

# Application Development for Mobile and Ubiquitous Computing

Backy - The App for Backpackers and Travellers

Final Presentation

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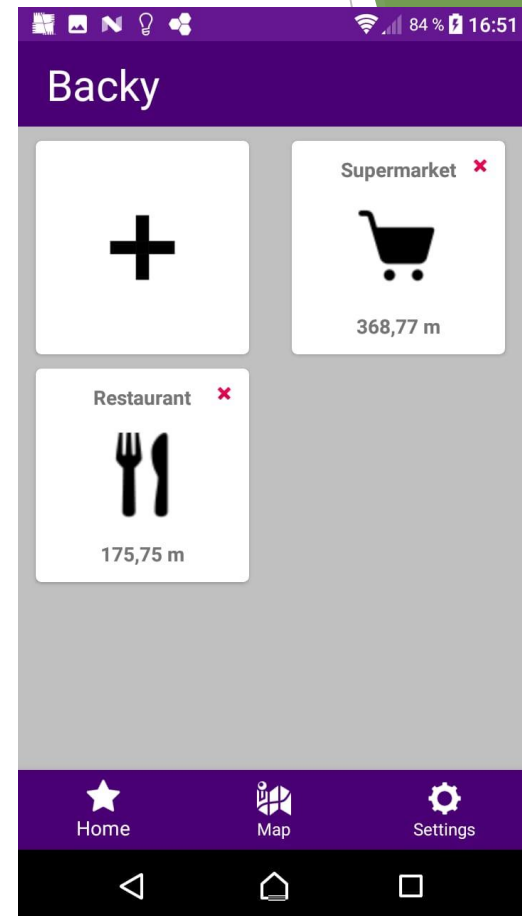
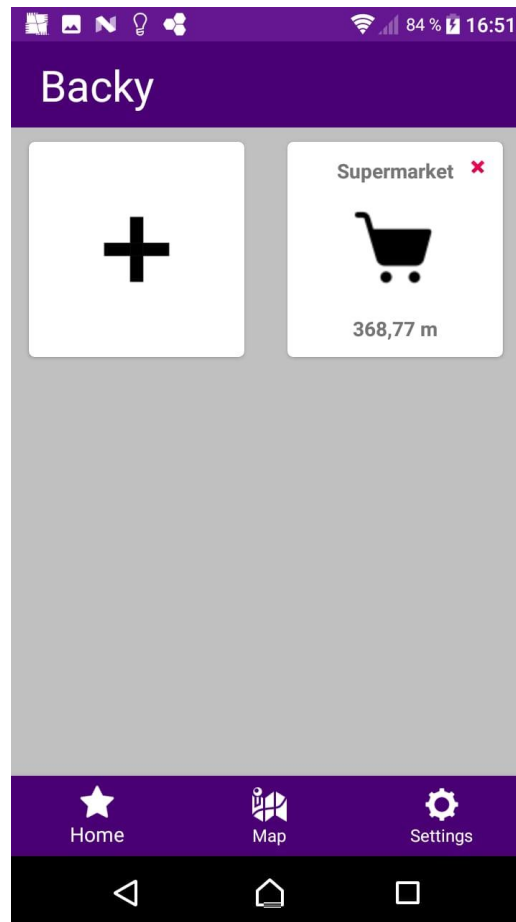
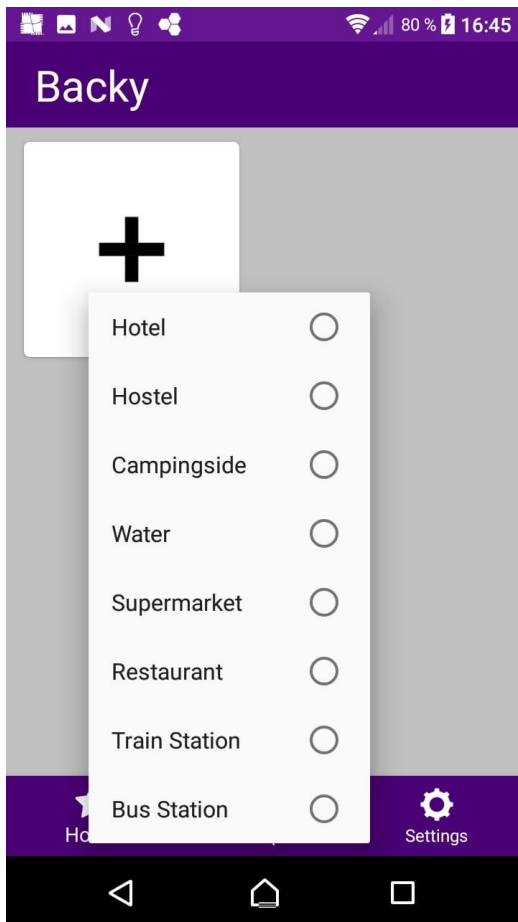
# Scenario

