

I . MOGJ(Lone senior caring app) planning document and images

<Development Period: 2018>

1. Motivation & Purpose

A. Motivation

My grandfather and great-grandfather lived in Gwangju together, but my great-grandfather had passed away. My grandfather became a lone senior. I started to think that the social issue about lone senior is not so far from it.

B. Purpose

If our grandparents lives far away, we usually contact to them at least once a month. However, do you think that is enough? Supporting for caring health and contacting during everyday life is the purpose of the app. We can know if our parents are healthy easily.

2. Necessity

Republic of Korea always has the largest senior suicide rate between the OECD countries. There are many problems and holes of senior welfare, and this occurs suicide. However, it might have been changed if the senior had contacted with their children. With periodic contact, both the senior and their children will feel good of it,

3. Pilot Research

A. OECD statistics

1) Senior suicide rate (N people per 100,000 people)

Korea has the highest rate 59.6. Japan has 25.8, France 25.1, and Turkey 3.8, the least.

2) Senior poverty rate (%)

Korea has the highest rate 45.7%, Australia 25.7%, Mexico 25.6%, and France 3.1%, the least.

3) Analysis

Korea has the highest rate for both of it. This is a serious problem, and we need to have change of it.

3. Development Output

❖ IDE used : Android Studio

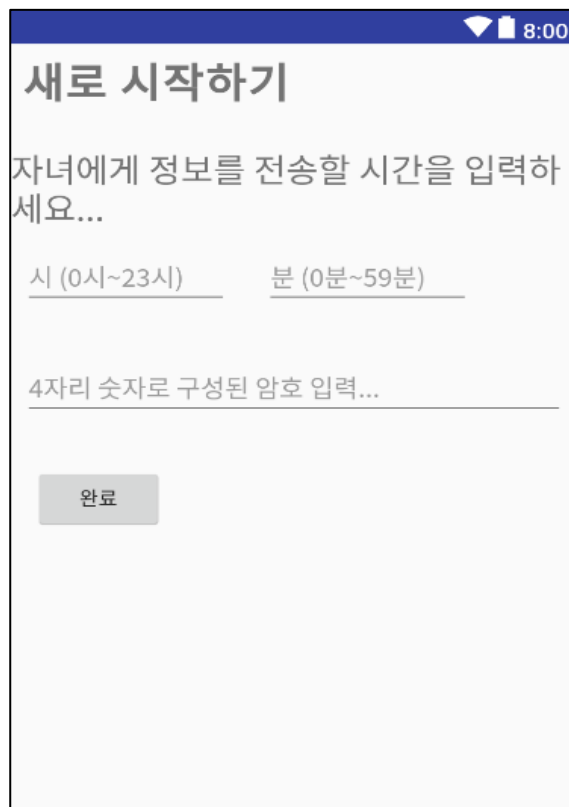
A. MOGJ for parents

1) Application UI

① activity_main.xml (start)

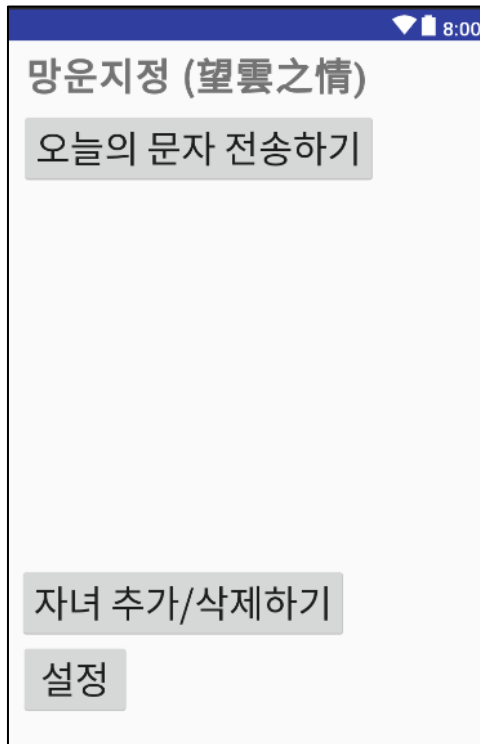


② activity_start1.xml (register)

