

COMP1216. Software Modelling and Design (2021-22)

Group 48: A COVID Vaccination Tracking System

Submission date: 11 March 2022

1 Introduction

Include a brief description of each member's contribution.

Xiaoke Li(xl5u20) did part **4 and 7**

Weiwu Qi(ww3u21) did part **2 and 6**

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Yangchen Kang(yk2g21) did part **3 and 8**

2 Scope

Need It is inconvenient for users to receive the vaccine. Recording what kind of vaccine, when or how many times a citizen should be vaccinated through people will consume a lot of time and energy and be prone to mistakes.

Goals Users can easily and quickly make online appointments, know when and where they should go to get vaccinated. Administrators can also easily and quickly manage and check information.

Business Case It is more convenient to manage vaccination, do not waste vaccine, and track everyone's vaccine records

Stakeholders citizens, vaccination center staffs, NHS, vaccine manufacturer program design firm

High-level Operational Concepts

The administrator can set vaccination stock.

The administrator can create vaccination centre

The administrator can set available working time and vaccination stock.

The citizen can book vaccination appointment.

The citizen can change appointment.

The citizen can take vaccination.

The staff can check citizen's personal information.

The staff can update vaccination stock.

The staff can give vaccination to citizen.

Successful Criteria Reduce vaccination waste.

Manage every citizen's vaccination record.

Rational allocation of health care workers' working hours and human resources.
enhance citizen satisfaction.

3 Scenarios

3.1 Scenario 1. Create a new vaccination centre

1. Administrator opens the login window.
2. Administrator enters the Username or NHS number and password to sign in.
3. Computer shows “Home” screen.
4. Administrator selects “Setting”.
5. Administrator clicks “Create a new vaccination centre”.
6. Administrator is required to enter the postcode and location of the vaccination centre.
7. Administrator selects a location and click “Next” and is taken to the “Add Vaccination” screen.
8. Computer shows the vaccination stocks with each vaccination batch number and brand.
9. Administrator enters the batch number and brand of each vaccination.
10. Computer shows “Adding Successfully”.
11. Administrator clicks “Next” and is taken to the “Set Opening time information”.
12. Computer shows “available appointment setting”
13. Administrator sets up the available appointments per hour per day worked.
14. Administrator clicks “Done”.
15. Computer shows “Create Successfully!”.
16. Administrator signs out.

3.2 Scenario 2. Citizens book vaccination

1. Citizens choose to make an appointment on the NHS website.
2. Citizens fill in their name NHS account number and date of birth.
3. Citizen are sent to the appointment screen to see the number of vaccines in stock as well as a list of working hours and notes for each working hour.
4. After the appointment, System checks if the male line has received less than 3 injection.
5. System checks that the last injection is more than 8 calendar weeks from the date of registration and if it is more than 8 calendar weeks, then an appointment can be made.
6. System checks that the citizen is over or under 40 years of age.
7. Citizens under 40 years of age can only receive vaccines from Pfizer.
8. Public donors can offer the earliest possible appointment at a centre that has the same brand of vaccine as the one previously accepted. If a public donor declines this offer, the system will provide.
9. After the appointment is closed, the public can re-book 1 day before the original appointment date
10. After the appointment, the Vaccine Centre administrator will update the vaccine stock, the working dates and the number of hours and quantities of appointments available per hour.
11. Upon arrival at the appointment location, the vaccination officer receives the citizen's identity information and verifies the information.
12. System checks if the citizen is over or under 40 years old, if under 40 years old, only Pfizer vaccine can be administered.
13. Citizens over 40 years old can choose for themselves.
14. After booking vaccination, staff update citizens' information and the number of vaccines remaining in the vaccine bank, as well as the exact time when citizens will be vaccinated

