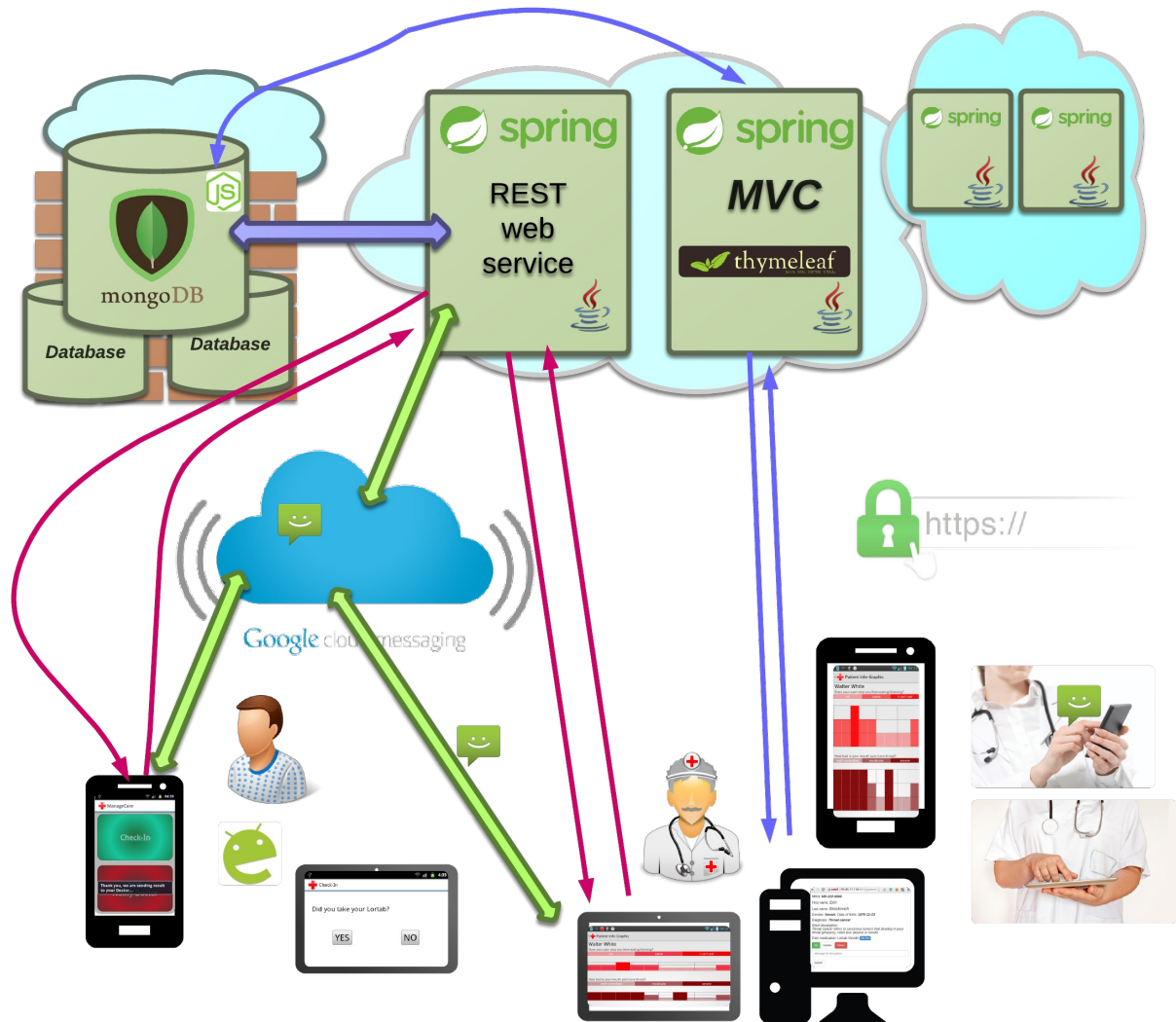


“ManageCare”

medical system

System scheme



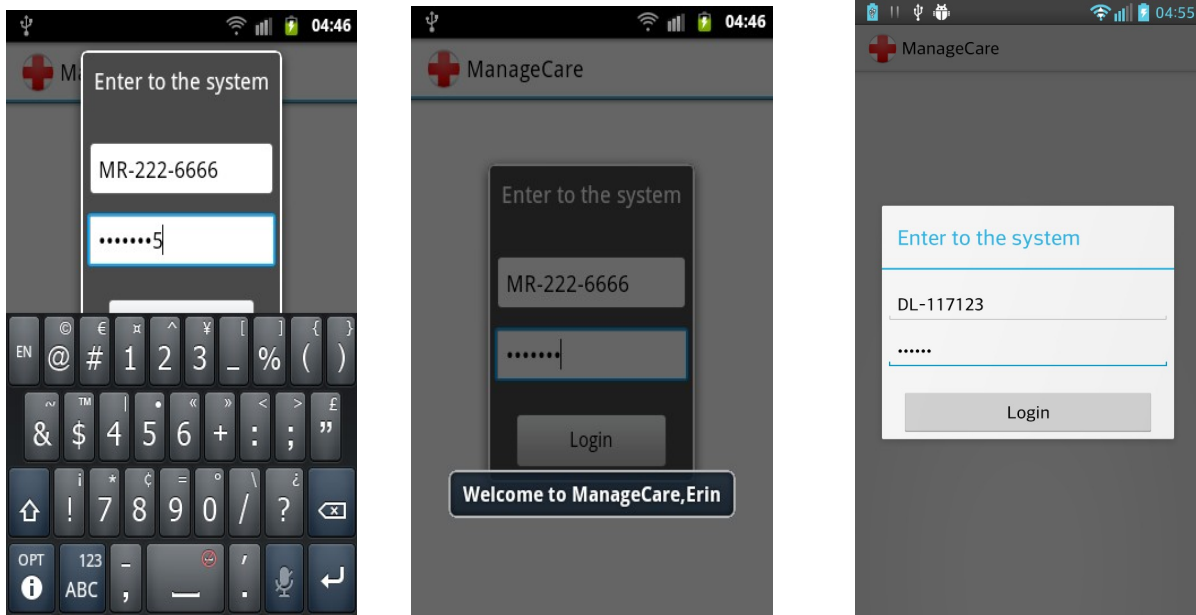
I hope the scheme explains pretty much design of system infrastructure. All data transfer via https.