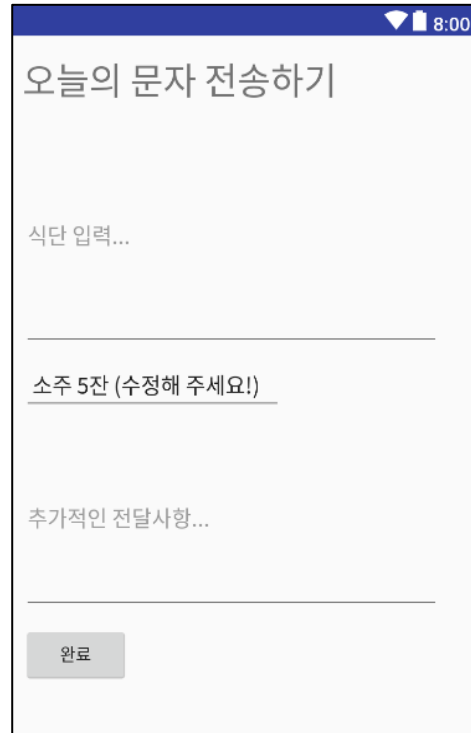


③ activity_home (main)

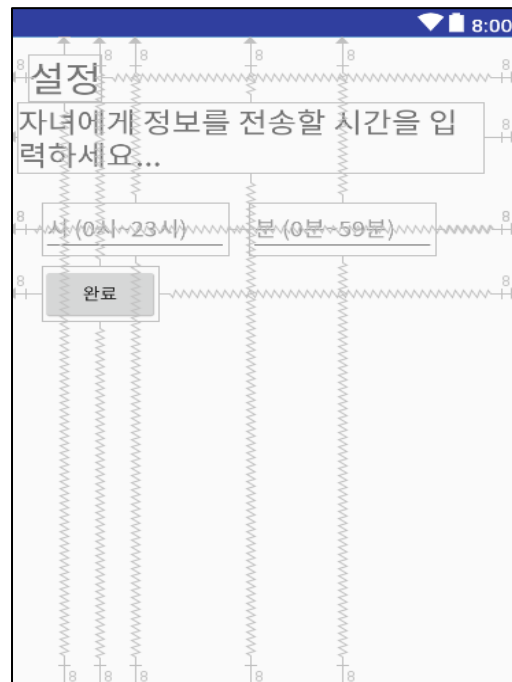
④ activity_send_msg (SMS sending)



⑤ activity_add_child.xml (Add/delete child)



⑥ activity_settings.xml (Settings)



2) Algorithm

① MainActivity.java

On login button press, program checks if the password text is a number and is equal with password.txt. If it meets the condition, it launches HomeActivity.java. If it doesn't, it asks to rewrite it.

On register button, it launches StartActivity1.java.

② StartActivity1.java

On register button press, program checks if the input meets condition(ex) is the time variable small than 25?). If it doesn't., it asks to rewrite it.

If the password isn't a 4-number PIN, it asks to rewrite it.

If it meets both conditions, the program asks for permissions, and continues to HomeActivity.java.

③ HomeActivity.java

On clicking "Send SMS", checks if a child is registered. If one or more children are registered, it launches SendMSGActivity.java. Else, it will ask to register children.

On clicking child add/delete, launches AddChildActivity.java.

On clicking settings, launches SettingsActivity.java.

④ SendMSGActivity.java

On clicking "Send", program checks if the entered values are valid. If they are, the program will check every child's phone number, and executes the function following.

```

public static void SendSMS(String phonenumber, String message) {
    SmsManager smsManager = SmsManager.getDefault();
    if(smsManager == null) {
        return;
    }
    String sendTo = phonenumber;
    ArrayList<String> partMessage = smsManager.divideMessage(message);
    if(partMessage.size() > 1){
        Log.d("SMS", "Sending " + partMessage.size() + " parts");
        smsManager.sendMultipartTextMessage(sendTo, null, partMessage, null, null);
    } else {
        smsManager.sendTextMessage(sendTo, null, message, null, null);
    }
}
}

```

After using the function, program goes back to HomeActivity.java

⑤ AddChildActivity.java

On clicking “Add” or “Delete”, it will check if the values are valid. If it is,

“Add” → Open the index value from the hard drive, and save the phone number in (“index value in int”+1).txt. Then it adds 1 to the index value, adds 1 to the children number variable.

“Delete” → Check all the “number.txt” files and delete if it contains the input. It subtracts 1 from the children number variable.

The index value and children number variable might seem similar. If you delete a child, the children number variable will decrease. However, the index value won’t decrease, and be the same.

