct	2, 5, 9
brand_id	A foreign key to the brand table, which represents the brand of this product	3, 4, 8
product_name	The name of this product, shown on the	Black Leather Jacket

	product listing page and the product page.	Nike Air Force Shoes Long Black Dress
product_description	A description of the product to provide more information	This jacket is part of our new collection and is designed…
model_height	The height of the model in the photos	6ft 1in
model_wearing	The size that the model is wearing	Medium
care_instructions	Any instructions on how to wash, dry, or care for the product	Mashine wash, cold only
about	Some information about the product	Made with 100% cotton

product_item

A record for a product that comes in a different colour and has a different price.

Column	Description	Sample Data
product_item_id	Primary key. A unique identifier for the row.	1, 2, 3
product_id	A foreign key to the product table for the related product.	3, 5, 12
colour_id	A foreign key to the colour table for the related product.	1, 43, 9
original_price	The price of a product, or its original price if it is on sale	10, 150, 210
sale_price	The price of a product if it is on sale	9, 120, 190
product_code	A unique code for the product, which can be used for searching or identifying the product	CAB109874

brand

A lookup table for the brands of products

Column	Description	Sample Data
brand_id	Primary key. A unique identifier for the	1, 2, 3

	row.	
brand_name	The name of the brand that creates a product	Nike, Adidas, Gucci
brand_description	A description of the brand to explain more about it.	Founded in 1976, the company specialises in quality…

product_variation

A record for a product item that comes in a specific size. It is represented by a quantity in stock and this is what is ordered by customers.

Column	Description	Sample Data
variation_id	Primary key. A unique identifier for the row.	1, 2, 3
product_item_id	A foreign key for the related product_item	2, 6, 10
size_id	A foreign key for the related size	3, 5, 23
qty_in_stock	The number of items that are in stock for this product variation	0, 12, 85

size_category

A record that represents a category of sizes, such as "Shoes" and "Women's Pants", so the website can show the correct size options for a category.

Column	Description	Sample Data
category_id	Primary key. A unique identifier for the row.	1, 2, 3
category_name	A description of the category of sizes.	Shoes Women's Dresses Men's Pants

size_option

A record for the available sizes within a category.

Column	Description	Sample Data
size_id	Primary key. A unique identifier for the row.	1, 2, 3
size_name	The name of the size, which is shown on the page or in drop-down lists.	M, 8, 41
sort_order	The order to display the sizes in, because sorting them alphabetically is not always desirable.	1, 2, 8
size_category_id	The category that this size belongs to.	1, 2, 5

product_attribute

A combination of products and the attributes that apply to them, which is used for filtering.

Column	Description	Sample Data
product_id	A foreign key that refers to the product table.	1, 8, 15
attribute_option_id	A foreign key that refers to the attribute option.	3, 8, 12

attribute_option

A record for all of the available options for different attributes of a product.

Column	Description	Sample Data
attribute_option_id	Primary key. A unique identifier for the row.	1, 2, 3
attribute_type_id	A foreign key that represents the attribute type.	3, 8, 10
attribute_option_name	The name of the attribute option that can be displayed.	Crew Neck Main Collection Plus Size

attribute_type

A record for the different types of attributes.

Column	Description	Sample Data
attribute_type_id	Primary key. A unique identifier for the row.	1, 2, 3
attribute_name	The name of the attribute type, which is the name of the filters shown on the product listing page.	Length Body Fit Neckline

Conclusion

Hopefully you found this guide, diagram, and script useful.

If you have any questions or suggestions, let me know at ben@databasestar.com.

Thanks!

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