One user can access his account from several devices (even simultaneously) – from Android powered devices, and only doctor can enter to server-part of system from any device.

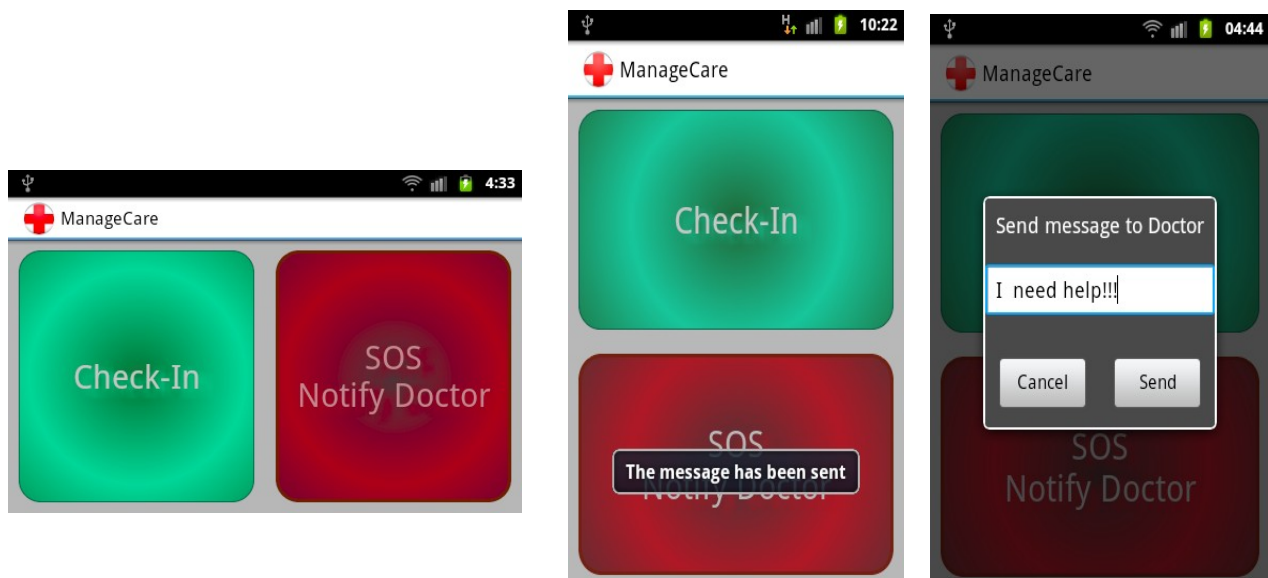
Mobile App

App supports old versions of Android OS since Android 2.3.* (api level 9, version name "GINGERBREAD") It covers (approximately) 99% active devices.

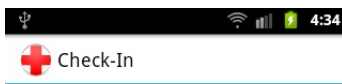
Patients and medical staff use the same App, but depending on credentials program looks and works absolutely different way.



I tried to keep things for users as simple as possible, so Patients part “start screen” has only 2 buttons that allow user to answer Check-In or send an urgent message to Doctor.



Android Capstone Project 2014

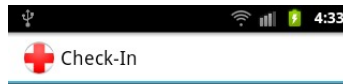


How do you feel today?

- ☐ good
- ☐ moderate
- ☐ bad

Pick one answer, please...

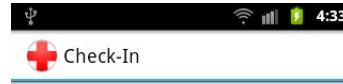
OK



How bad is your mouth pain/sore throat?

- ☐ well-controlled
- ☒ moderate
- ☐ severe

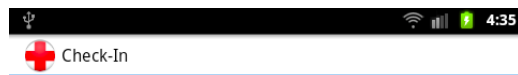
OK



Does your pain stop you from eating/drinking?

- ☐ no
- ☐ some
- ☒ I can't eat

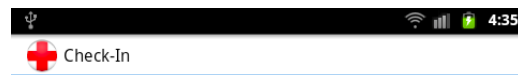
OK



Did you take your painkiller medication?