On clicking “Done”, it launches HomeActivity.java

⑥ SettingsActivity.java

Does the same job with entering the time settings in StartActivity1.java. If it is done, it returns to HomeActivity.java.

B. MOGJ for Child

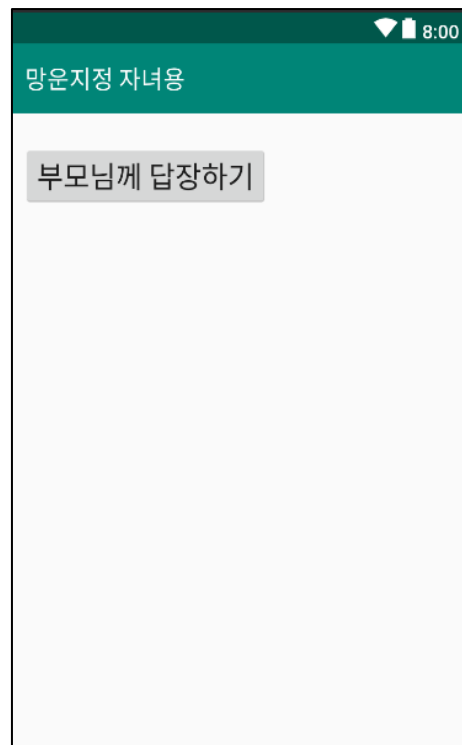
1) Application UI

① activity_main.xml (Start)

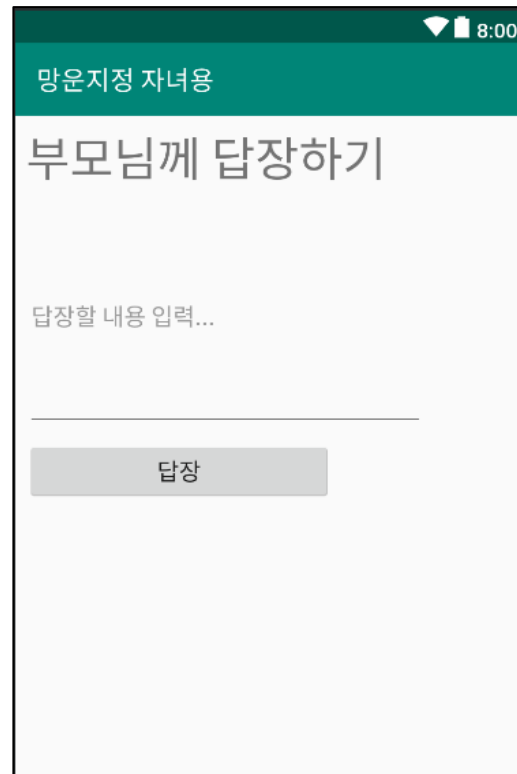
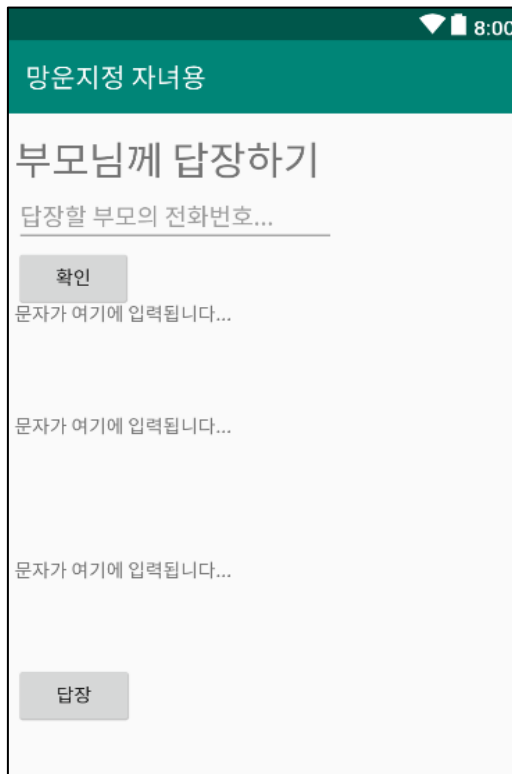
② activity_home.xml (Main)



③ activity_reply.xml (Read Sent SMS)



④ activity_reply_send.xml (Reply)



2) Code

① MainActivity.java

Asks for permission on “Start” button press. Continues to HomeActivity.java.