4 Use Cases

4.1 Use Case 1. Create a New Vaccination Centre

Use Case Name	CreateNewVaccinationCentre
Scope	NHS system
Primary Actor	Administrator
Stakeholders	NHS
Full success scenario	Administrator already logged into “create vaccination centre” page on NHS system. Vaccination centre has vaccinations in stock
Full success scenario	<ol style="list-style-type: none">1. Administrator is taken into “location” page2. Administrator sets the location of the vaccination centre and its postcode, then is taken to “Add Vaccination” page.3. System shows “Enter the batch and brand of one vaccination”4. Administrator enters the batch number and brand of one vaccination. [InvalidBatchNumber]5. Administrator repeats step 4 and 5, until all the vaccination is in the NHS system. Then administrator chooses “Stop adding vaccination”.6. System shows the vaccination stocks with each vaccination batch number and brand listed below, then go into “Set opening time information” page7. Administrator creates a timetable to select the “opening dates”, select “opening hours” on the vertical line, notes on the number of “available appointment” each hour.8. Administrator clicks “Finished”. Then system shows the full timetable.9. Administrator creates booked list, input citizens information as row line, like NHS number, date of birth, name, appointment date and time, which vaccinate should be taken, citizen vaccinate record. The booked list is empty now.10. New vaccination centre is created and is ready to accept booking.
Extensions	[InvalidBatchNumber]: The system finds wrong batch, and reject the input, then asks user to enter again.

4.2 Use Case 2. Book vaccination appointment

Use Case Name	CitizenBookVaccination
Scope	HNS system
Primary Actor	Citizen
Stakeholders	
Precondition	Citizen has own NHS number. NHS system would not update new vaccination centre when citizen makes booking
Full success scenario	<ol style="list-style-type: none"> 1. Citizen chooses to make an appointment on the NHS website. 2. Citizen fills in name and NHS account number and date of birth <p>[WrongPersonalInfor]</p> <ol style="list-style-type: none"> 3. Citizen is sent to the appointment screen to see the number of vaccines in stock as well as a list of working hours and notes for each working hour. 4. Citizen chooses the date and time to booking vaccination. 5. After the appointment, NHS system checks if the citizen has received less than 3 injections 6. NHS system checks that the last injection is more than 8 calendar weeks from the date of registration <p>[TooEarlyToGetNextVaccination]</p> <ol style="list-style-type: none"> 7. After the appointment, the Vaccine Centre administrator will update the vaccine stock, the working dates and the number of hours and quantities of appointments available per hour 8. Upon arrival at the appointment location, the vaccination officer receives the citizen's identity information and verifies the information 9. NHS system checks that the citizen is over or under 40 years of age <p>If citizen is under 40:</p> <ol style="list-style-type: none"> 10. Citizens under 40 years of age can only receive vaccines from Pfizer, and be noted to NHS system. 11. Public donors can offer the earliest possible appointment at a centre that has the same brand of vaccine as the one previously accepted. <p>If citizen is over 40:</p> <ol style="list-style-type: none"> 12. And citizens over 40 years old can choose for themselves 13. After the appointment is closed, the public can re-book 1 day before the original appointment date 14. NHS system presents "Your booking is confirmed", with the vaccination location, date and time to take vaccination, personal information about the citizen shows below. <p>If citizen chooses to change the date:</p> <ol style="list-style-type: none"> 15. Citizen fills in NHS number, name, date of birth and is taken to "view your boeing page".
	<ol style="list-style-type: none"> 16. NHS system checks days between today and the scheduled date <p>[LessThan1Day]</p> <ol style="list-style-type: none"> 17. Citizen clicks the "change vaccination date" 18. Citizen repeats step 3 – 13, till clicks "confirm date".
Extensions	<p>[WrongPersonalInfor]: citizen entered the wrong personal information, then is asked to enter again.</p> <p>[TooEarlyToGetNextVaccination] : If it is more than 8 calendar weeks, then the appointment can Not be made</p> <p>[LessThan1Day]: NHS system refuse the "change date" request.</p>

