

Application Development for Mobile and Ubiquitous Computing

Backy - The App for Backpackers and Travellers

Second Presentation

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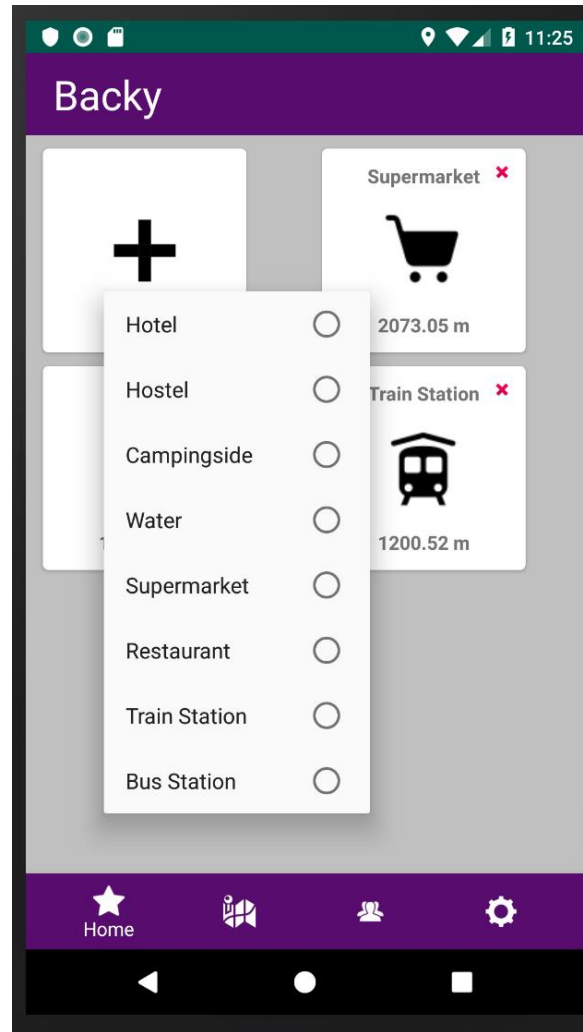
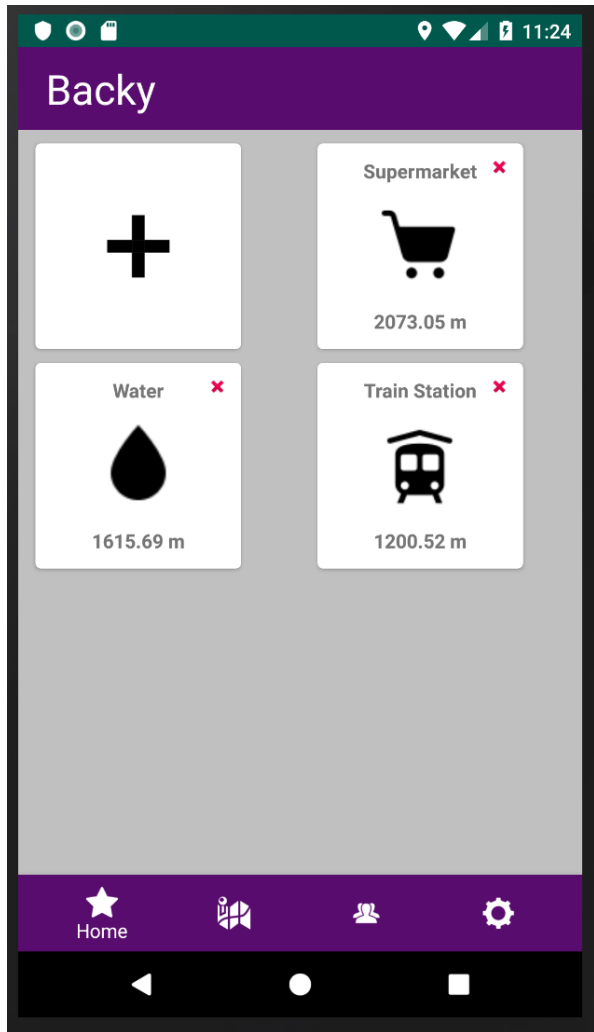
Scenario

Backpacker looking for spots of interest:

