



Application Development for Mobile and Ubiquitous Computing

Seminar Task

Adaptation Concept Presentation

Group№12

Team: Maya Shallouf

Liudmyla Burkan

mobile application for
searching current discounts
in convenience stores

location-based map



caching data on user side

find and choose
nearest markets with discount

uses adaptation mechanisms

Development:

- Android SDK
- Java SE
- Android Studio IDE

For location tracking:

- GPS,WiFi,GSM(EDGE,GPRS)...
- Google maps

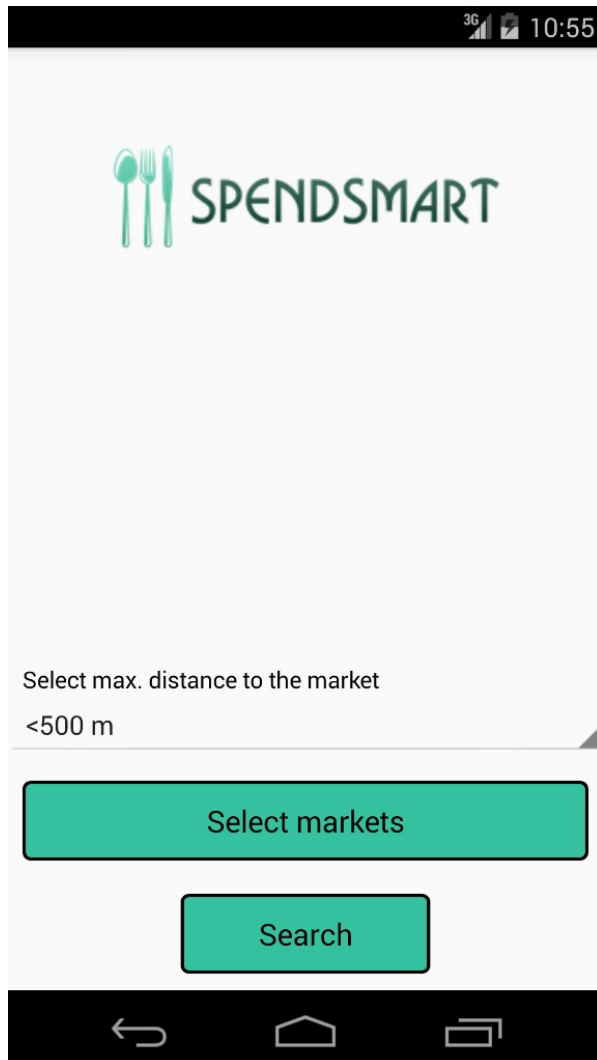
JSOUP Java library for parsing HTML data:

- <http://www.lidl.de/>
- <http://www.penny.de/startseite/>

Picasso library for downloading images:

- uses image-URL parsed by JSOUP







1) Google Map:

Displaying the google map on the start activity depends on two factors:

- ✓ Connectivity (Technical context)

