
I AM HERE

Lab Overview

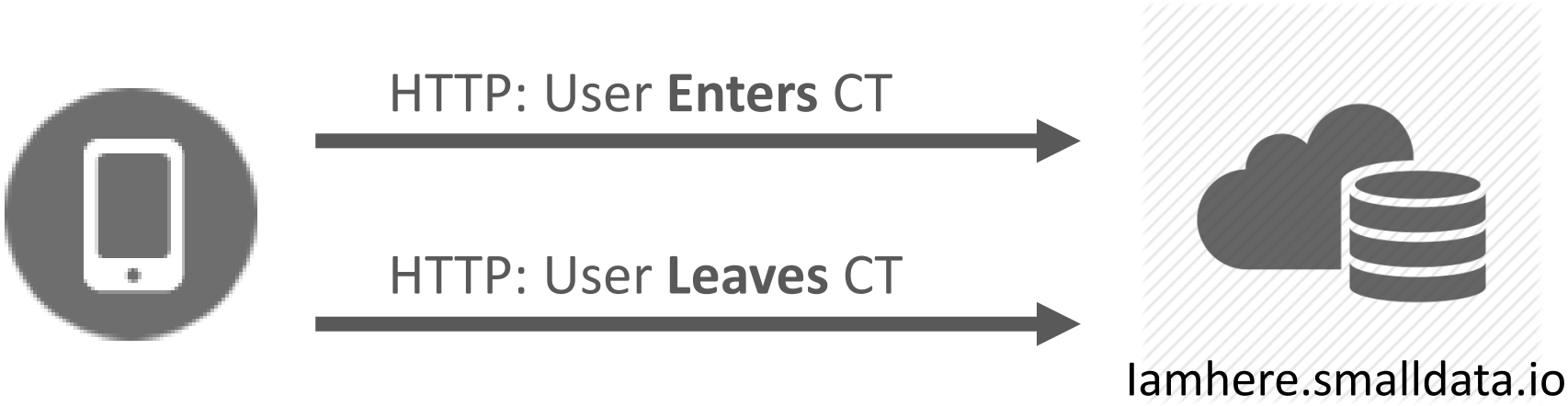
- Wiki: http://bit.ly/5454lab1
- Estimated time to complete: 6 hours +
- Through the lab, you will learn how to
  - Communicate with Web APIs
  - Create Geofence
  - Schedule Periodic Tasks on phone
- Feel free to come to us if you encounter any difficulties!

Idea

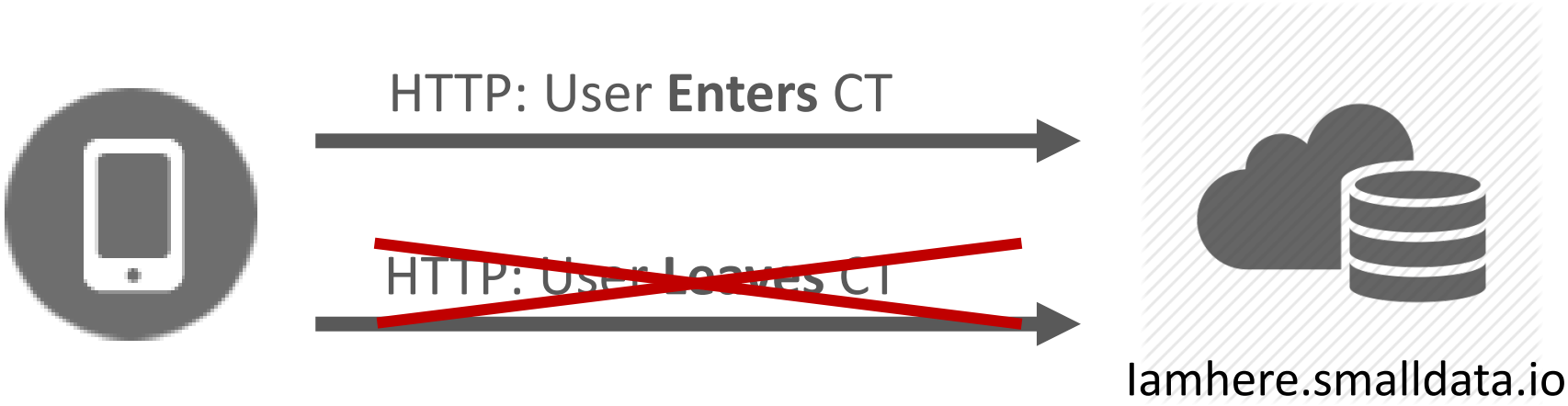
Raise awareness of others' presence for people working in a multi-floor environment.