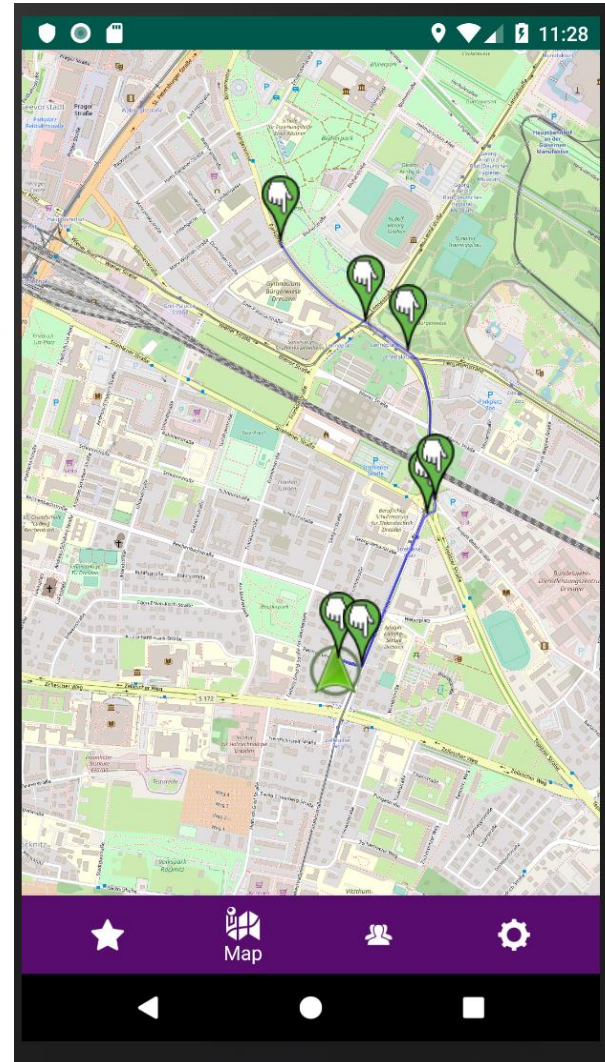
- Supermarkets
- Restaurants
- Water sources
- Train and Bus Stations
- Hotels and Hostels
- Campsites

User can personalize filter for his needs

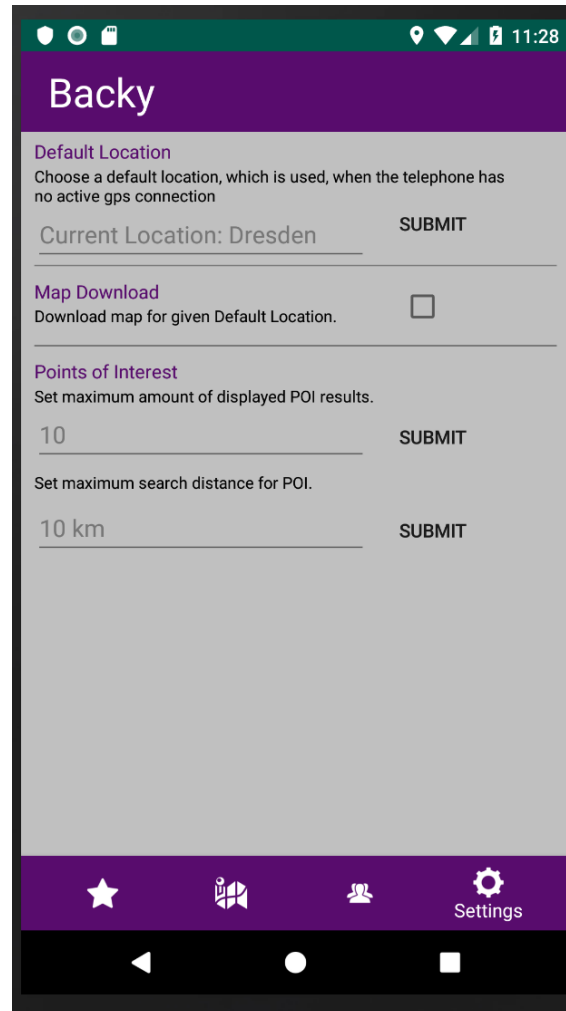
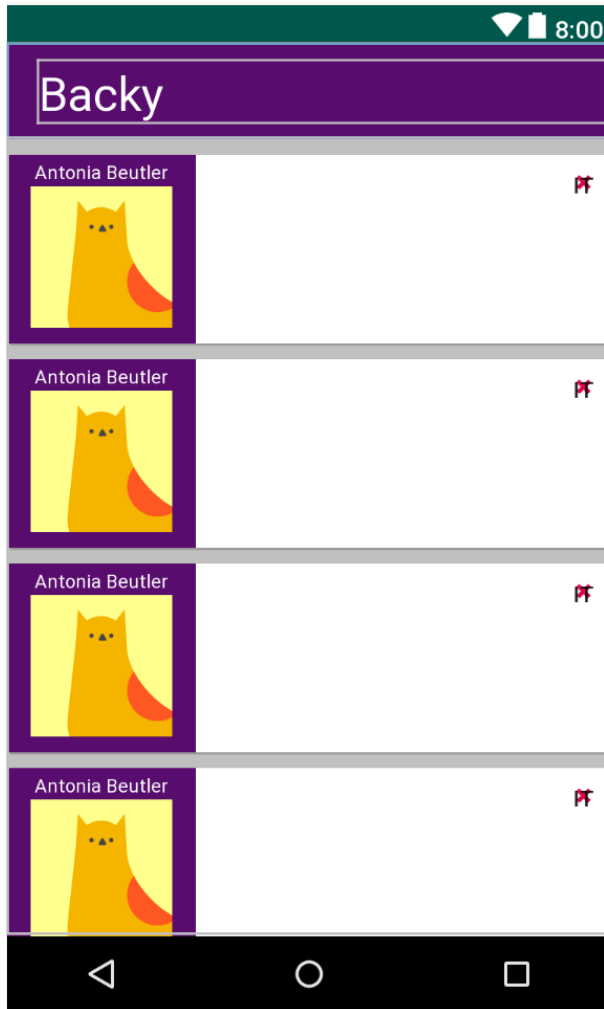
Screens 1



