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## Introduction to Android Smartphone Programming

<http://proglang.informatik.uni-freiburg.de/teaching/androidpracticum/>

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### Exercise Sheet 4

## 1 GPS Notification (20 points)

In this exercise you will extend the To-Do List Manager from the previous exercise sheet. You will be required to add the possibility to define a To-Do Item with a location. Locations will be defined by contacts or Google Maps. Notify the user when he is close (100m radius) to the corresponding location. Use GPS to track the position of the user and the location in the To-Do Item.

**Service** Use a *Service* to keep track of locations. When a location is in the proximity a notification should be used to display an information to the user.

**LocationManager** Use the *LocationManager* to keep track of locations and to know when he is close to one of the locations linked to a To-Do item.

**Contacts** Use the contacts to get addresses for To-Do Items. Use the *Geocoding* feature to convert addresses to locations.

**Google Maps** Take use of Google Maps to specify various locations in a map.

**Geocoding** Use this feature alongside with the Google Maps *MapView* API in order to transform addresses to longitude and latitude and vice-versa.

**Note:** To use the Google Maps *MapView* you must first obtain an API key for your application. Please follow the instruction in the following link: <https://developers.google.com/maps/documentation/android/mapkey>

## Submission

**Deadline** The submission deadline is **10.01.2013, 12:00 (noon)**. Late submissions will not be accepted.

**Project** Create an *Eclipse Project* `exercise4_{number}` for each exercise. Use `androidlab.exercise4_{number}` as package name. Make sure that your project include all source files.

**Report** Your solution will consist of a *pdf file* **report4\_⟨number⟩.pdf** with a description. The description must be limited to one page per exercise. Submitting more than one page will lead to reduction in points. The description may be either in German or in English. Clear and understandable style is required.

**Submission** Submit your solution to the subversion repository. Your solution will consist of one *folder* **exercise4\_⟨number⟩** for each exercise which include the eclipse project and the report.

You are strongly encouraged to test your solution. Provide your source code with comments to understand the intention. Clear and understandable style is required.