5 Use Case Diagram

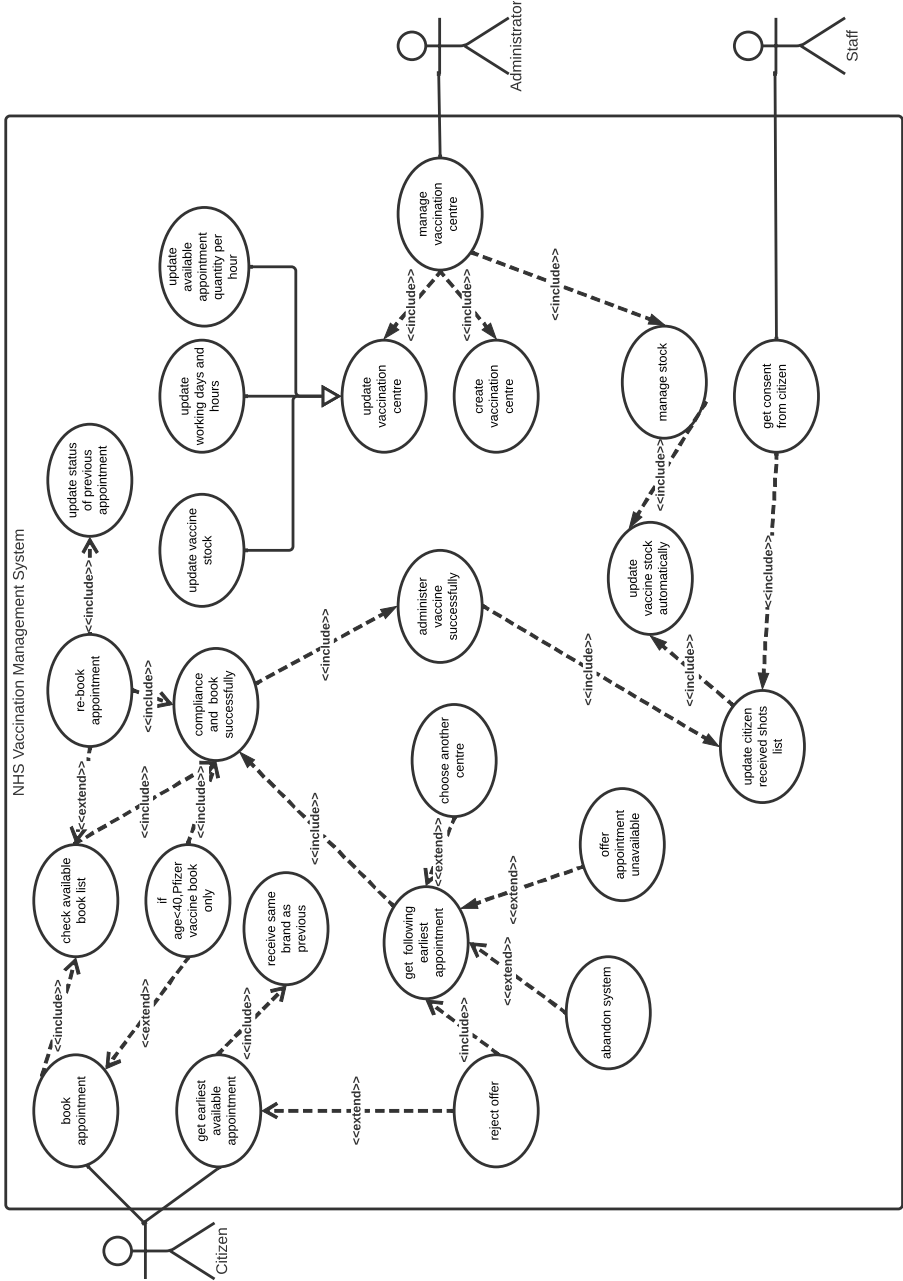


Figure 1: Use Case Diagram

6 Class Diagram

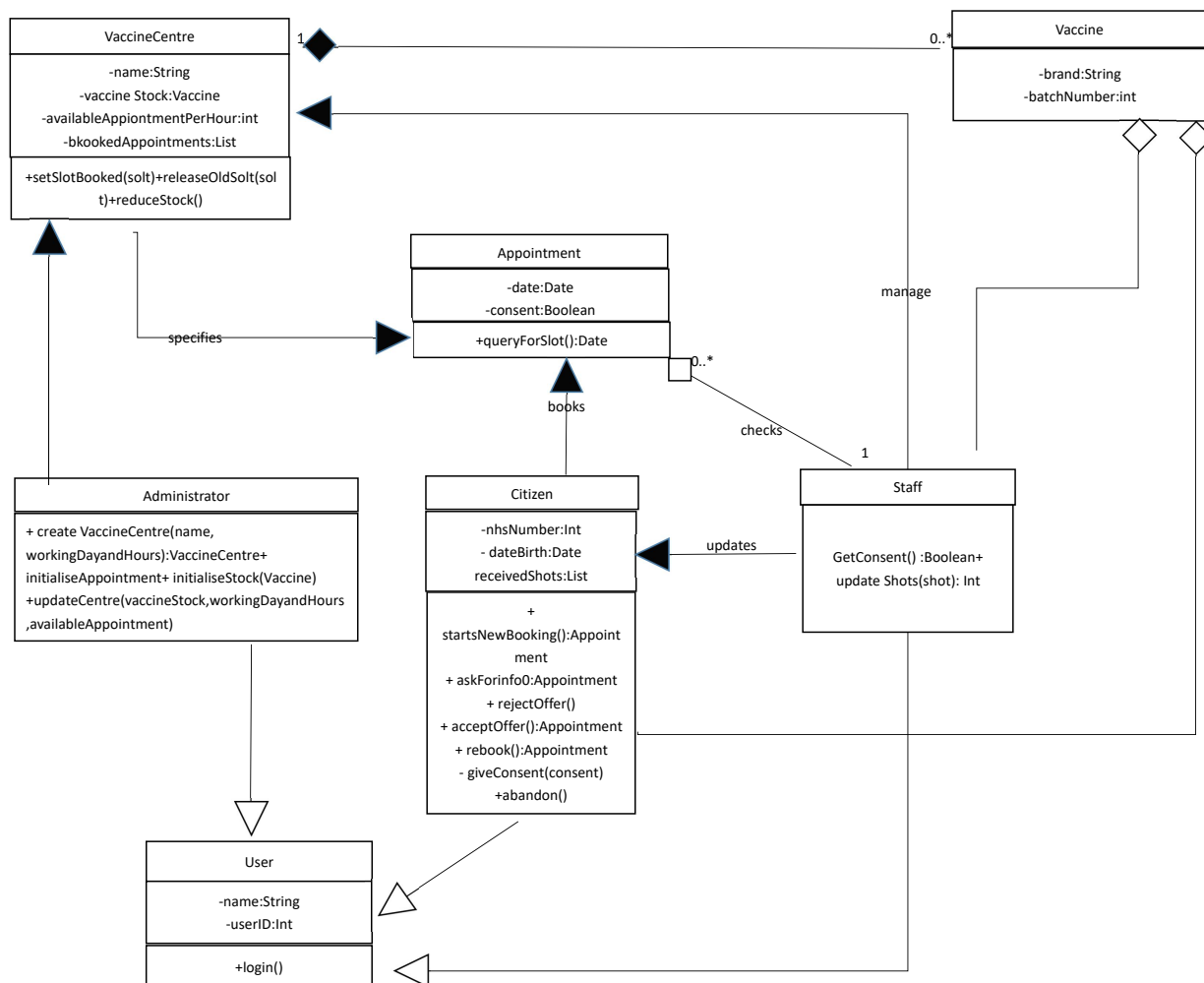