YES

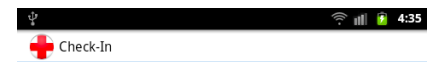
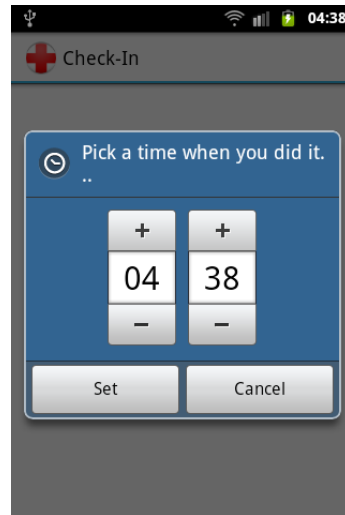
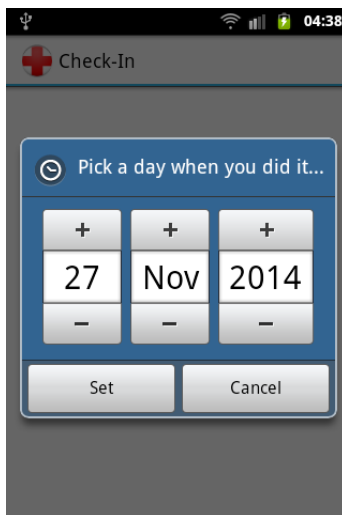
NO



Did you take your Lortab?

YES

NO



Did you take your Vicodin?

YES

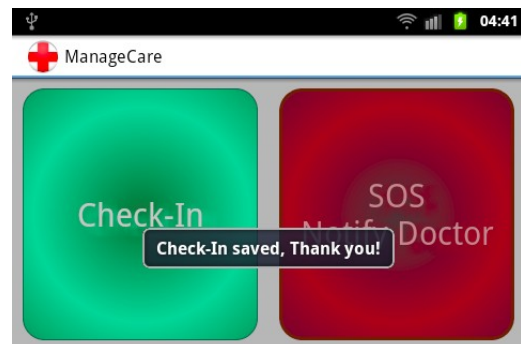
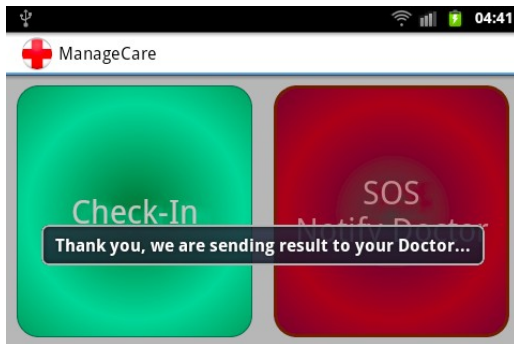
NO



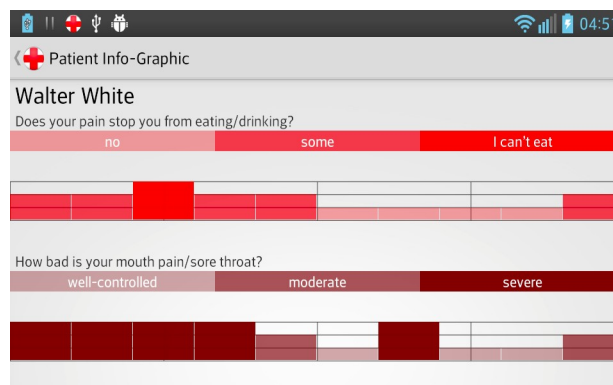
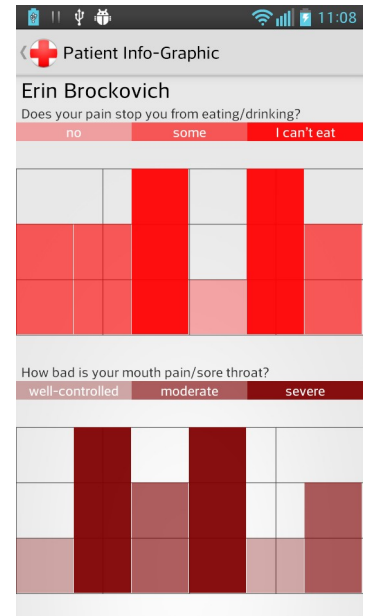
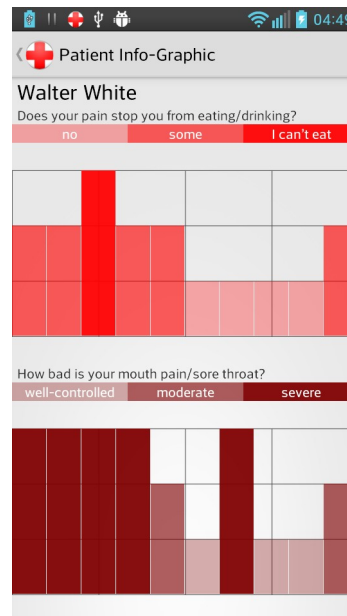
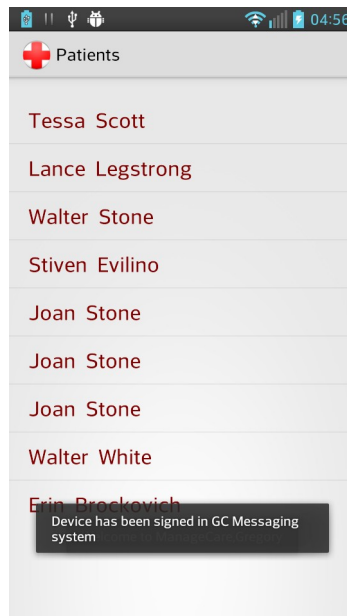
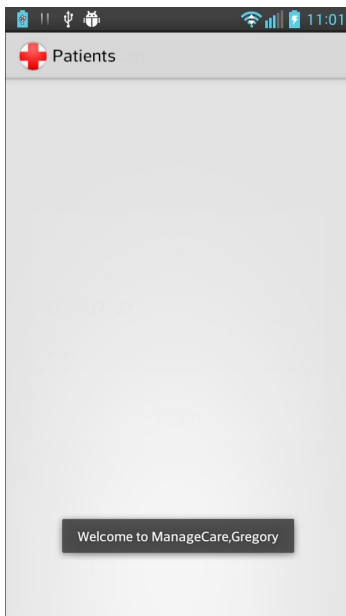
Did you take your OxyContin?

