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	NA.
<ul> <li>Package android.telephony provides classes to monitor bas phone information, tools to manipulate phone numbers an to work with SMS<sub>[1]</sub>.</li> </ul>	
<ul> <li>Most important class is <i>TelephonyManager</i><sub>[4]</sub>.</li> <li>Provides access to information about telephony services of the device.</li> </ul>	f
<ul> <li>For example network type or call state, which indicates idle or ringing.</li> </ul>	е

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 ${\tt 1}\,{\tt Context.getSystemService}\,({\tt Context.}\\ {\tt TELEPHONY\_SERVICE})\,.$ 

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- Very limited access to work with calls for security reasons.
- Possibility to place a call from activity if permissions are set.
- Extend Android manifest:

```
1 < uses - permission android: name = "android."</pre>
    permission.CALL_PHONE"></uses-permission>
```

■ There are ways to interfere a bit more: Listen to phone state change to ringing and then mute phone.



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■ How? Create *Intent* with predefined action.

```
2 Intent callIntent = new Intent(Intent.
    ACTION_CALL);
3 callIntent.setData(Uri.parse("tel:1234567"));
4 startActivity(callIntent);
5} catch (ActivityNotFoundException e) { ... }
```



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Example mute phone University of Freiburg



■ Extend Android manifest:

1 < uses - permission android: name = "android.
permission.VIBRATE" />

- $\blacksquare$  Use  $\textit{AudioManager}_{\text{[2]}}$  to manipulate ringer mode.
- Get instance of AudioManager:

1 AudioManager Context.getSystemService(Context. AUDIO\_SERVICE)



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■ Method to change the ringer mode used with parameters RINGER\_MODE\_NORMAL, RINGER\_MODE\_SILENT or RINGER\_MODE\_VIBRATE:

void AudioManager.setRingerMode(int ringerMode)



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## SMS



- Class *SmsManager* can be used to send and receive SMS from an application[3].
- Extend Android manifest with needed permissions:
  - android.permission.SEND\_SMS
  - android.permission.RECEIVE\_SMS
     android.permission.READ\_SMS

  - android.permission.WRITE\_SMS

1 <uses-permission
2 xmlns:android="http://schemas.android.com/apk/
res/android"</pre> 3 android:name="enter\_permission\_name\_here">
4 </uses-permission>



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## SMS How to use SmsManager



■ Receive reference to SmsManager

1 static SmsManager SmsManager.getDefault();

■ Send message

```
1 void SmsManager.sendTextMessage(
2 String destinationAddress,
3 String srcAddress,
4 String text,
5 PendingIntent sentIntent,
6 PendingIntent deliveryIntent);
```



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■ To access the built-in calendar the Android manifest has to be extended:

1 <uses-permission android:name="android.
permission.READ\_CALENDAR">
2 </uses-permission>

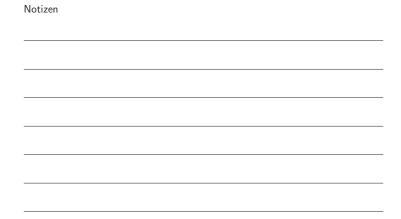
- Data can be accessed through a Content Provider and a Cursor.
- The Content Provider for the calender has the following URI:

1 content://calendar/calendars



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## Summary University of Freiburg

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- Functionality to monitor phone information included in class *TelephonyManager*.
- Application can place calls, but not much more for security reasons.
- Muting phone when phone state changes to ringing allows more interference.
- $\blacksquare$  SmsManager allows sending of SMS.



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