DGS wants a application to manage the vaccination process in Portugal to manage

DGS is responsible for the Vaccination Program in Portugal and needs a software application to

manage the vaccination process and to allow SNS users to schedule a vaccine and obtain a

vaccination certificate.

Vaccination process is mainly carried out throught comunity mass vaccination centers and health care centres. Different from the health care centers, which

provide a wide range of healthcare services to citizens in a certain area, the community mass

vaccination centers are facilities specifically created to administer vaccines of a single type as

response to an ongoing disease outbreak.

**Vaccination center**

Admin-ARS

Center Coordinator - responsibility to manage the Covid19 vaccination process. wants to monitor the vaccination process, to see statistics and charts, to evaluate the performance of the vaccination process, generate reports and analyze data from other centers, including data from law systems.

**Healthcare center**

Admin-AGES

Nurses can issue and deliver on site vaccination certificate

can administer any type of vaccines

**Both**

-characterized by a name, an address, a phone number, an e-mail address, a fax number, a website address, opening and closing hours, slot duration (e.g.: 5 minutes) and the maximum number of vaccines that can be given per slot (e.g.: 10 vaccines per slot).

-Coordinator

-receptionists and nurses

**Vaccines**

Multiple types

-Covid-19: the Pfizer vaccine, (ii) the Moderna vaccine, (iii) the Astra Zeneca vaccine, and so on

Age groups

-5 to 12 years old, 13 to 18 years old, greater than 18 years old

Doses administered

Vaccine dosage

Times interval between doses

**Admin**

Config and manage the core information(type of vaccines, vaccines, vaccination centers, employees)

(User story??)

Take the vacine

1. 1.SNS user should use the application
2. 2.introduce his/her SNS user number
3. select the vaccination center
4. the date, and the time
5. type of vaccine to be administered (by default, the system suggests the one related to the ongoing outbreak)
6. application should check the vaccination center capacity for that day/time
7. confirm that the vaccination is scheduled and inform the user if possible

Opcional

send an SMS message when the vaccination event is scheduled and registered in the system

schedule the vaccine appointment with the help of a nurse

(User story??)

Vaccination day

1. Go to vaccination place

**receptionist**

1. receptionist registers the arrival of the user to take the respective vaccine
2. receptionist asks the SNS user for his/her SNS user number and confirms that he/she has the vaccine scheduled, if possible
3. receptionist acknowledges the system that the user is ready to take the vaccine
4. receptionist should send the SNS user to a waiting room

**nurse**

1. use the application to check the list of SNS users that are present in the vaccination center to take the vaccine
2. call one SNS user to administer him/her the vaccine

ob-Usually, the user that has arrived firstly will be the first one to be vaccinated

1. checks the user info and health conditions in the system and in accordance with the scheduled vaccine type, and the SNS user vaccination history, (s)he gets system instructions about vaccine
2. After giving the vaccine to the user, each nurse registers the event in the system, more precisely, registers the vaccine type (e.g.: Covid-19), vaccine name/brand (e.g.: Astra Zeneca, Moderna, Pfizer), and the lot number used
3. sends the user to a recovery room, to stay there for a given recovery period
4. system should be able to notify (e.g.: SMS or email) the user that his/her recovery period has ended

if nurse identifies any adverse reactions during that recovery period, the nurse should record the adverse reactions in the system.

After taking the vaccine, any SNS user can request the issuance of the EU COVID Digital Certificate **(this feature of the system will be implemented later by the DGS’s IT department)**

Management of people on vaccine

(User story???)

goal of the performance analysis is to decrease the number of clients in the center, from the moment they register at the arrival, until the moment they receive the SMS informing they can leave the vaccination center. To do this for any time interval on one day, the difference between the number of new clients arrival and the number of clients leaving the center every five-minute period is computed. In the case of a working day, with a center open from 8 a.m. until 8 p.m., a list with 144 integers is obtained, where a positive integer means that in such a five-minute slot more clients arrive at the center for vaccination than clients leave with the vaccination process completed. A negative integer means the opposite.

problem consists in determining what the contiguous subsequence of the initial sequence is, whose sum of their entries is maximum. This will show the time interval, in such a day, when the vaccination center was less effective in responding. So, the application should implement a bruteforce algorithm (an algorithm which examines all the contiguous subsequences) to determine the contiguous subsequence with maximum sum.