YES

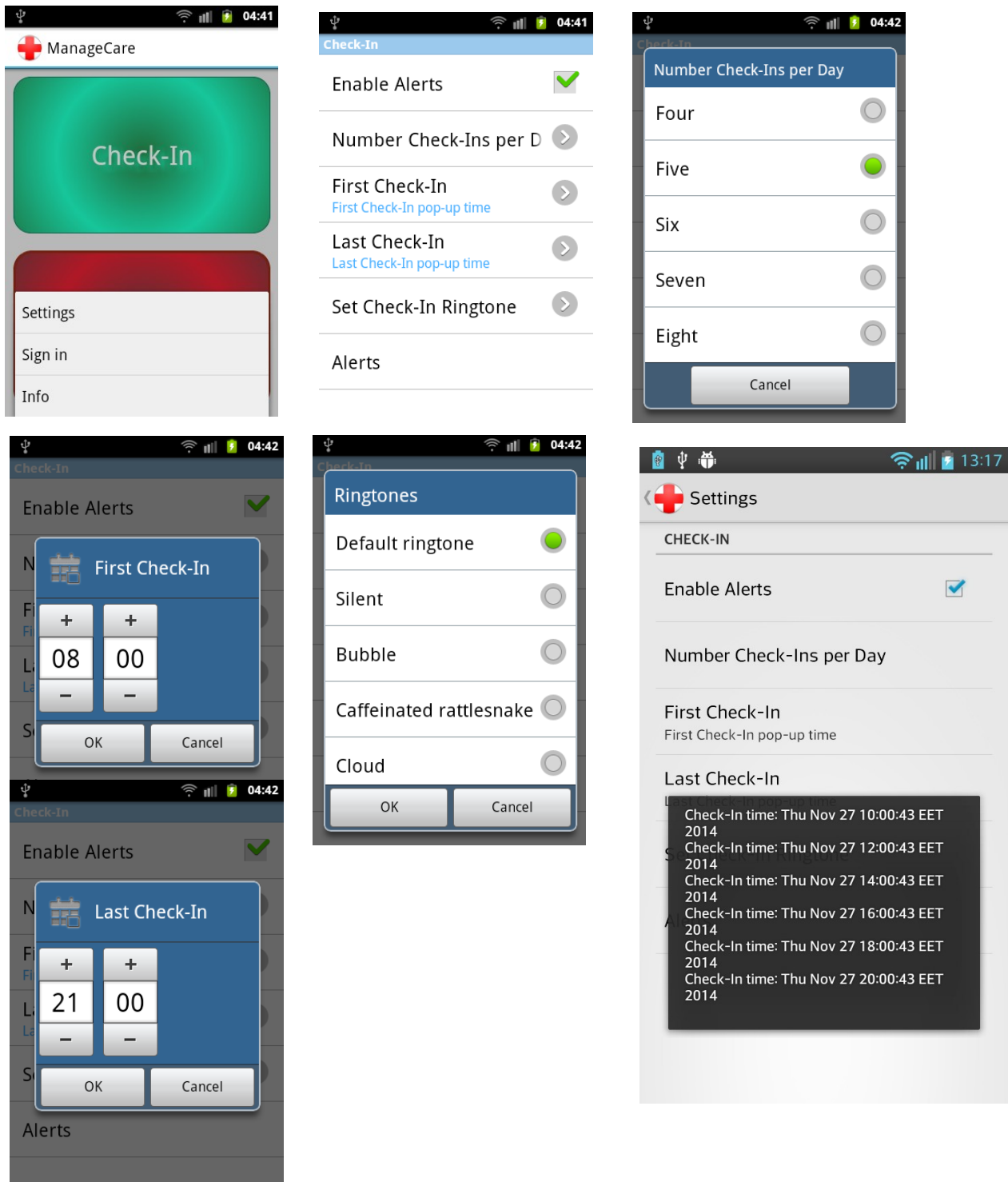
NO



Medic part starts with list of all Doctor's patients and after pressing on the Patient open Info-graphic screen that provide info about patient's condition.



