

Department of Computer Science Institute for System Architecture, Chair for Computer Networks

Application Development for Mobile and Ubiquitous Computing

Seminar Task

Adaptation Concept Presentation

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Application Scenario

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

Application Development – Adaptation Concept Presentation

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





Technologies





Current state

³⁶ 7 10:57

³⁶ 1 🖬 10:55	5 This is activity two	³⁶ 70:54	3
		3.99	Dallmayr prodomo
	Freixenet Cava D.O. demi sec, Schau	imwein 3.99*	
	Freixenet Cava D.O., Schaumwein	3.99*	
	Freeway Cola/MixxMax	33	Kaffer
	Ehrmann Almighurt	29	Dallmayr prodomo Virus fizikati
	Feine Brände	2.22	
	Vita D'or Sonnenblumenöl	1.11	
Select max. distance to the market <500 m	DALLMAYR Kaffee Classic oder C Balance* 500-g-Packung	lassic 3.77	3.99
Select markets	Clementinen* 1-kg-Netz	0.99	Description:
Search	Saftorangen* 1,5-kg-Netz	1.29	Gemahlener Kaffee, vakuumverpackt / 500 g
	Rote Tafeläpfel* 850-g-Schale	0.99	-31% vorher: 5.79 3.99 1 kg = 7.98

Application Development - Adaptation Concept Presentation



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);





Application Development – Adaptation Concept Presentation



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