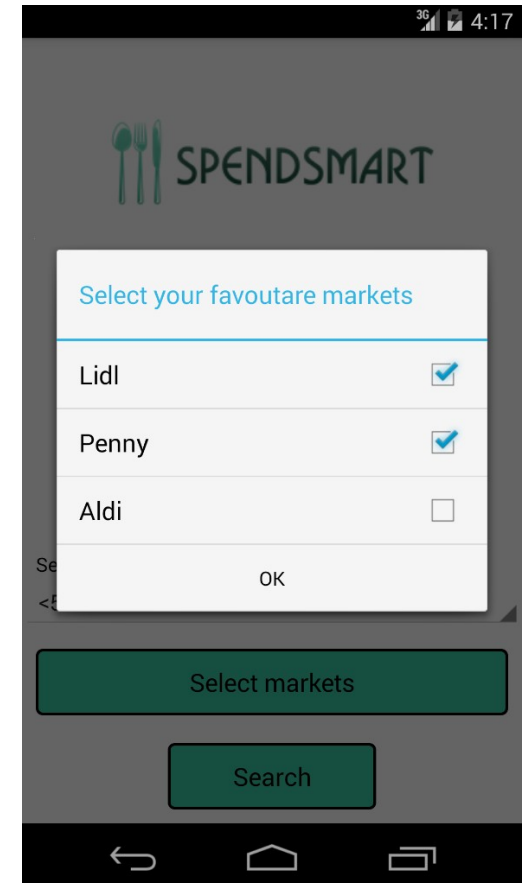
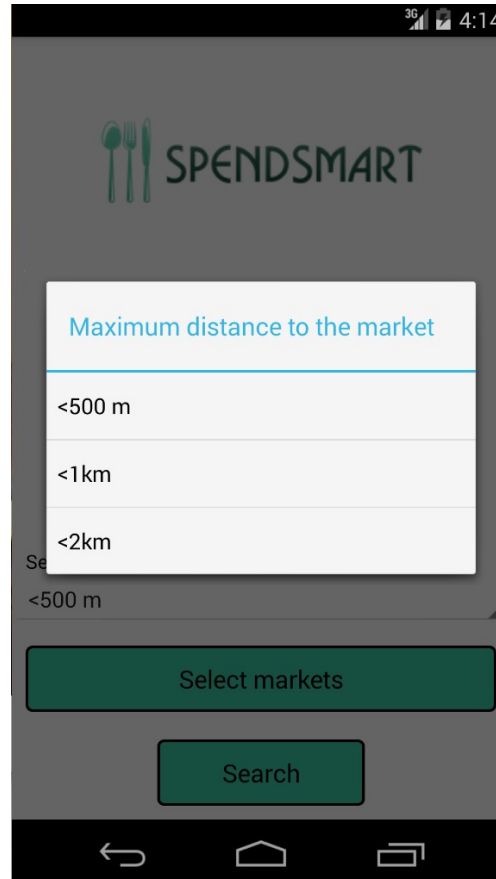
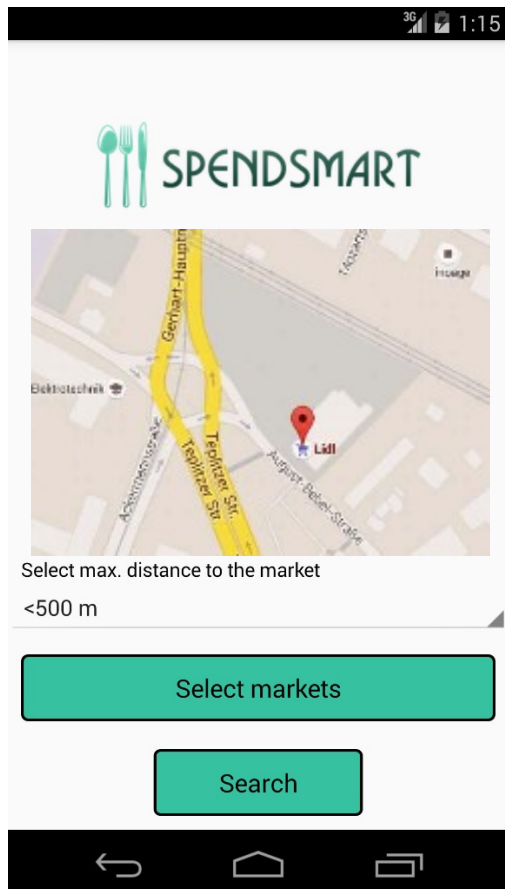
Don't show the map in case of poor or no connectivity (Content-Adaptation)

```
ConnectivityManager cm = (ConnectivityManager)
    context.getSystemService(Context.CONNECTIVITY_SERVICE);
NetworkInfo info = cm.getActiveNetworkInfo();
//check info.getType() (wifi or mobile)
//check info.getSubtype() (connection speed)
```

- ✓ Current location (Physical context)

Show current location on map (get current location on create)

```
LocationManager locationManager = (LocationManager)
    getSystemService(Context.LOCATION_SERVICE);
```





2) Adaptation of Application Data (Content-Adaptation):

- ✓ structure transformation - provide access to map-based location presentation as an option;
- ✓ reduction of data volume - download product images only if WiFi or 3G is connected and not roaming.

if (netType == ConnectivityManager.TYPE_WIFI)

else if (netType == ConnectivityManager.TYPE_MOBILE

&& netSubtype == TelephonyManager.NETWORK_TYPE_UMTS

&& !mTelephony.isNetworkRoaming())



3) Supporting multiple screens - application should look the same on smartphones with different sizes. Support a set of four generalized sizes: small, normal, large, and xlarge.

- ✓ Declare in the manifest which screen sizes are supported
- ✓ Use `wrap_content`, `fill_parent`, or `dp` units in XML layout file
- ✓ Do not use hard coded pixel values in your application code
- ✓ Do not use `AbsoluteLayout`
- ✓ Supply alternative bitmap drawables for different screen densities



- 4) Use client-side caching that provides independence from internet connection** (Adaptation of Communication):
- ✓ make app more responsive with choosing `CachePolicy.CACHEFIRST` of Kinvey's Android caching library;
 - ✓ cache data maximum for one day to provide information only about current discounts (specify `maxAge` option);
 - ✓ use Picasso caching mechanism for loading previously requested images much faster.

- ▶ Finalization of map integration
- ▶ Improvement of GUI
- ▶ Implementing caching mechanisms
- ▶ Preparation for final presentation