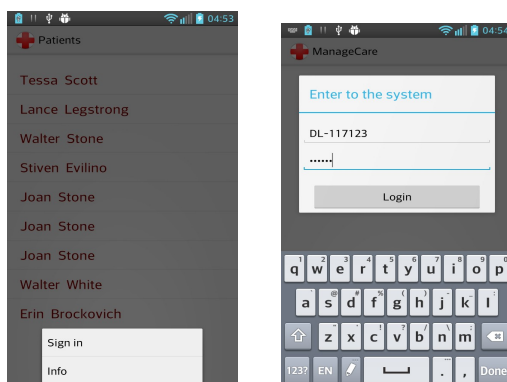
The setting also are as easy as possible. Patient can reenter, get info about himself or to adjust Check-In alerts schedule, pick a ring-tone for alerts. There are also default settings (5 per/day)



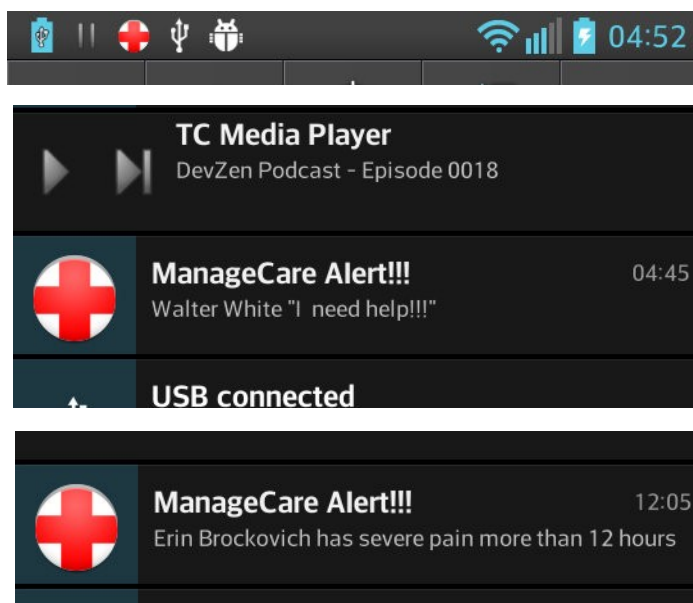
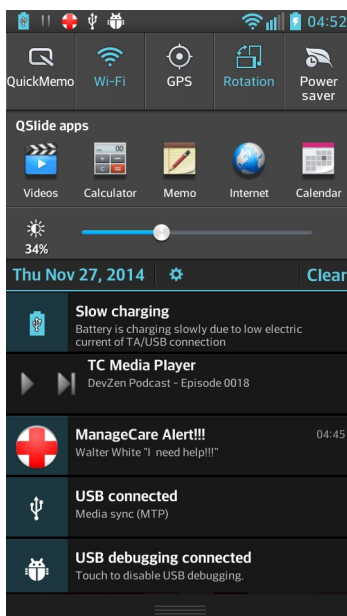
Alert pop ups Check-In screen, and Patient just has to answer 4 – 10 questions. The system trying not to use exact hours time to avoid server overhead.

After rebooting device Check-In pop-up tasks schedule persists, and user do not need to re-adjust it (by default, all alarms are canceled when a device shuts down). I did it using intent “android.intent.action.BOOT_COMPLETED” and handling it in the BroadcastReceiver.

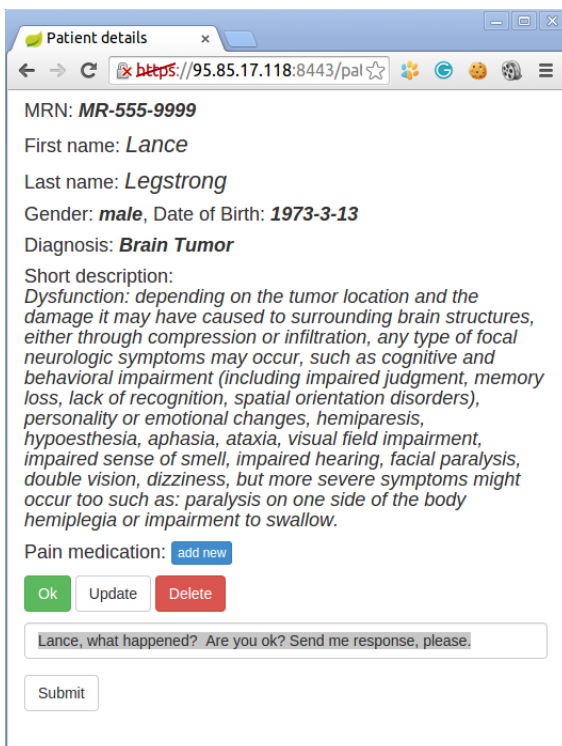
And nothing to adjust for Doctor, only reenter and info.



Doctor also gets Notifications (I used GCM) if something wrong accordingly project specification about patient's answers. And Doctor is receiving messages from his/her Patients.



Doctor can also send a messages to any of his/her patients via web interface:



Patient details

MRN: **MR-555-9999**

First name: **Lance**

Last name: **Legstrong**

Gender: **male**, Date of Birth: **1973-3-13**

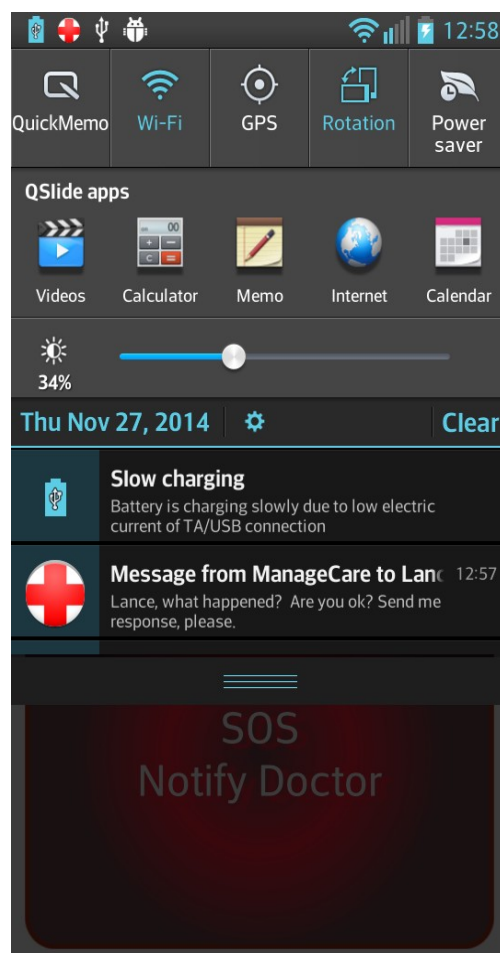
Diagnosis: **Brain Tumor**

Short description:
Dysfunction: depending on the tumor location and the damage it may have caused to surrounding brain structures, either through compression or infiltration, any type of focal neurologic symptoms may occur, such as cognitive and behavioral impairment (including impaired judgment, memory loss, lack of recognition, spatial orientation disorders), personality or emotional changes, hemiparesis, hypoesthesia, aphasia, ataxia, visual field impairment, impaired sense of smell, impaired hearing, facial paralysis, double vision, dizziness, but more severe symptoms might occur too such as: paralysis on one side of the body hemiplegia or impairment to swallow.

Pain medication: [add new](#)

[Ok](#) [Update](#) [Delete](#)

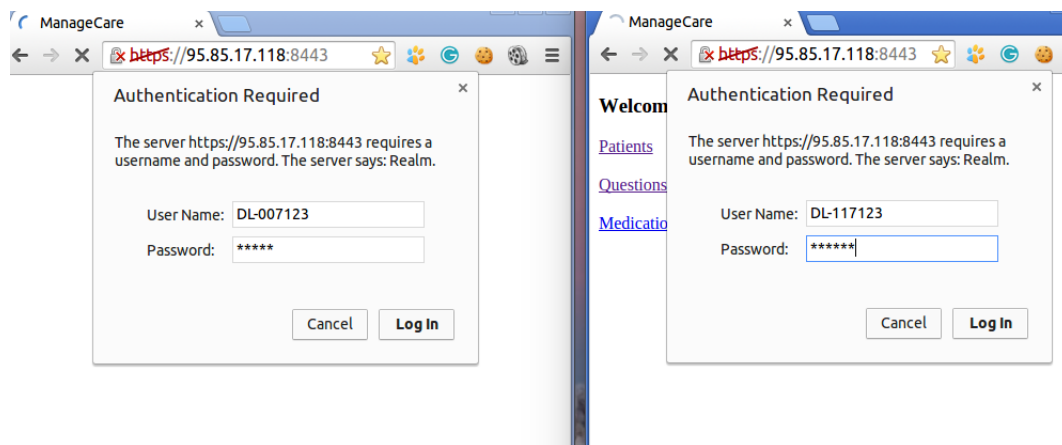
[Submit](#)



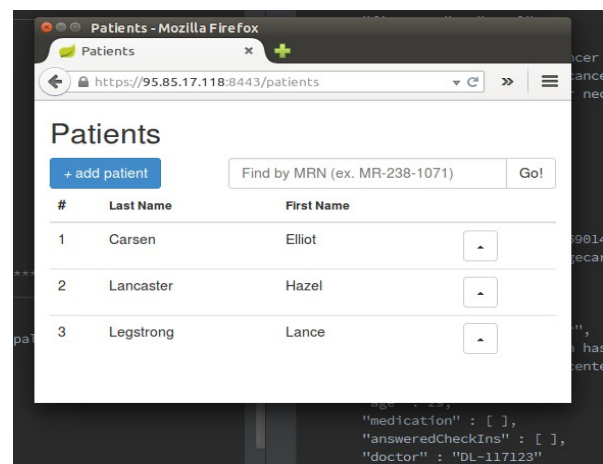
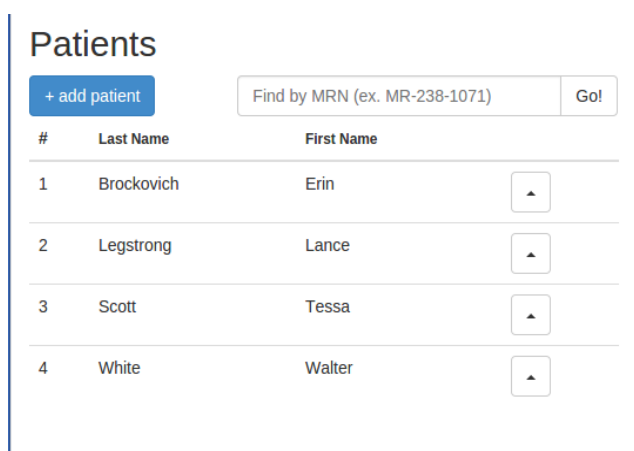
Web App

A lot of things Doctor can do via web console with practically any device (even phone).