Backpacker looking for spots of interest:

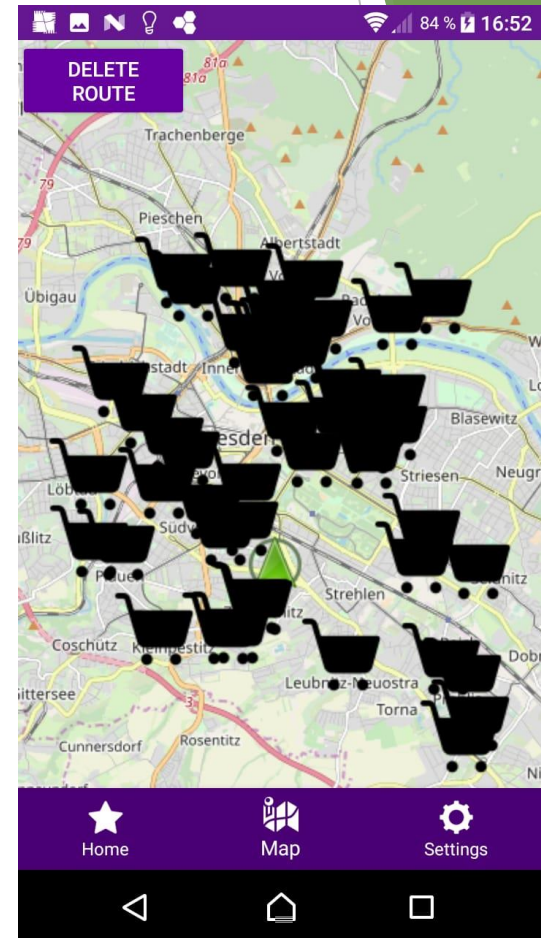
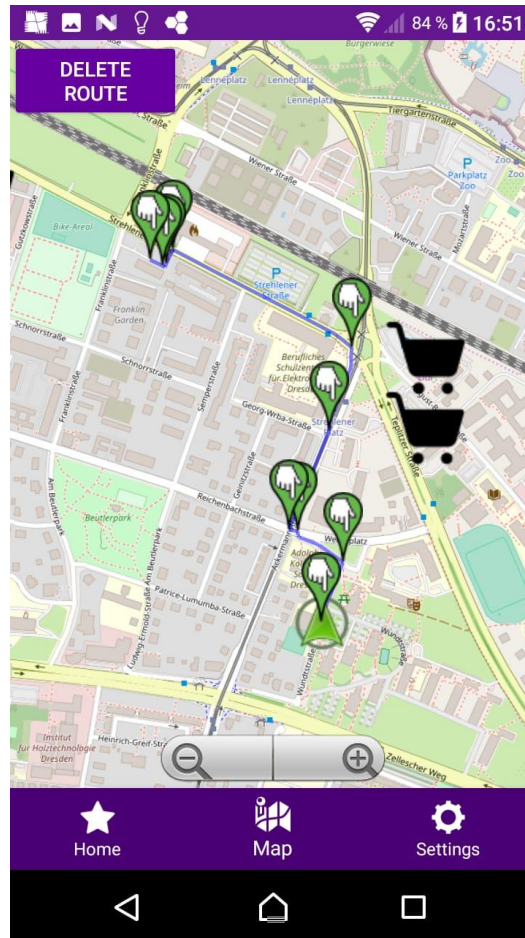
- Supermarkets
- Restaurants
- Water sources
- Train and Bus Stations
- Hotels and Hostels
- Campsites