CORNELL
NYCTECH

Basic functions

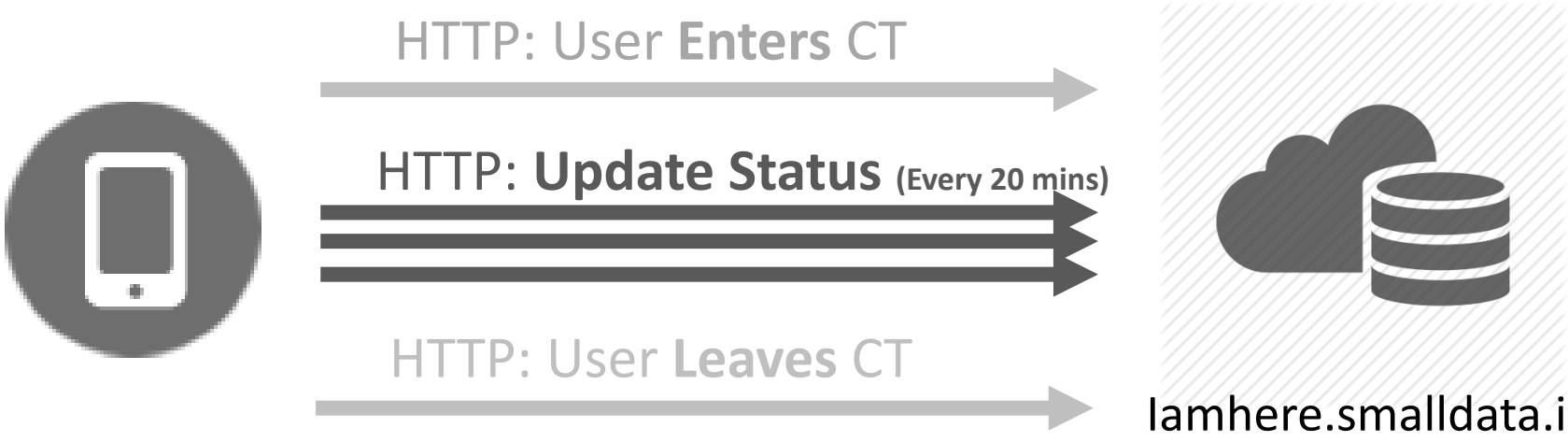


What if?