Figure 2: Class Diagram

7 Sequence Diagrams

7.1 Sequence Diagram 1. Create a new vaccination centre

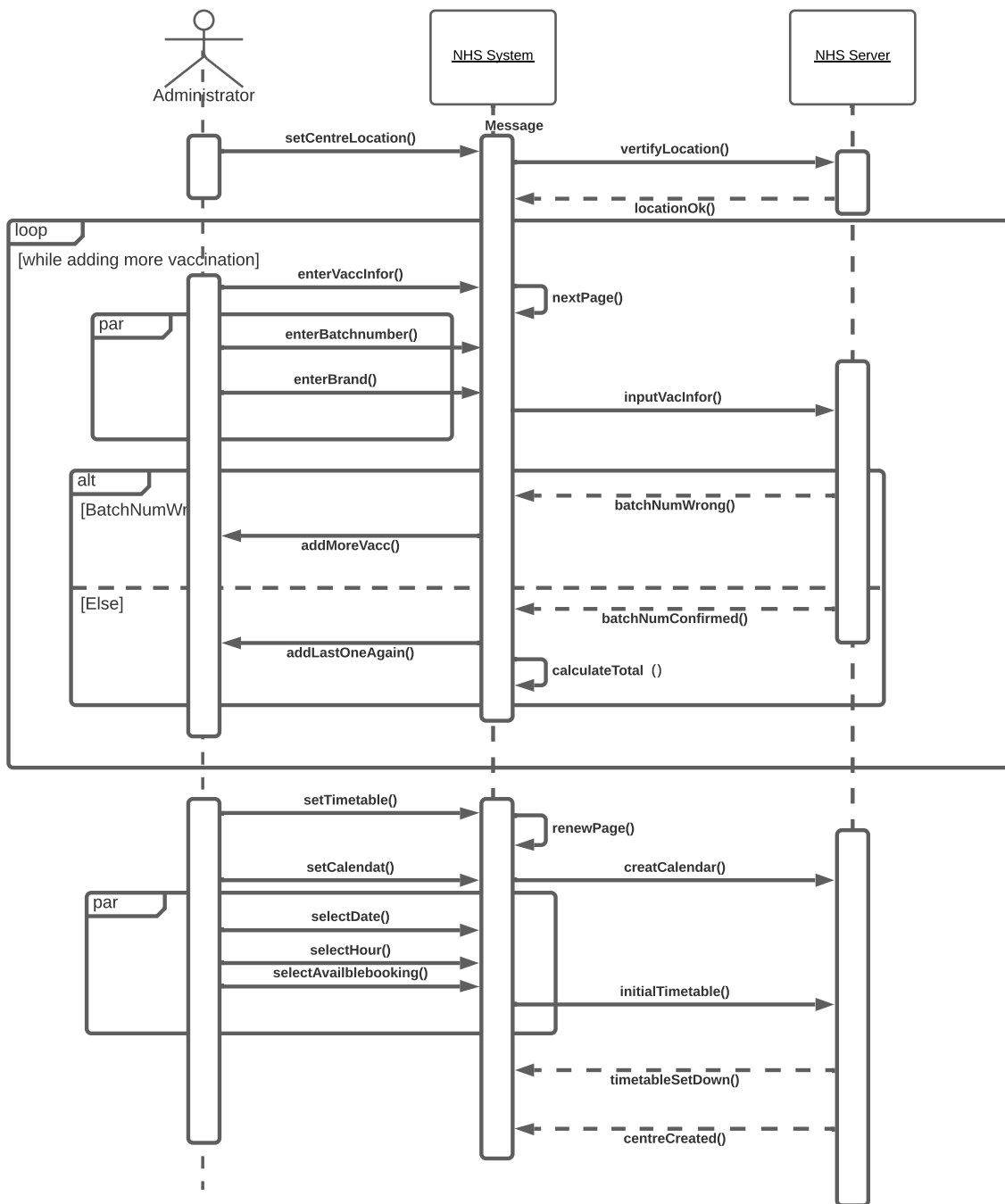


Figure 3: Sequence Diagram 1

7.2 Sequence Diagram 2. Have a new appointment

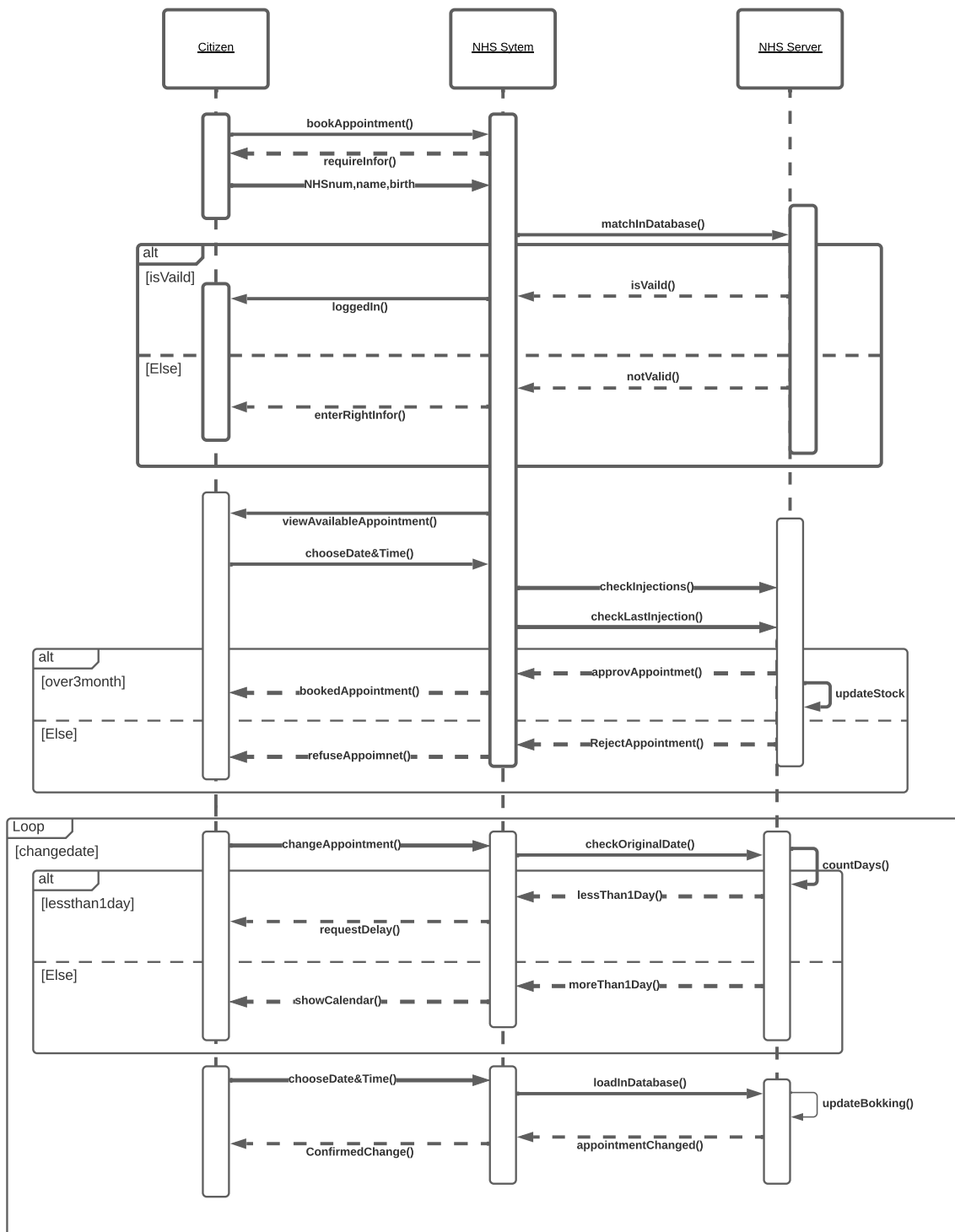


