

AndroidTracker

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Quality and Security Program

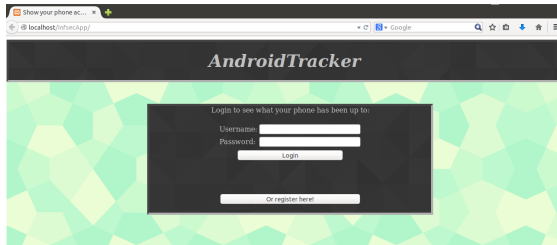
- ▶ Write an Android application that tracks a user
- ▶ Runs in background
- ▶ Sends GPS location information to Web application
- ▶ Uses Wifi to determine location of the device
- ▶ Allow remote locking of the device
- ▶ Build a Web application that plots the user's activity

- ▶ built for Android 4.3
- ▶ use Google Play Services to read GPS data from mobile phone
- ▶ use **HTTPS**-POST to send it to server
- ▶ information sent:
 - ▶ IMEI – unique device identification
 - ▶ LAT – GPS coordinates: latitude
 - ▶ LONG – GPS coordinates: longitude
 - ▶ ACCURACY – GPS coordinates accuracy in meters

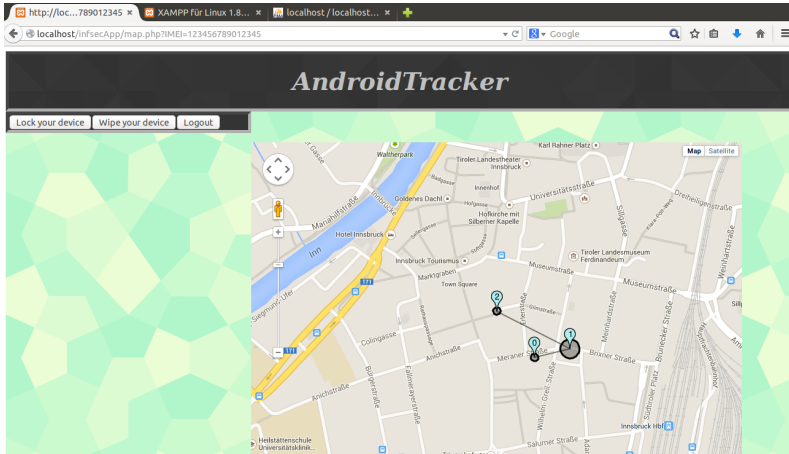
- ▶ user can change interval of GPS coordinate transmissions (default is 60 seconds)
- ▶ user can enable device administration for the app
 - ▶ needed for remote locking and wiping of the device
- ▶ for SSL: create own *TrustManager*, that trusts only the certificate of our server

- ▶ server sends lock command and new password in HTTP response to the POSTed location data
 - ▶ JSON encoded
 - ▶ { "200": { "cmd": "lock", "data": "password"}}
- ▶ therefore aggregation of data points is performed on the server
- ▶ for wiping, only the wipe command is sent in HTTP response

- ▶ use XAMPP to set up a local server
- ▶ to plot your activity register with a username, a password and your IMEI
- ▶ passwords are saved as hash using a salt value



- ▶ locations are displayed using Google Map Markers
- ▶ numbers are written in the markers to indicate the order in which the location data has been received
- ▶ lines between markers indicate paths
- ▶ circle around markers indicate accuracy
- ▶ upon mouse over the time-stamp of the location update as well as the accuracy is shown
- ▶ map centers around last known location



- ▶ locking and wiping requests are saved in DB and sent to the user with the next arrival of coordinates
- ▶ data aggregation:
 - ▶ received coordinates are compared to last received ones
 - ▶ if difference (in meters) is smaller than a certain threshold (currently 3 meters) the location is not saved in the database, but timestamp of last location is updated

QUESTIONS?