Instructions

Implement the code test according to the instructions below. We expect you to spend about 8 hours on the exercise.

We will evaluate the code test based on the overall code quality, including domain design, testability, extendability etc. We understand that you might not be able to cover all these aspects in 8 hours. Prioritize your time and focus on what you consider to be most important.

You may either implement the program as a web service with a REST API, using the web service framework and hosting of your choice, or implement a command line program with a similar text-based API.

There is no need to implement persistence.

Hospital simulator

Implement a program that simulates a hospital. A hospital has the following resources:

- **Treatment room**: a room has a unique name. A room can be equipped with a *treatment machine*.
- **Treatment machine**: a treatment machine has a unique name and a *capability*. Capabilities can be *Advanced* or *Simple*.
- **Doctor**: a doctor has a name and a set of *roles*. A role can be *Oncologist* or *General Practitioner*.
- **Patient**: a patient has a name and a *condition*.
- **Condition**: a condition can be *Cancer* or *Flu*. A cancer condition has a *topography*. Topographies can be *Head & Neck* or *Breast*.
- **Consultation**: a consultation has a patient, doctor, treatment room, registration date and consultation date.

Each day, a number of patients are registered at the hospital. Each time a patient is registered, a consultation should be scheduled at the first available date. The consultation occurs in a treatment room with a doctor. Cancer patients must see oncologists and flu patients must see general practitioners. Oncologists must meet their patients in a room with a treatment machine. Head & Neck patients need a machine with Advanced capability. Breast patients need a treatment machine with Advanced or Simple capability.

All consultations take a full day. A consultation may not be scheduled on the same day as the patient is registered. Consultations may be scheduled on any calendar day. Resources may not be double-booked.

The program shall set up the hospital with its resources and simulate the flow of patient registrations. Implement a REST interface (or a command line interface) supporting at least the following:

- Patient registration
- Get the list of registred patients
- Get the list of scheduled consultations

Environment

The program shall be implemented in C# and it shall build and run on a Windows machine. Include instructions of how to build and run. Also include a description of the API.

Resources

Initialize the service with the following resources:

```
"Doctors" : [
  { "Name" : "John", "Roles" : [ "Oncologist" ] },
  { "Name" : "Anna", "Roles" : [ "GeneralPractitioner" ] },
  { "Name" : "Laura", "Roles" : [ "Oncologist", "GeneralPractitioner" ] }
]
"TreatmentMachines" : [
  { "Name" : "MachineA", "Capability" : "Advanced" },
  { "Name" : "MachineB", "Capability" : "Advanced" },
  { "Name" : "MachineC", "Capability" : "Simple" }
]
"TreatmentRooms" : [
  { "Name" : "RoomOne" },
  { "Name" : "RoomTwo" },
  { "Name" : "RoomThree", "TreatmentMachine" : "MachineA" },
  { "Name" : "RoomFour", "TreatmentMachine" : "MachineB" },
  { "Name" : "RoomFive", "TreatmentMachine" : "MachineC" }
]
```