# Microservices with .Net – Homework Assignment

The goal is to design, develop & realize a set of microservices for Inventory Management of reagents and consumables in a laboratory. A brief introduction of the domain provided below.

Inventory Management involves the following:

1. A catalog of qualified reagent and consumable products to be used in the laboratory.
2. Tracking of inventory usage through ‘Check-in’ and ‘Check-out’ of product items.
3. Provide insights into inventory usage through various reports and dashboards.

## Product catalog

A product catalog has all the qualified reagent and consumable products whose items get managed by the system. The key functionality offered by product catalog are:

1. Registration of product (reagent or consumable) into the system.
2. Deregistration of product that is retired or discontinued by vendor or not required by laboratory.

Note: Once registered into the system, a product cannot be deleted from the catalog.

A product has below attributes:

* Product Name – Name of reagent or consumable product. E.g., "Atellica IM TNIH 100T"
* Global Trade Item Number (GTIN) – Globally unique identifier code for each product. E.g., 00630414006703
* Material Number – Siemens unique identifier for each product. E.g., 10997840
* Vendor – Vendor will always be one of the distribution centers of Siemens.
  + 1. American Distribution Center (ADC)
    2. European Distribution Center (EDC)
* Description – Brief description of the product.
* Unit of measure – Units. E.g., ml

## Inventory Management

Inventory management is about tracking the usage of product items in the laboratory.

The life cycle of a product item begins after it arrives from a vendor and gets onboarded onto the system. This is known as ‘Check-in’ of product items.

As the inventory gets consumed, the product items are ‘Check-out’ from the system. Note: there can be varied reasons for check-out – consumption, expiry, lost-and-not-found, transfer, leakage, etc.

Various reports and dashboard enable periodic monitoring of inventory levels in the system.

A product item has below attributes:

1. Serialized Global Trade Item Number – Unique identifier representing individual item of a product.
2. Lot – Manufacturing lot of the product.
3. Expiration Date - Expiry date for the current lot of product item.
4. Check In Date - Date & time of onboarding product item onto system.
5. Check Out Date – Date & time of consumption of the product item from the system.
6. Reason For Checkout – One of Normal Consumption, Expiry, Leakage, Lost, Transferred, Others.

## Homework deliverables

1. Create Product Catalog and Inventory Management microservices.
2. Define APIs for various use-cases described above.

Hint: All the functionality described above to be realized as APIs.

E.g., Data for various reports such as ‘Daily inventory status’ can be obtained using well defined GET API.

1. Create a POSTMAN collection for demo.

## Domain Model

Example of domain model is shown below. The sample is provided in a separate file.