② HomeActivity

Continues to ReplyActivity.java on clicking “Reply”

③ ReplyActivity.java

Read messages from SMSReceiver.java. If the message contains the <MOGJ> tag, the app shows the message.

On clicking “Reply”, saves the phone number to a temporary file and continues to ReplySendActivity.java.

④ SMSReceiver.java

```

public class SMSReceiver extends BroadcastReceiver {
↓
    public static final String TAG = "SMSReceiver";
↓
↓
↓
    @Override
    public void onReceive(Context context, Intent intent) {
        if (Telephony.Sms.Intents.SMS_RECEIVED_ACTION.equals(intent.getAction())) {
            for (SmsMessage smsMessage : Telephony.Sms.Intents.getMessagesFromIntent(intent)) {
                String messageBody = smsMessage.getMessageBody();
                String messageSend = smsMessage.getOriginatingAddress();
                Log.d(TAG, "SMS Message : " + messageBody+"from"+messageSend);

                FileOutputStream fos = null;
                if (messageBody.contains("MOGJ1")) {
                    try {
                        fos = context.openFileOutput(messageSend + "-1.txt", Context.MODE_PRIVATE);
                        fos.write(messageBody.substring(5).getBytes());
                    } catch (FileNotFoundException e) {
                        e.printStackTrace();
                    } catch (IOException e) {
                        e.printStackTrace();
                    }
                }
                if (messageBody.contains("MOGJ2")) {
                    try {
                        fos = context.openFileOutput(messageSend + "-2.txt", Context.MODE_PRIVATE);
                        fos.write(messageBody.substring(5).getBytes());
                    } catch (FileNotFoundException e) {
                        e.printStackTrace();
                    } catch (IOException e) {
                        e.printStackTrace();
                    }
                }
                if (messageBody.contains("MOGJ3")) {
                    try {
                        fos = context.openFileOutput(messageSend + "-3.txt", Context.MODE_PRIVATE);
                        fos.write(messageBody.substring(5).getBytes());
                    } catch (FileNotFoundException e) {
                        e.printStackTrace();
                    } catch (IOException e) {
                        e.printStackTrace();
                    }
                }
            }
        }
    }
}

```


⑤ ReplySendActivity.java

Opens phone number from the temporary file. On clicking “Send”, it sends a message to the phone number.

```
public static void SendSMS(String phonenumber, String message) {  
    SmsManager smsManager = SmsManager.getDefault();  
    if(smsManager == null) {  
        return;  
    }  
    String sendTo = phonenumber;  
    ArrayList<String> partMessage = smsManager.divideMessage(message);  
    if(partMessage.size() > 1){  
        Log.d("SMS", "Sending " + partMessage.size() + " parts");  
        smsManager.sendMultipartTextMessage(sendTo, null, partMessage, null, null);  
    } else {  
        smsManager.sendTextMessage(sendTo, null, message, null, null);  
    }  
}
```

4. Survey

A. Summary

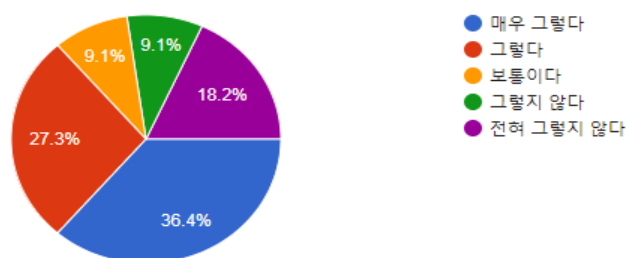
- 1) Survey participants: Koreans age of 12~14
- 2) Survey contents
 - Would people contact more than before when using MOGJ?
 - Would lone-living seniors will feel hard or be bothered while using MOGJ?
 - Is MOGJ easy to use for seniors?

B. Results

- Would people contact more than before when using MOGJ?

망운지정 부모용을 사용하면 독거노인 분들과 연락이 더 잘 될 것 같습니까?