Figure 4: Sequence Diagram 2

8 Activity Diagram

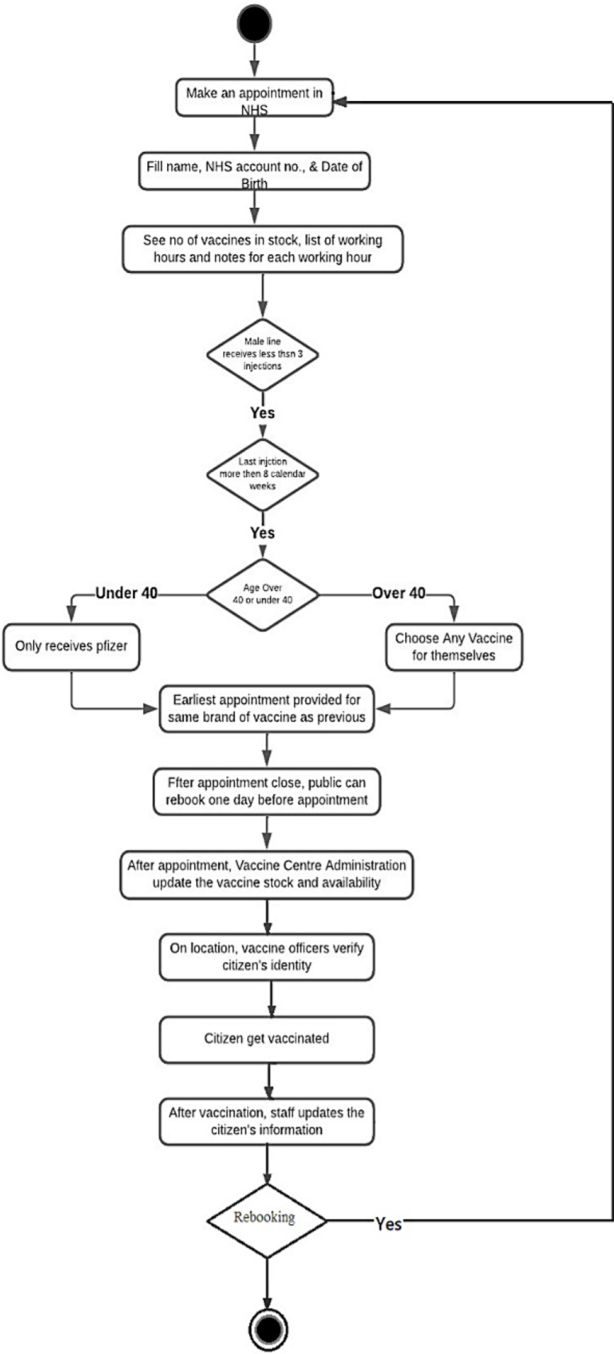


Figure 5: Activity Diagram