Introduction

In this homework, we will explore the Open Thing Platform and you will have a chance to contribute new ideas and applications to extend Sabrina.

As usual, you are encouraged to work in pairs. For each task, we’re providing you with starter ideas that your group can sign up to, but you are welcome to go beyond the list and do something different, as long as you can make it work. **Submissions are due March 3rd at 3pm electronically on the ThingPedia website.**

To complete this assignment, you will need a phone or tablet with Android or iOS (any recent version should work). If do not have one, you can ask the TAs for a Android tablet to use for the assignment.

If you get stuck at any point, or are having any trouble with the system, you should contact the guest TA for this assignment Giovanni Campagna via e-mail or Omlet at gcampagn@cs.stanford.edu

Task 0: Getting Started

*This part will not be graded.*

First of all, you should familiarize yourself with our instance of Sabrina and ThingPedia that is available at [https://thingengine.stanford.edu](https://thingengine.stanford.edu).

Preliminaries:

1. Register an account on ThingPedia at the above URL
2. Enable Sabrina by creating an Omlet account when prompted during the registration process
3. Install Omlet from the Google Play Store or the iTunes App Store
4. Complete the Sabrina initialization process
5. Apply to be a ThingPedia developer from the Settings page; in the request, please indicate names and student IDs of all members of the group

When registering the ThingPedia account (not the Omlet account), please use your SUNET ID as your username. If you chose to register to ThingPedia with Facebook or Google, your username will be your email, so please change it to your SUNET ID from the Settings page in the top right.

Your task:

- Install the "Warriors Games" app from ThingPedia, and observe Sabrina reporting the NBA scores live or the time of the next game
- Enable one of the supported accounts from the My Sabrina page
- Read the developer documentation
Task 1: Creating Apps

This task is worth 30% of the grade.

In this section, you will learn how to create new ThingTalk apps. To do so, you must go to My Sabrina, the click on Create new App.

Your Task

Write two apps that you would use yourself using the existing public ThingPedia interfaces (such as Twitter, LinkedIn, SportRadar or Omlet). You can use any of the existing apps as starting point, but your app should be significantly different.

Submission

To submit this task, it is sufficient to mark the apps that you wish to have graded as public from My Sabrina. It is indifferent which one of you is submitting the app, as we will take the union. Apps that are not marked public will not be graded, and you can submit any number of them, any number of times.

Task 2: Writing interfaces

This task is worth 70% of the grade.

Your Task

In this section, you will write a new app using a new interface that your group develops.

You will need to develop and submit both the interface and the app. To obtain full credit, you must complete both the configuration part of the interface and at least 2 channels (triggers or actions).

Logistics

Your group must sign up at https://goo.gl/4UOGuQ indicating what interface you wish to implement. Additionally, at the same location (on the second sheet) you will find a list of ideas taken from IFTTTT. Different groups must sign up for different interfaces.

If you wish to use a physical IoT device, we have available (on a first come first served basis) a FitBit, a LG smart TV using the AllJoyn protocol and a Bluetooth speaker. To request them, sign up on the Google Spreadsheet.

Submission must happen through the "Upload new interface" button on the ThingPedia developer portal. For grading, the interface must include both your sunet IDs in the unique identifiers, e.g. "edu.stanford.jsmith_jdoe.fitbit". You can submit any number of times, and after you submit you can start testing the new interface. Only the last submission will be graded.

Extra credit

Extra credit is up to 10% of the homework grade.
For extra credit, you can include the following additional features:

- Make use of ThingTalk distributed social computation in your Task 2 app
- Have more than 4 sufficiently distinct triggers or actions
- Make use of a non-polling interface, when one is available
- Make use of mobile device features such as geolocation or Bluetooth (contact the TAs if you wish to attempt this extra credit)

Hints

- When you create a new app, it is not run immediately, nor it is public. Instead, to run you would enable it by clicking on the name, from My Sabrina or from the App Collection.

- To learn ThingTalk, you should look at the examples in the App Collection (by clicking on Show code), as well as the ThingTalk documentation from the developer portal.

- You can use the code of existing interface at starting point in writing your own. You can find it at [https://github.com/Stanford-IoT-Lab/thingpedia-common-devices](https://github.com/Stanford-IoT-Lab/thingpedia-common-devices) and you can ask the TA for explanations.

Hackathon sessions and assistance

To help in the course of your assignments, in addition to the regular review session on Friday, we will hold special hackathon sessions, where your group can come, talk to the TAs and receive direct assistance with the project. Food and refreshments will be provided.

Sessions are scheduled at:

- Saturday 27th, from 2pm to 5pm, in Gates 409
- Monday 29th, from 2pm to 5pm, in Gates 409

You are also welcome to hang out in Gates 409 at other times, if someone is in the room. The TA will try to be available at most hours during the day.

Setting up a local ThingPedia to test

While it is not necessary, and you’re encouraged to test using the online service, in the development of your interface, you might find it useful to set up a local instance of ThingPedia and Sabrina.

If you want to do so, you must have a machine running Linux, and you must install (using apt-get, zypper or dnf) a MySQL server. Then use the following commands:

- git clone -b selfcontained https://github.com/Stanford-IoT-Lab/thingengine-platform-cloud.git
- cd thingengine-platform-cloud
• make

• # enter MySQL’s root password

• make run

The server is now running at http://127.0.0.1:8080. The default user is "root", password "rootroot", and it’s a full administrator of the ThingPedia instance.

If you want to enable Sabrina on the local instance, which you must do before anyone sets up a local Omlet account, you should create a second Omlet account to use as the "Sabrina" user, and then proceed from the Administration page.