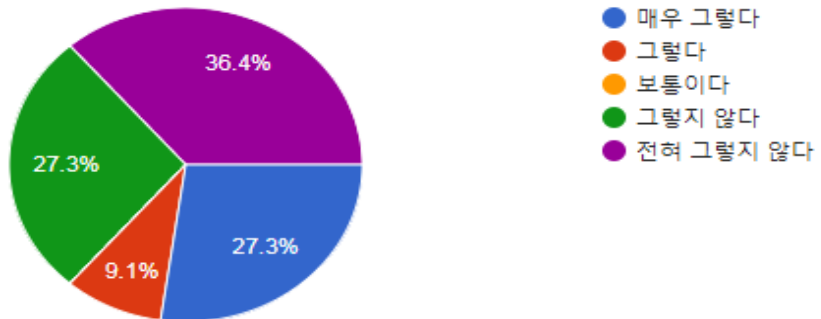
응답 11개



- Would lone-living seniors will feel hard or be bothered while using MOGJ?

망운지정 부모용을 사용하는 독거노인 입장에서 귀찮을 것 같습니까?

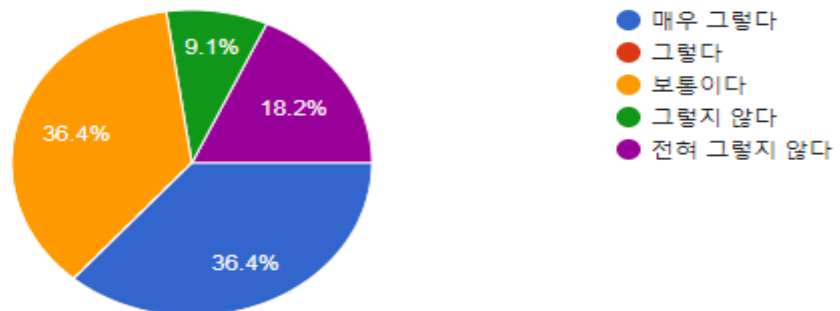
응답 11개



- Is MOGJ easy to use for seniors?

망운지정 부모용이 독거노인 분들이 사용하기에 편리합니까?

응답 11개



C. Survey Analyzing

1) Would people contact more than before when using MOGJ?

Positive opinions account for 63.7%. It is a very high rate, and it shows that it can motivate contacting.

2) Would lone-living seniors will feel hard or be bothered while using MOGJ?

"They will feel bothered" accounts for 36.4%. It cannot be ignored. I think there should be elements which can make users have interest.

3) Is MOGJ easy to use for seniors?

Postive opinions account for 36.4%. There might be some needs to change the UI more easier for seniors.

5. Necessary Improvements

When I first started, I thought that it will be hard to help all lone seniors. I targeted seniors who uses a smartphone and can contact their children. I wanted to put in many things, (ex. time alarm, server-side communication, etc.) but it was hard for my skills. There were many opinions about practical usage, such as “Text based UI might be hard for seniors to use.” Also, I want to add special functions such as alarming children if their parents’ movement isn’t tracked.

6. What I Felt

I felt that application development is a hard progress. I used App Inventor until last year, which wasn’t so hard. However, using Android Studio was quite challenging for me. I should practice more about changing my logics into computer methods.

II. Friend Relationship Helper

Planning document and images

<Development period: 2017>

1. Motivation & Purpose

A. Motivation

When I start a new grade or join a new group, I can see a lot of people I’ve never seen before. These “strangers” make us feel uncomfortable. I have felt this emotion too. I wanted to reduce this emotion.

If we talk with “strangers”, we could find our commonality and be more close with each other. It will be much comfortable than before.

B. Purpose

The purpose is to “smelt” the “frozen” relationships between people who aren’t close. It will stop the tone becoming uncomfortable. I hope this will help relationships between students, and furthermore between adults, too.

2. Necessity

Friend relationship doesn’t always flow to the positive side. There will be at least one or two friends in your class that you’ve never talked to. If we neglect this

situation, there might be misunderstandings each other which might hurt one's heart. Also, it will be hard to have broad friend relationships.

3. Applications Similar with the Subject.

Search result of "Friend Relationship" on Google Play.



There isn't any similar applications in the market yet.