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: 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

Adaption: Offline Usage

- ▶ Challenge: provide a working app in areas with limited or no connection
- ▶ Context: network state
- ▶ Adaption:
 - ▶ Use of offline maps if user enabled pre-download
 - ▶ Use of pre-downloaded POIs to show the distance to closest POI and to show on map
 - ▶ Calculation of routes is not possible

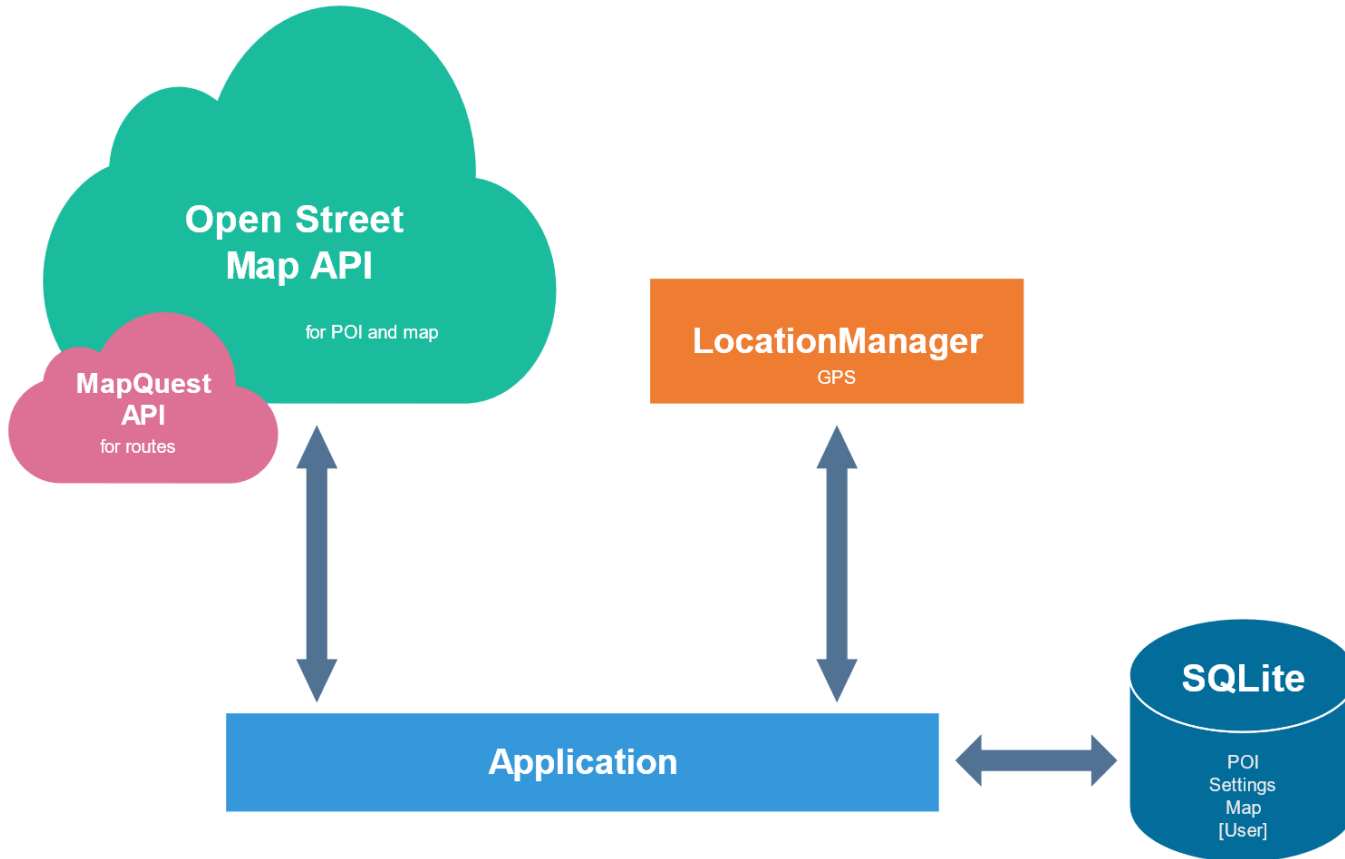
Technologies



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



Architecture



Work Plan

- ▶ Refine UI
- ▶ Implement offline usage
- ▶ Improve navigation
- ▶ Bug fixing
- ▶ If enough time: social feature