

CS2310 Multimedia Software Engineering - Final Project Report

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Introduction

In final project, I extended basic components in Exercise 4 containing work like extended EmergencyMsgManager SuperComponent, built a HomeCare basic component and added some UI to system. After all this work, the base of whole home health care system was built up. The whole system is very easy to extended and use, which could be further work to build a more complexity system.

1 System Overview

The whole home care system consists of three components: input sensor, EmergencyMsgManager, HomeCare.

1. Input Sensor: in this project, PrjRemote was used to mimic input sensors' signal to give input to EmergencyMsgManger. If more complexity input components needed to be extended, just simple replace PrjRemote with some new component will be OK.
2. EmergencyMsgManager: this is a super-component in this system, also, this is the only super-component in this system. EmergencyMsgManager will be working like a server: receive all messages from input sensor (in current system, PrjReomote), then according to how many times receiving a single message from input sensor, EmergencyMsgManger will send different message to HomeCare component to remind remote home care staff to call or visit patient.
3. HomeCare: this component is a basic component taking care of messages from EmergencyMsgManger and display different message into screen to remind home care staff to call or visit patient.

The architecture of the whole system will be shown as follow:

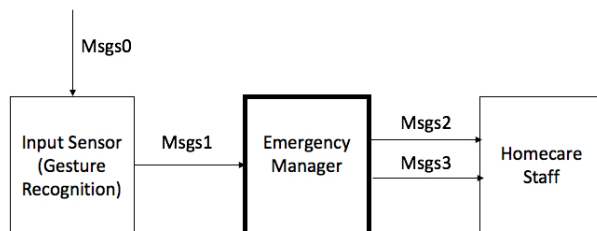


Figure 1: Architecture of homecare system

2 Implementation of each component

2.1 EmergencyMsgManger

This is the only super-component in this system, the core implementation of this component concentrates on one problem: when sensor push a message to EmergencyMsgManger, how to determine the correct scenario? this happens when user trigger the alarm by accident. In order to solve this one, in this project, I use a **counter** to count how many times user send a message:once receive the message, the counter should increase by one; below or equal to once, the system should trigger homecare component to display "call patient" message, otherwise, system should display "visit patient". Besides the counter, I also use a **timer** to count for time: if the alarm beyond 30s without any new message, then the counter should be cleared.

2.2 HomeCare

This is a basic component in this system: HomeCare component will monitor all message from EmergencyMsgManger and display different message to home care staff. For example, if the EmergencyMsgManger send a "Call" message, then HomeCare component should display a Call message in **GUI** and if EmergencyMsgManger send a "Visit" message, then HomeCare component should display a Visit message. Moreover, this component should give home care staff more **options** to choose: if clear the message or not, if not, then a higher level priority message will be present and remind again.

3 UI design and system usage guide

3.1 register

Using PrjRemote, use message CreateTempMsgManager.xml and CreateHomeCare.xml to register two components.

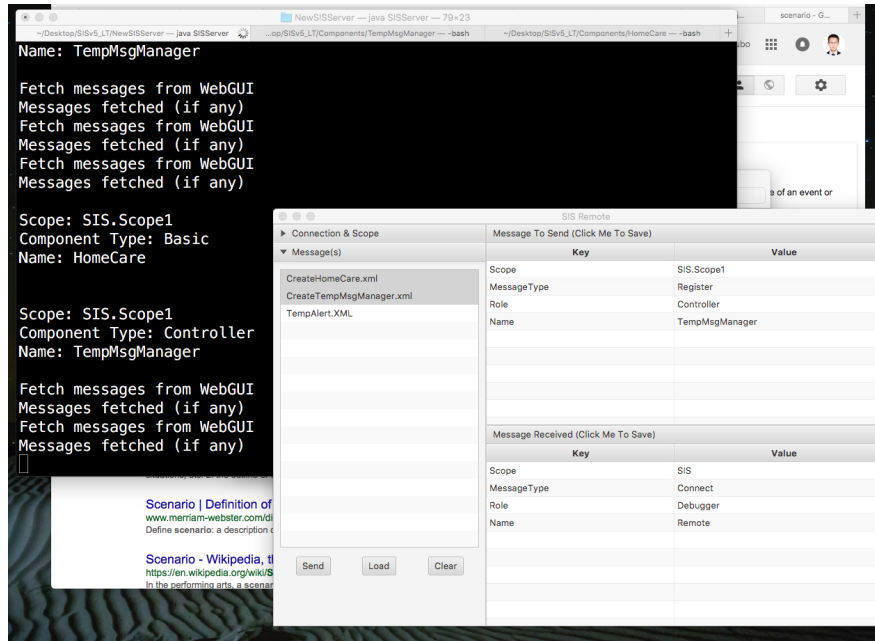


Figure 2: Register of two components

3.2 Call Scenario

Using PrjRemote, use message TempAlert.xml to send message to HomeCare component.