User can personalize filter for his needs

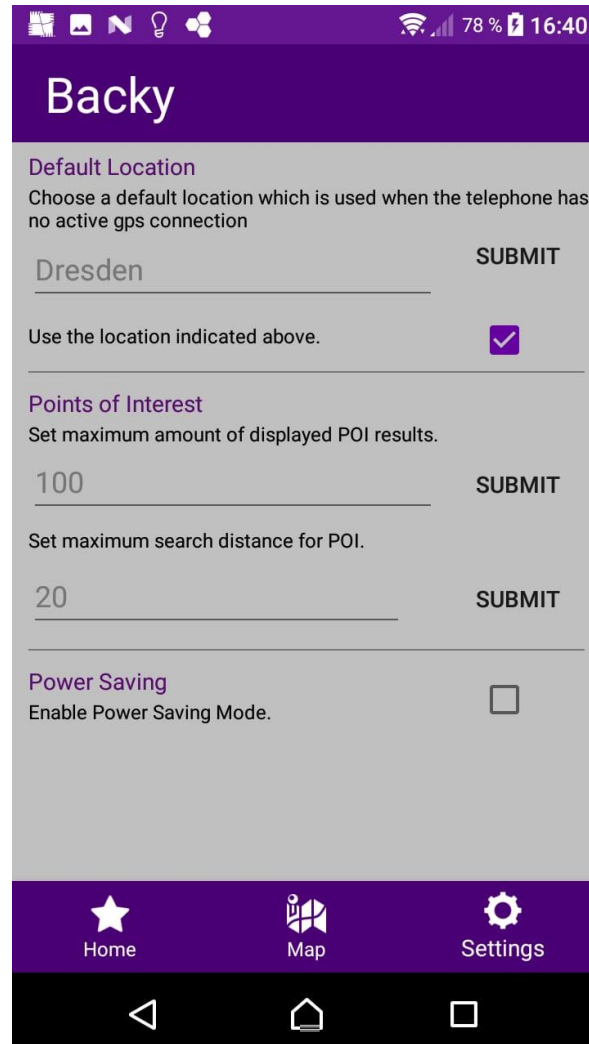
# Screens 1



# Screens 2



# Screens 3



# Context Features

- ▶ Battery level:
  - ▶ `BatteryManager.EXTRA_LEVEL`
- ▶ Charging state:
  - ▶ `BatteryManager.BATTERY_STATUS_CHARGING`
- ▶ Network state:
  - ▶ `ConnectivityManager.TYPE_MOBILE`,  
`ConnectivityManager.TYPE_WIFI`
- ▶ Last known location:
  - ▶ `LocationManager`
- ▶ Default location:
  - ▶ specified by user

# Adaption: Location features

- ▶ Challenge: Provide location-dependend features
- ▶ Context: network state, last known location, default location
- ▶ Adaption:
  - ▶ Map: update current location symbol every time location changed
  - ▶ Home Screen: update distance to closest POI every time location changed
  - ▶ Load of new POIs: only if new current location is more than 5 km away from the location the POIs where downloaded the last time
  - ▶ no last known location available from locationManager or if user enables use of default location: use of default location for the map and POIs

# Adaption: Energy Consumption

- ▶ Challenge: create an app that is not consuming too much energy → GPS drains the battery
- ▶ Context: battery level, charging state
- ▶ Adaption:
  - ▶ < 30% batterie level and not charging: lower GPS update interval: double of normal interval (home screen: 5min, map: 10s for navigating) -> user can adjust interval
  - ▶ < 5% batterie level and not charging: disable GPS signal



