

.NET Software Engineer Technical Assignment (Manufacturing)

Things we look for in this test

We would like you to show us your skills in building testable and maintainable software with design and architecture in mind using industry best practices.

We value "simple" more highly than "complex", "working" is better than "nice". Readability matters.

Business flow

A customer can order 1 or multiple items.

For example, an order could consist of a photo book and 2 canvases.

After the order is produced, it is delivered to one out of thousands of pickup points across the country.

The package is put in a bin on a shelf at the pickup point. The bin has to be sufficiently wide for the package.

Since bins are reserved upfront, we need to calculate the minimum bin width required for the order at the moment of order creation.

Assignment

Create a .NET Web API that accepts an order, stores it and responds back with the minimum bin width.

We also should be able to get back all the information that is known about the order by its ID.

Cover code with tests where you find it important.

Order information submitted by customers:

- OrderID
- ProductType and quantity. //Product type can be 1 of "photoBook", "calendar", "canvas", "cards", "mug"

Order information retrievable from the Web API by OrderID:

- ProductType with quantity.
- RequiredBinWidth in mm.

Simplified width calculation rules

Items are put in the package next to each other (for simplicity of the test assignment).

For example, 1 photo book (1), 2 calendars (|) and 1 mug (.) should look like this in the package:

[1||.]

But a mug has 1 detail: it can be stacked onto each other (up to 4 in a stack). So, an order with 1 photo book, 2 calendars and 2 mugs should be positioned like this:

[1||:.]

So the width of the 2 packages above is exactly the same. It would be still the same even if we add 2 more mugs (4 in total) but would increase if we add a 5th mug.

Package width occupied by 1 product unit per type:

- 1 photo book consumes 19 mm of package width.
- 1 calendar: 10mm of package width.
- 1 canvas: 16mm.
- 1 set of greeting cards: 4.7mm
- 1 mug: 94mm.