4. Development Progress

A. 1st Survey



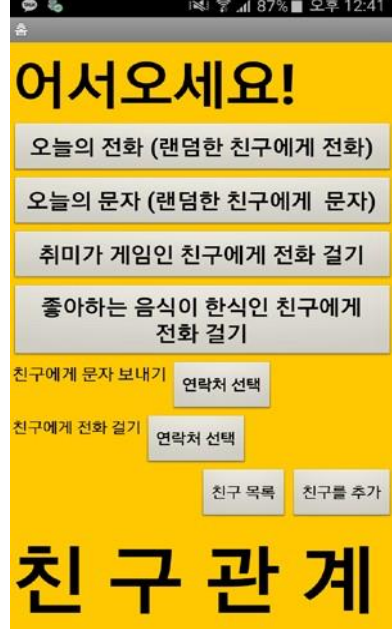
- 1) Participants: Korean students age 12~13
- 2) Contents: Basic personal information, if you get along enough with friends at school, and reason if not.

B. 1st version of Application (v1.0)

1) Summary

- ① Version Code: 1.0
- ② Contents: First version, contains the following.
- ③ Not uploaded on Google Play.
- ④ Published on a chat room with 23 people.
- ⑤ Used IDE : App Inventor 2.

2) Contents

| | | |
|--|--|--|
| <p>① Login system</p> <p>Friend relationships is one of the most sensitive personal information. I made a simple login system in order to protect it.</p> <p>You can register on first install and can login with registered ID/PW next time.</p> | <p>② “Relationship Reinforcement” system</p> <p><u>You need to enter information about your friend (ex. best food or hobby) while registering your friend.</u></p> <p>After writing in the information, you can call their phone number from the phone book easily.</p> | <p>③ Sorted main screen</p> <p>Using the information from "Relationship Reinforcement" system, you can randomly call to a friend with a specific hobby or comfort food. You can also call just anyone in the registered list. There is a system which stops from calling to a same person twice, too.</p> |
|  |  |  |

C. 2nd Survey


- 1) Participants: Similar with 1st survey.
- 2) Contents: Changes of friend relationships after using the app.

D. Fixes After The 2nd Survey (v2.0)

1) Summary

- ① Version Code: 2.0
- ② Contents: Fixing complaints from the previous version.
- ③ Published on Google Play.

2) Fixes

| | |
|--|--|
|  | <p>① Friend list delete system.</p> <p>If someone made a mistake and registered a wrong phone number, there should be a method to delete it, and I made it.</p> <p>I used "pages" to view the big list in one screen. Deleted friends or unregistered slots will show "Friend not found", and there is a tip button in case of misunderstanding.</p> |
|--|--|

E. Bug Patch (v2.1)

There was a bug which you can login without entering both ID and PW. Also, I changed the UI in order to make it compatible with bigger screen sizes.

F. 3rd Survey

- 1) Participants: Similar with the previous surveys.
- 2) Contents: If the application finally did help and extra suggestions.

3) Analysis

There were positive opinions about the effect of the application. This might have been derived out from the additional features of v2.0.

4. Development Conclusion

I am not close with everyone, and I started this project in a wish if I can be close with more people, and furthermore if everyone could.

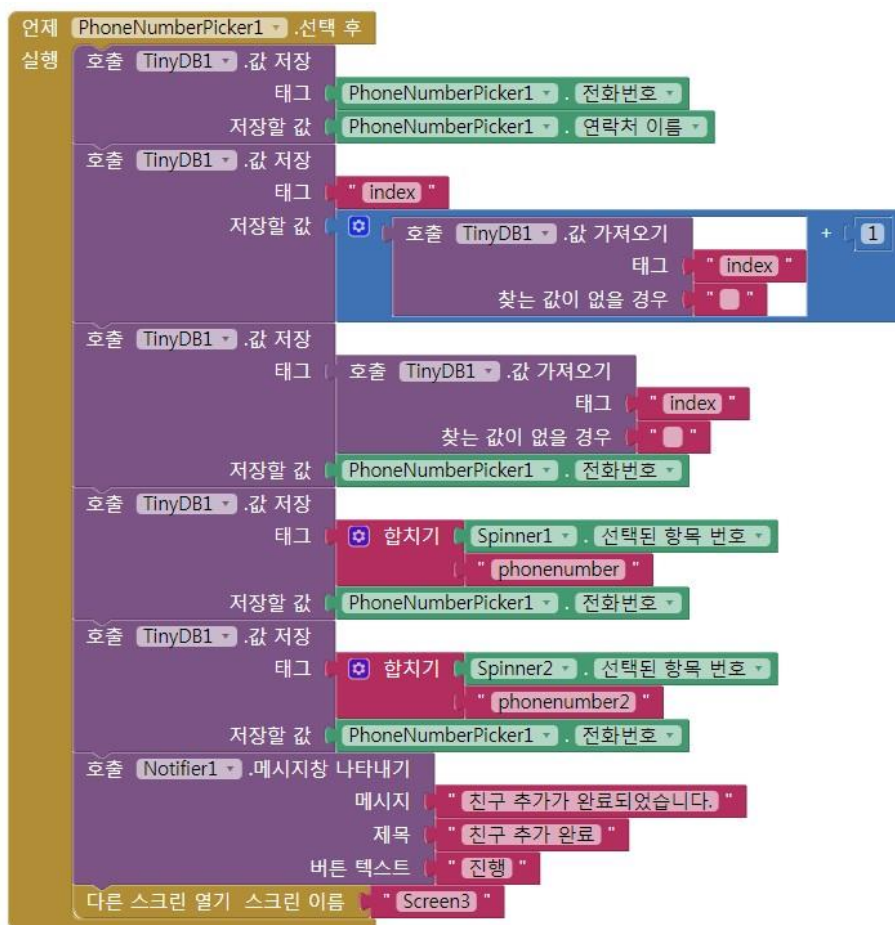
This can fix contacting with specific friends and talk with others more than before.

