



Application Development for Mobile and Ubiquitous Computing Seminar

LO{O}CKOUT

Final Presentation

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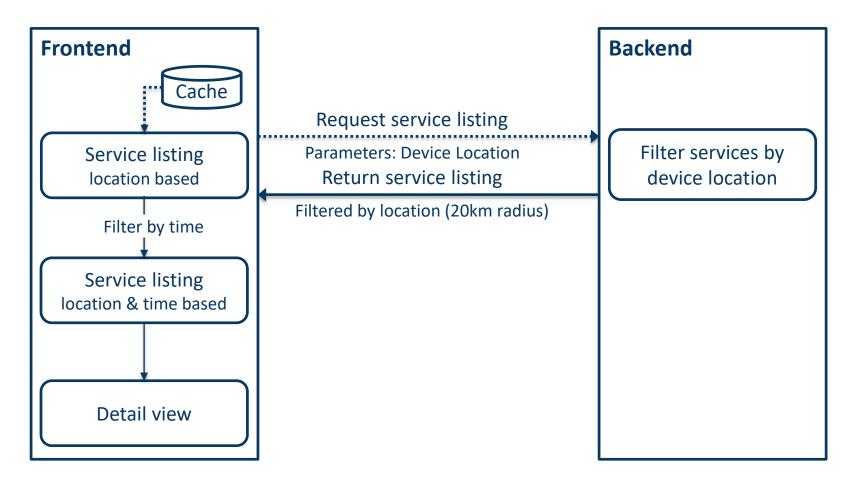
HMMM...WHAT WAS IT ABOUT?

- You are **locked out** of your home
- You need help from a key service nearby
- Io{o}ckout will help you to find a <u>reputable</u> key service nearby





ARCHITECTURE







COMPONENTS & TECHNOLOGIES

- Main activity
 - Collect users address either by
 - reading users input
 - location detection using Google Play Services
- List activity
 - Check for cached services if no cached services available for the address provided by the main activity
 - Get services using the backend API (filtered by location)
 - Put returned services to the cache
 - Filter services by date & opening hours of the services





COMPONENTS & TECHNOLOGIES

- Detail activity
 - Show details of selected service
 - Allow user to call service directly





APPLICATION SCENARIO

C 12 7:26	a 42/ 🖬 7:24	4 2 7:27
	logckout	logckout
logckout	Street City	Nöthnitzer Str. 46 \odot 01187 Dresden
	Find Services	Find Services





APPLICATION SCENARIO

 ✓ 5 services nearby FELGNER Sicherheitstechnik GmbH & Co. KG 3.54 km Schlüsseldienst SCHULZE 4.5 km Olaf Bäger Schlüsselservice 7.23 km Schmidt Uwe Schlossermeister 9.0 km Otto Schlüsseldienst Freital 	FELGNER Sicherheitstechnik GmbH & Co. KG 3.54 km Schlüsseldienst SCHULZE 4.5 km Olaf Bäger Schlüsselservice 7.23 km Schmidt Uwe Schlossermeister 9.0 km		⁶ / 🖪 7:27
GmbH & Co. KG 3.54 km Schlüsseldienst SCHULZE 4.5 km Olaf Bäger Schlüsselservice 7.23 km Schmidt Uwe Schlossermeister 9.0 km	Image: Second structure 3.54 km Image: Second structure 3.54 km Image: Second structure 4.5 km Image: Object structure 7.23 km Image: Second structure 7.23 km Image: Second structure 9.0 km	← 5	services nearby
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7.23 km Schmidt Uwe Schlossermeister 9.0 km	7.23 km Schmidt Uwe Schlossermeister 9.0 km Otto Schlüsseldienst Freital	ß	
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Ω Otto Schlüsseldienst Freital	<pre>}</pre>	24 hours	
12.0 km		8	
			• • •

1 1 1 2 7 :28	6 ⁴⁶ 2 7:28
← Schlüsseldienst SCHULZE	← FELGNER Sicherheitstechnik GmbH.
Jetzt Geöffnet!	Jetzt Geöffnet! 24 hours
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Haec igitur Epicuri non probo, inquam. Que Manilium, ab iisque M. Causa autem fuit huc veniendi ut quosdam hinc libros promerem.	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Haec igitur Epicuri non probo, inquam. Que Manilium, ab iisque M. Causa autem fuit huc veniendi ut quosdam hinc libros promerem.
Standard Service 2 75.0 €	Standard Service 2 75.0 € Standard Service 2 75.0 €





CONNECTIVITY CHALLENGE

- Challenge
 - Reduce amount of data to be transferred
- Context: GPS location
- Adaption
 - Reduce amount of services returned by backend API by doing server-side location based filtering
 - Cache services





USABILITY CHALLENGE

- Challenge
 - App should be usable with different screen sizes (phone, tablet, ...)
 - Show only relevant services (opening hours)
- Context: screen size & current time
- Adaption
 - Adapt layout for different screen sizes (ContraintLayout)
 - Filter services by current time and their opening hours





POWER STATUS CHALLENGE

- Challenge
 - Reduce battery usage
- Context: battery status
- Adaption
 - Power cord connected: refreshing services based on current users location
 - Else: disable background refresh





OPEN ISSUES & LESSONS LEARNED

- Use contraint layouts instead of linear layouts in list & detail views
- "Android fragmentation"
 - KitKat Lollipop, Marshmallow, Nougat
 - Devices -> screen sizes
- Android Studio helps a lot to get started quickly (ready-to-use ecosystem)

Version	Codename	API	Distribution
2.3.3 - 2.3.7	Gingerbread	10	1.0%
4.0.3 - 4.0.4	Ice Cream Sandwich	15	1.1%
4.1.x	Jelly Bean	<mark>1</mark> 6	4.0%
4.2.x		17	5.9%
4.3		<mark>1</mark> 8	1.7%
4.4	KitKat	<mark>1</mark> 9	22.6%
5.0	Lollipop	21	10.1%
5.1		22	23.3%
6.0	Marshmallow	23	29.6%
7.0	Nougat	24	0.5%
7.1		25	0.2%