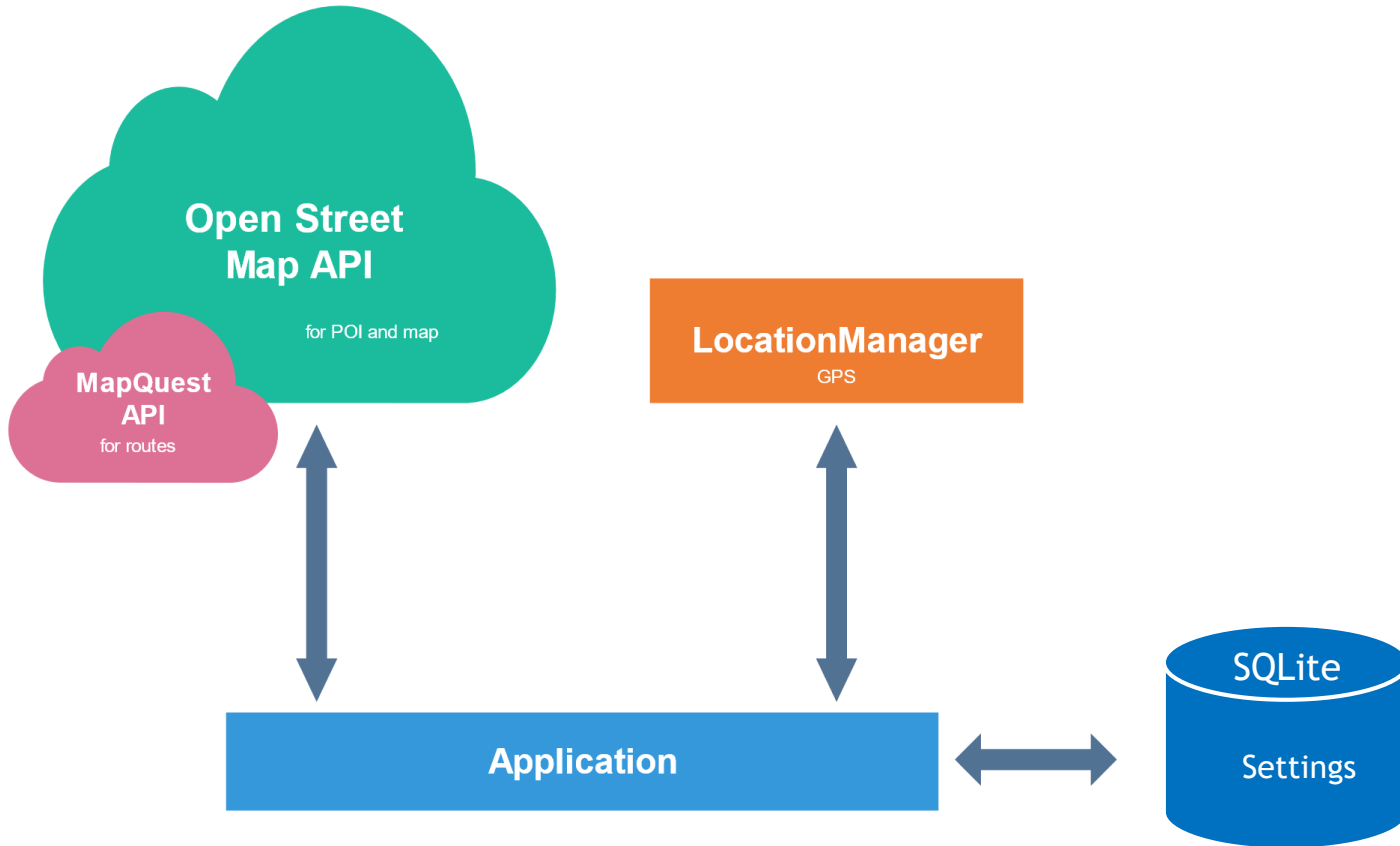
# Technologies



- ▶ Operating System: Android
- ▶ Language: Java
- ▶ IDE: Android Studio
- ▶ Maps, Poi: Osmdroid
- ▶ Routing for pedestrian : MapQuest
- ▶ Storage: SQLite



# Architecture



# Open Issues

- ▶ Map Download not implemented, because very slow or not working at all
- ▶ Social Feature
- ▶ Better implementation overall
- ▶ Proper Network Test if there is enough bandwidth to download POIs/ Server reachable

# What have we learned?

- ▶ How to work with Android studio and basic principles to create an Android App
- ▶ Hard to get started, especially if never programmed an Android app before
- ▶ Creating a useful structure is not so easy
- ▶ Adaptation mechanisms are hard to implement usefully and efficiently
- ▶ Very easy to create app shut downs, performance issues