5. What I Felt

It might become a happier school life if I talk with more people. I want to add more features to the app to make it utilized.

6. Part of the Code

① Friend Data Saving Code



III Menu Recommender

Planning Document and Images

<Development Period: 2017>

1. Motivation

In order to decrease the difficulty of menu choice for modern people.

2. Contents

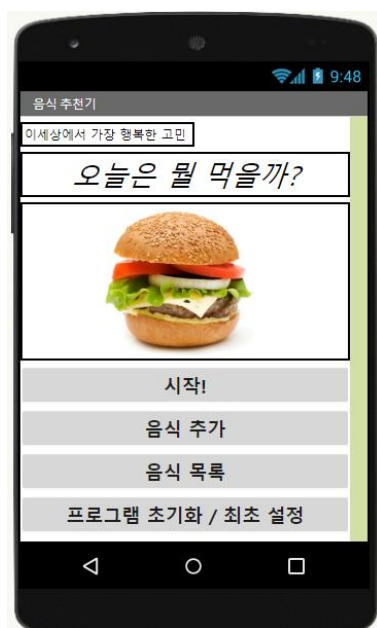
- Save one's best menus.
- When clicking start, it shows one random menu from the list.
- The menu searched on google will be shown below.
- Can add or delete menus.

3. Progress

Build with App Inventor(<https://appinventor.mit.edu/>) which helps to make an android application out of block coding.

4. Images

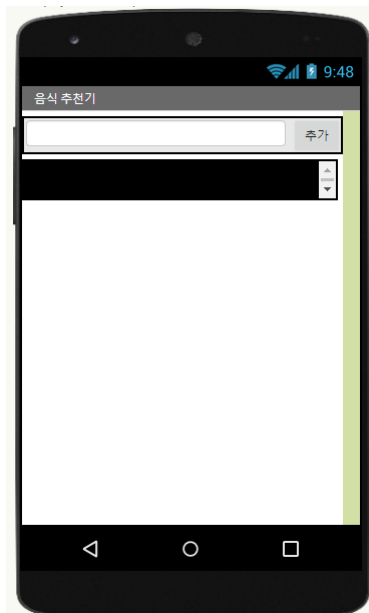
Main Screen



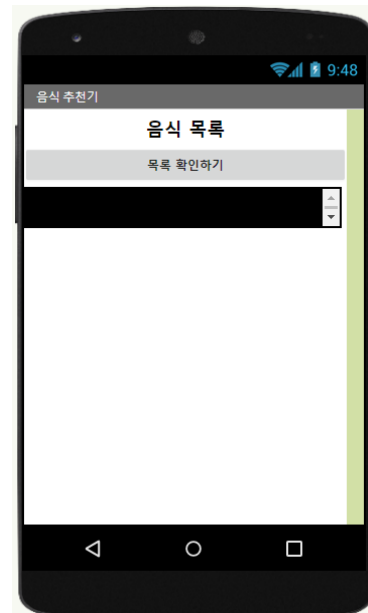
Results



Menu Add



Menu Delete



5. What I Felt & Necessary Improvements

My father used this application at work, and I felt proud of it. He said that the reset button is too easy to click on mistake. I will improve it so it would ask first before reset.

6. Part of the Code

