

## Welcome to Mathem

First of all, thank you for using your valuable time to complete this assignment. We know these tests feel like a bit of a chore, but we really believe it helps us to get a better picture of your software development skills. At most we would expect candidates to use 2-3 hours on this test, but feel free to use less or more as long as you feel it gives a good representation of how you like to write quality software.

We wish you good luck and don't hesitate to contact the recruiter if anything is unclear with the test assignment.

## Assignment guidelines

Before we start the actual assignment, Mathem has some guidelines for you to follow:

- Use the programming language and editor of your choice.
- It should be possible to execute the code in some way.
- Write the code as if it were to be deployed to production.
- No storage is needed during this assignment.
- Take advantage of your creative freedom.

## Implementation

We have a potential customer that just filled their shopping cart with some amazing products. To be able to deliver these products, we need to visualize all the available delivery dates that Mathem can provide to the potential customer.

## Delivery dates

In order to visualize all the available delivery dates, you as a developer should create a function that takes a postal code and a list of products as input.

The output of this function should return a list of available delivery dates for the upcoming 14 days, using the following format:

```
[
  {
    "postalCode": 13756,
    "deliveryDate": "2019-02-13T00:00:00+01:00",
    "isGreenDelivery": true
  },
  {
    "postalCode": 13756,
    "deliveryDate": "2019-02-12T00:00:00+01:00",
    "isGreenDelivery": false
  }
]
```

## Products

The structure of the product list that you pass into the function is up to you to define, but a product should include the following properties:

- productId
- name
- deliveryDays (a list of weekdays when the product can be delivered)
- productType (normal, external or temporary)
- daysInAdvance (how many days before delivery the products need to be ordered)

## Green delivery

The team's product manager is feeling really happy today, you are asked to visualize “green” (environment-friendly) delivery dates. You as a developer get free hands to define what a green delivery is, this could be as simple as “all Wednesdays” or “date 5, 15 and 25 each month” are considered green delivery dates.

## Business rules

- A delivery date is not valid if a product can't be delivered on that weekday.
- A delivery date is not valid if the customer has ordered a product that cannot be delivered in time. This is determined by the daysInAdvance property on the product. I.E. if the product needs to be ordered 4 days in advance, all delivery days before today + 4 are invalid as the product cannot be delivered on time.
- All external products need to be ordered 5 days in advance.
- Temporary products can only be ordered within the current week (Mon-Sun).
- The result should be sorted in priority order, with green delivery dates at the top of the list if they are within the next 3 days, otherwise dates should just be sorted ascending.