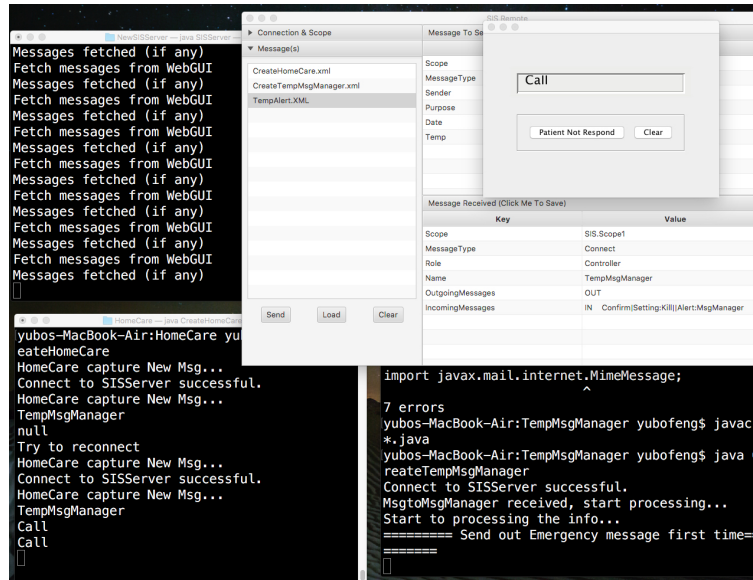


Figure 3: First time send call message

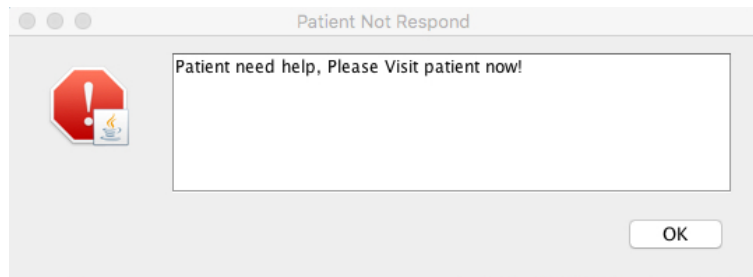


Figure 4: If choose 'not response'

When the PrjRemote sends Alarm message to EmergencyMsgManger, the EmergencyMsgManger component will receive and identify the message as first time call while set a timer to trace this state. After this, EmergencyMsgManger will send a "Call" message to HomeCare component, then HomeCare component will pop a message window to indicate that Call message has already been received and what kind of action should HomeCare staff to execute. Then HomeCare staff will call the patient or do nothing. If "Clear" is chosen, which means HomeCare staff called the patient already; otherwise, "Patient Not Respond" is chosen, and a emergency message will pop out indicating that HomeCare staff should visit patient directly.

3.3 Visit Scenario

After first time EmergencyMsgManger send alarm to HomeCare component (in Call Scenario), the timer in HomeCare component counts for 30s and waiting for new message. If at this time, new alarm message come in, EmergencyMsgManger counts this as second alarm, which means HomeCare staff should visit patient. Then EmergencyMsgManger send a Visit message to HomeCare component. The same as previous Call Scenario, this message will displayed in screen and two options will be left to choose. Moreover, if there is no new message come to Server, then the system will reset the timer, and new round of waiting for SISServer begins.

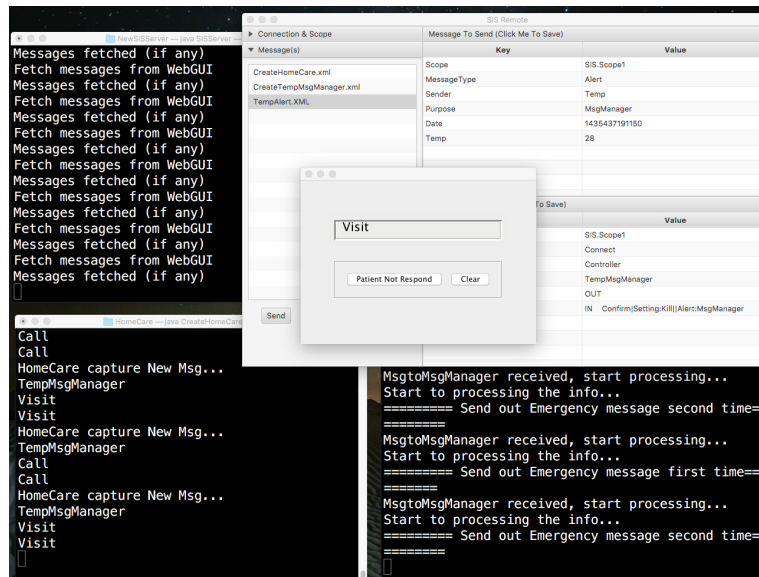


Figure 5: Second time send call message

4 Youtube Link and demo

The video for the demo could be found in following link:

<https://youtu.be/lcy7aaXVLiM>

Moreover, all code could be found in the email along with this report.