Maybe Overview

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Maybe project let developers be able to defer choices about app behavior that difficult to made at development time.

1 Android Library

a. Communicate with Google Cloud Messaging and maybe backend server.

Why Google Cloud Messaging? When backend server get a new choice(s) for one device, we need **push** the change to device.

b. TODO: Collect logs from device.

It should be able to cache logs and do batch upload.

c. TODO: get decision tree from backend server and able to dynamically make decision on device.

d. TODO: debug mode.

Let develop easily attach a setting activity for maybe variables. It should be generated by meta data.

2 Backend Server

2.1 Requirements

a. provide choices for all devices (each device may has different choices)

different schemas for value assignments of new device, such as: random, fixed, preassigned

b. push changes of choice

c. TODO: collect logs, Storing Log Data in mongoDB

d. TODO: send decision tree to device

e. TODO: user system and permission control

2.2 Tech roadmap

We use Meteor to develop backend.

repo address: https://github.com/xcv58/backend

3 Rewriter

Change maybe style codes to ordinary Java code. Such as: convert

```
1  maybe ("label") {
2      // do something 0
3  } or {
4      // do something 1
5  } or {
6      // do something 2
7  }
```

to

```
1  int choice = maybeService.get("label");
2  switch (choice) {
3      case 0:
4          // do something 0
5          break;
6      case 1:
7          // do something 1
8          break;
9      case 2:
10         // do something 2
11         break;
12     default:
13         maybeService.log("get invalid choice for " + choice + " label");
14         break;
15 }
```

3.1 Current Implementation

Current version uses Python to implement rewriter. The basic idea is using regular expression to match maybe syntax, and convert it to switch case code block. In the meanwhile, it will upload metadata to maybe backend. repo: ssh://src@blue.cse.buffalo.edu/projects/maybe/rewriter

But we need change some feature of current implemenatation.

3.2 TODO: Rewrite whole project instead one Java file

Current implemenatation can only rewrite one Java file. It takes the Java package name as the package name used in maybe metadata.

But we need an unique namespace for an Android project. The Android package name is unique for an Android project. More details about Android package name can be found: http://developer.android.com/guide/topics/manifest/manifest-element.html

3.3 TODO: IDE Support

The maybe syntax should be supported by IDE like Eclipse and Android Studio (IntelliJ IDEA). For Android Studio, we need to develop a plugin with grammar support for the syntax detection.

TODO: how to integrate other features of IDE like auto complete.

3.4 TODO: Build System Integration

For build system, we can integrate our rewriter with Gradle. This highly depends how we implement new version of rewriter.

4 TODO: Learning Part