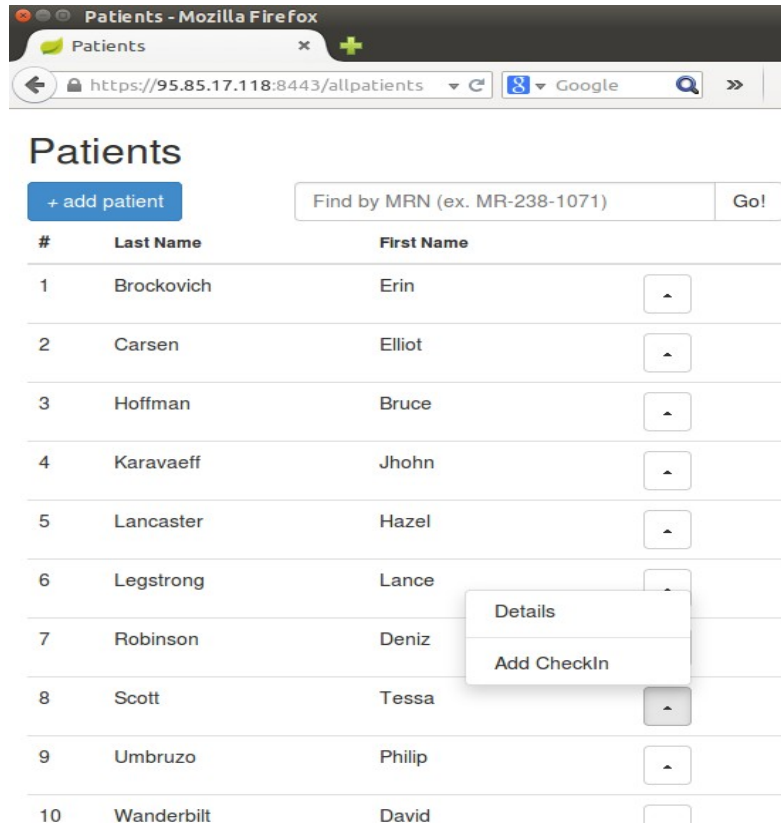
Browse a list all his/her patients (below two different medics enter to the App with their credentials:



And can see his/her Patients:



And as you've seen above one Patient can belong to many doctors. If the user knows “secret” he/she can see all patients).



#	Last Name	First Name	
1	Brockovich	Erin	▲
2	Carsen	Elliot	▲
3	Hoffman	Bruce	▲
4	Karavaeff	Jhohn	▲
5	Lancaster	Hazel	▲
6	Legstrong	Lance	▲
7	Robinson	Deniz	▲
8	Scott	Tessa	▲
9	Umbruzo	Philip	▲
10	Wanderbilt	David	▲

Doctor can add, update, delete Patients:

Add/Update patient

Medical Record Number:

Enter MRN (ex. MR-238-1071)

First name:

Enter first name

Last name:

Enter last name

Gender: ☐ female / ☐ male / **Date of birth:** YYYY-MM-DD

Diagnosis:

Enter diagnosis

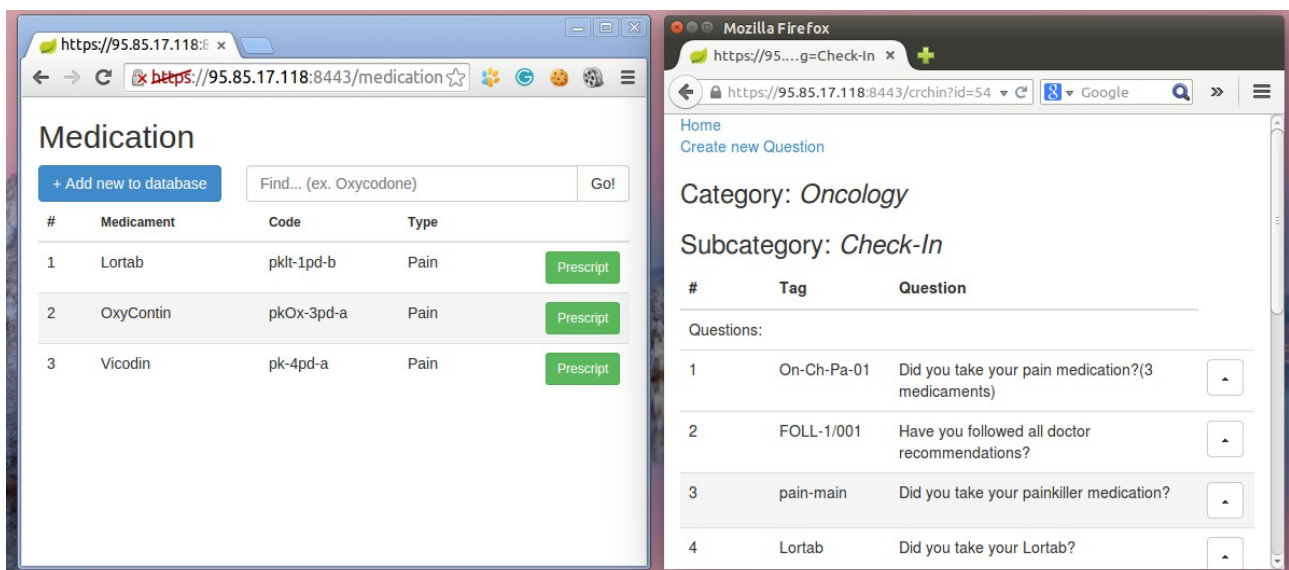
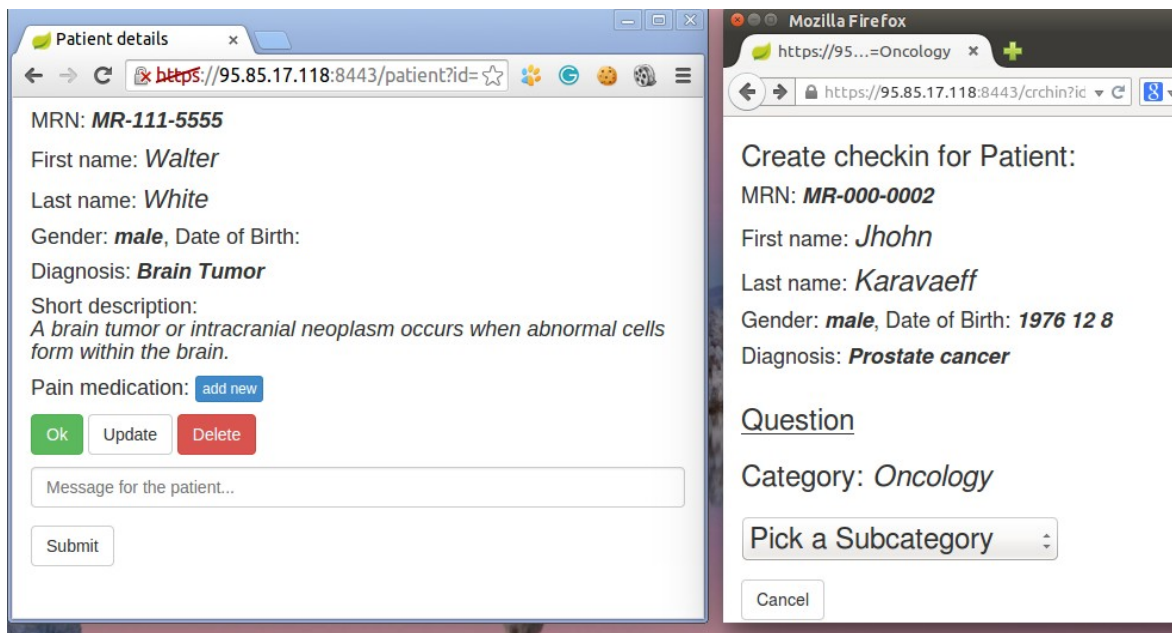
Description:

