

The Ben & Jerry's Ice Cream Factory Database

Ben & Jerry's ice cream factory in Vermont requires a database to keep track of its inventory and real-time operation. Their warehouse currently contains 24 freezers, one for each base flavor of ice cream that B&J uses in its award-winning recipes.

The warehouse also contains a large number of containers, some of which are capable of refrigeration, to hold “mixin” ingredients that are added to ice cream for various recipes. Some mixins (*e.g.*, cherries) require refrigerated storage, while others (*e.g.*, chocolate chunks) do not, and the former must be stored in a refrigerated container (the latter can be stored in any container.) Note that a given container can only hold one type of mixin at a time – you can't ever have a container that's “partially marshmallows and partially cherries.”

The database must keep track of, among other things, the ID number, contents, capacity and current load of each freezer and container; the cost of each ice cream flavor (some flavors, like butter rum, are “premium” and cost B&J more to produce); and the cost of each type of mixin (as well as whether or not it needs refrigeration.)

In addition, the database must keep track of the ingredients needed to make each of Ben & Jerry's production recipes. A recipe consists of a base flavor plus zero or more mixins. (For instance, “Cherry Garcia” features cherry ice cream with cherries and chocolate chunks mixed in, while “Make Mine Vanilla” is pure vanilla bean ice cream with no mixins.)

For each recipe, the number of cartons ordered by various customers (but not yet delivered) also must be tracked. (Information about which customers have placed orders is held in a separate database managed by a different division of the business.)

Finally, for production management, information about the real-time usage of the factory's assembly lines must be tracked. Ben & Jerry's currently controls six production assembly lines, each of which can be programmed to fill cartons with one ice cream recipe at a time. Only some of the assembly lines can handle mixins; the others can only produce flavors such as Make Mine Vanilla. Each assembly line also has a unique ID number, and a capacity (in cartons per minute) that varies with the make and model of the device.