

Link 9.2 Explanation of Figure 9.7

Figure 9.7 shows the following business rules:

- One *customer* may place (white circle outside box) many *orders* (but the details about a customer can still be retained if they do not place any orders).
- One *order* must be placed by (black circle inside box) one *customer* (so an order cannot exist unless it is placed by a customer).
- An *order line* must fulfil one *order* (that is, a line of an order can only exist if an order exists and a line of an order can only be a line of one order).
- An *order* may have zero, one or many *order lines* (shown by the N).
- An *order line* must specify one *product* (that is, each line of the order refers to one product).
- A *product* can be (white circle outside box) specified on a number of *order lines* (that is, the organization is likely to have several orders for the same product but when a product is first launched there will be no orders for the product).
- A *product* must have one *product type* associated with it.
- A *product type* may have zero, one or many *products* associated with it.

Given an *order_date*, the orders placed on that date can be identified by their *order_number* for example:

Order Date	Order Numbers
01-02-2014	110190
	110191

From a given *order_number* it is possible to identify the *product_numbers* that were included on the order lines for the order:

Order Numbers	Order Lines	Product Number	Quantity
110190	110190_1	12154421	250
	110190_2	12165871	875
110191	110191_1	SD9741	1250

Given a *product_number* it is possible to identify the *product_type* for each product:

Product Number	Product Type
12154421	Bulb
12165871	Tube
SD9741	Bulb

The sales figures by *product_type* can therefore be presented to the sales manager:

Report of Product Sales by Type on 01-02-201	
Product Type	Quantity
Bulb	1500
Tube	875