Enter short description

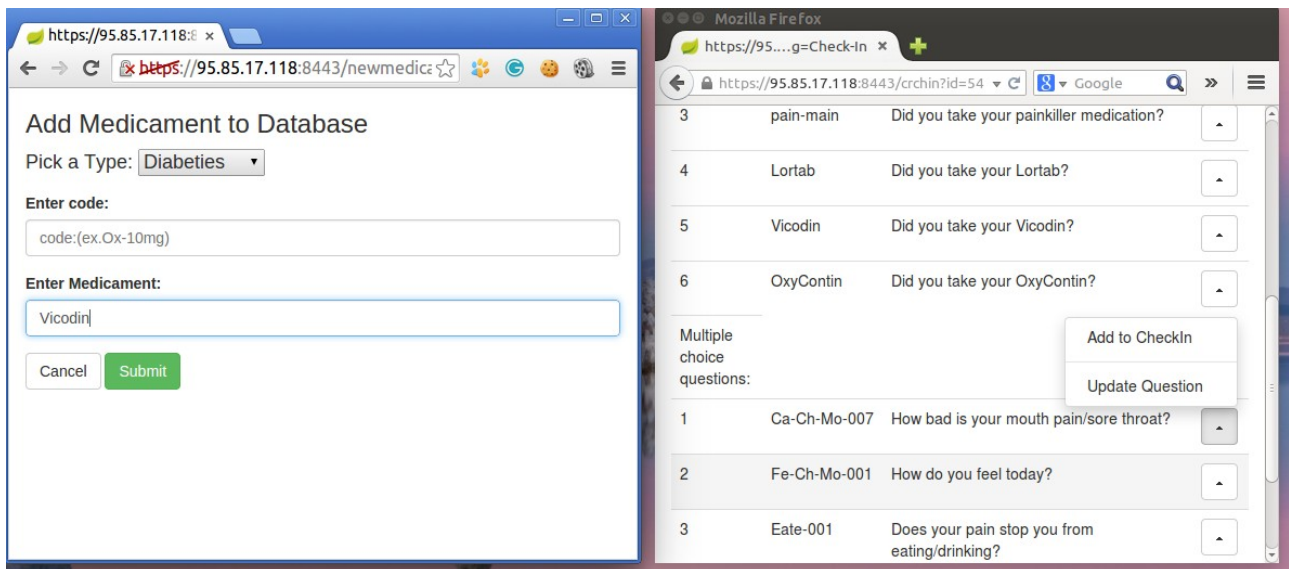
Cancel

Submit

He/she can see detailed information, prescript new medication, send messages, create individual Check-Ins:



Add new questions to database, update questions, add new medication to DB:



When doctor prescribes new medication the question like “Did you take your Vicodin?” goes to the patient's Check-In automatically and immediately!

Conclusions

Utilizing a Spring and MongoDB in the project make it easy maintainable, scaling (and vertically and horizontally), pretty secure. For security purposes I do not keep any data on the mobile, only on the server side.

Mongodb allows add new data fields, change data, create very sophisticated queries without headache. I'll show how it works in the screen-cast.

System supports same user from different devices at the same moment and multiple users from many gadgets.

PS. If something won't unzip or load or ... here you'll find all links and files:

<https://github.com/ruan65/capstone2014>

If there something is unclear don't hesitate to ask questions: ruan65@gmail.com

PSS.))