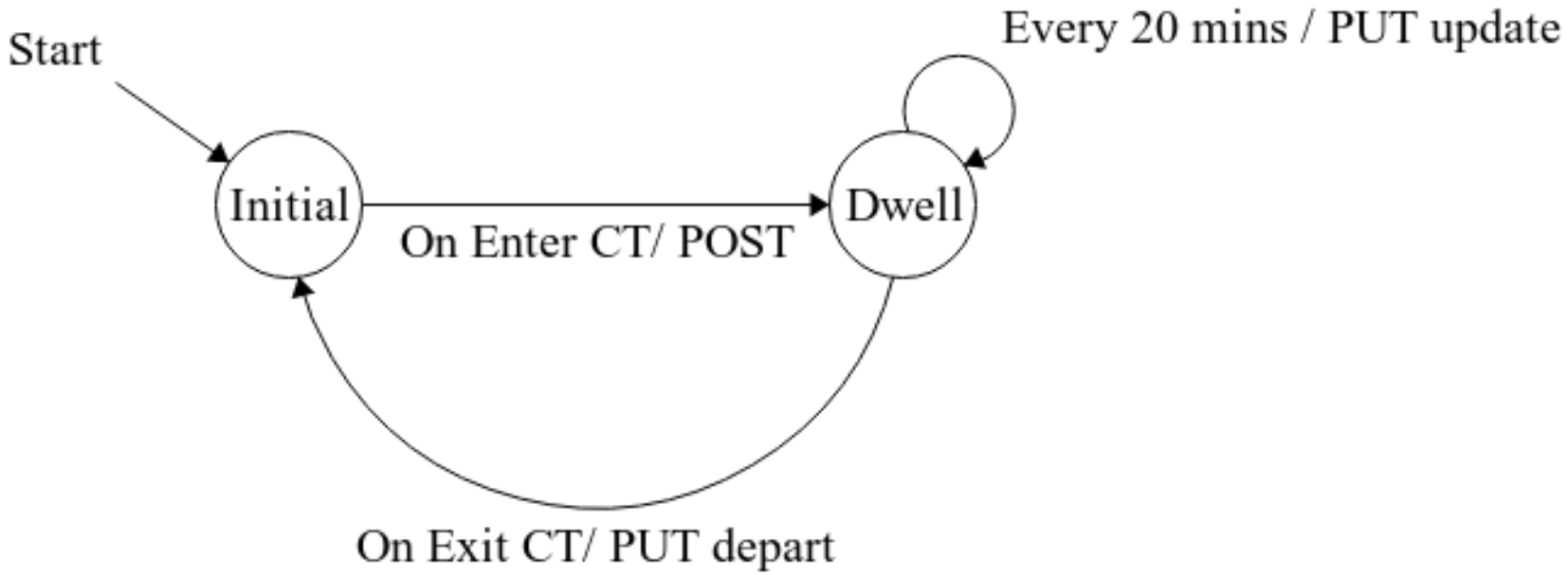

HTTP: User **Enters** CT
HTTP: User **Leaves** CT
Iamhere.smalldata.io

Power and Connection Availability is Always a Concern for Mobile/Ubiquitous Applications

A More Robust System



Finite State Machine



You will learn ...

- Make HTTP Requests
- Create Geofence
- Schedule Periodic Tasks on phone

HTTP Requests

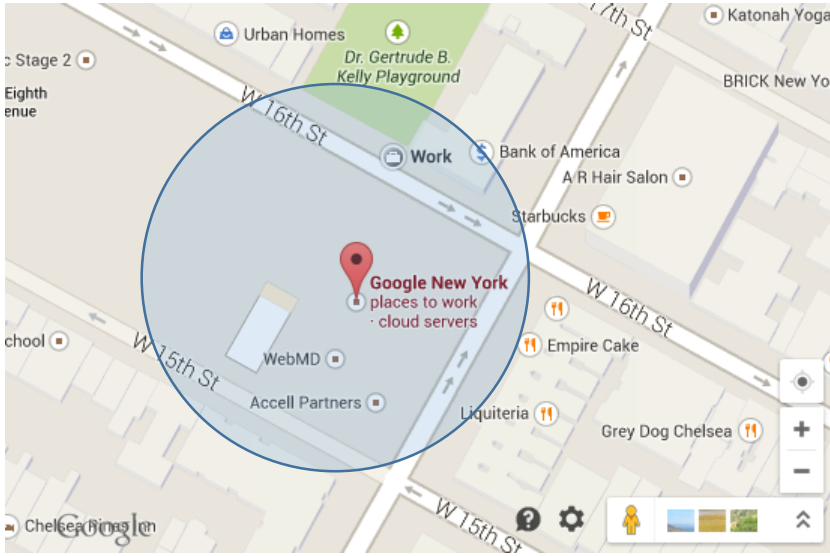
- Straightforward in both Android and iOS

- When Enter CT
  POST http://iamhere.smalldata.io/**occupancy**
- Every 20 mins while stay in CT
  PUT http://iamhere.smalldata.io/**occupancy/:id/update**
- When Leave CT
  PUT http://iamhere.smalldata.io/**occupancy/:id/depart**

- Question: What if connection is not available at the time the app makes a request?

Geofence

- A geofence can be defined by its center and the length of radius.
- Both Android & iOS allows apps to create a geofence and notify the app when ENTER or EXIT a geofence.
- Reference settings:
  - Lat: 40.7411873
  - Lng:-74.0026933
  - Radius: 100 meters or less



Schedule Periodic Tasks

- One major difference between mobile sw development and sw development on PC.
- Critical to the battery lifetime.
- API:
  - Android – Alarm Manager
  - iOS – Background Fetching

Floor Estimation (extra credit)

- Possible approaches
  - Fingerprinting WiFi/Cell Tower Signals (not available on iOS)
  - Altitude from GPS
  - Pressure from barometer*
  - User Input

*http://research.microsoft.com/en-us/people/sagarwal/hotmobile14.pdf

Demo

Commercial Time for Lab 2

- You are going to analyze data collected by mobile devices.
- We will provide sample data collected by ***Moves***.
- It will be more interesting if you can have access to your own data. (not required!)