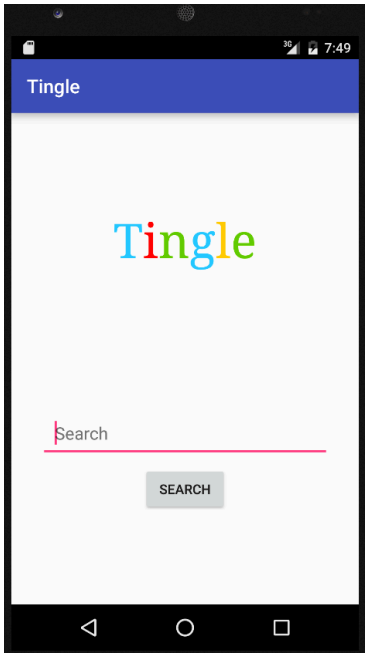
# Second Mandatory Assignment

Tingle App version 6.2: Mobile App Development - ITU Copenhagen
by Asger Balle Pedersen

**Application Icon: Tingle**

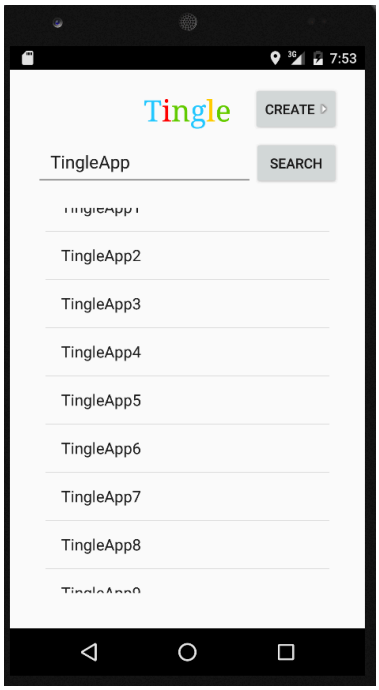
## Where in the world did I put….

## Application overview



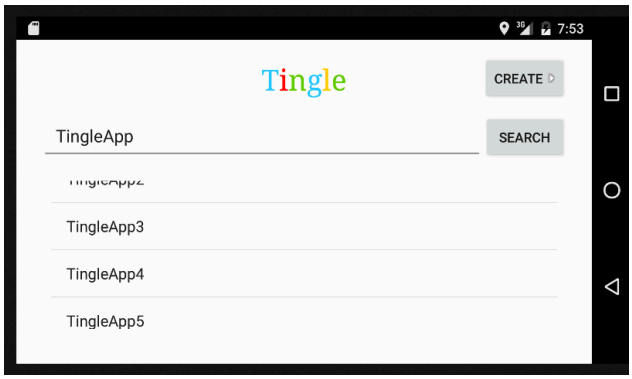

### Front-View

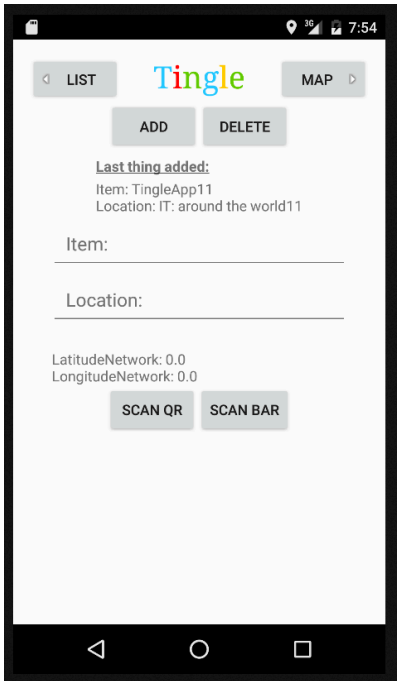
The design on the front page is minimalistic and simple in favor of the user. It has a text-field to reach input from the user and a action-button which guides the user to the List-View.


### List-View

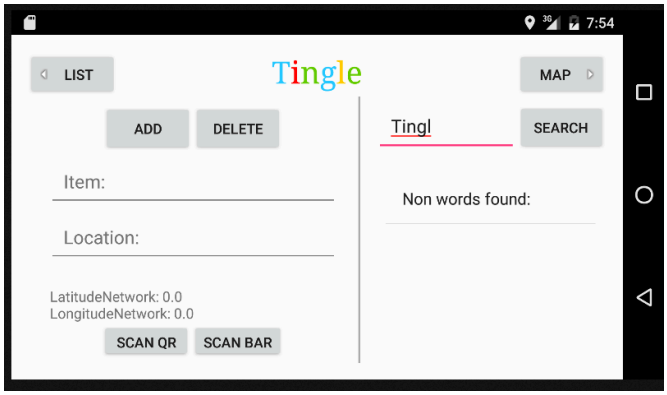
The List-view shows the search-results to the user and by clicking on things in the list, both the distance to the thing and the location description are shown.
The user has the opportunity to create a new thing, in Create-View, by clicking on the button in the upper right corner called “CREATE” or perform a new search with a different input.






## Create-View

The Create-View allows the user to create and delete things from the Tingle application. In the lower part of the screen both "SCAN QR" and "SCAN BAR" enables the user to scan QR and BAR codes to receive product information over the network and into the text-fields. The Google-map is not jet constructed so the button "MAP" in the upper right corner is for the time being disabled. To provide the developer and other interested users with a visual output the current location of the mobile device, Latitude & Longitude is stated, either via Network or GPS, near the bottom of the fragment. The button in the upper left corner guides the user back the List-View.




# Functionality of the application: Tingle

The Tingle application uses an arraylist to store things. Along with this Tingle-solution the structured files for a SQlite implementation is gather and setup, in the folder "database", ready to implement.

The registration of things in the application requires a name and location discription provided by the user. As a thing is registered so is the current location of the mobile device via network or GPS. It is also possible to look up things by its barcode or a QRcode to receive the product information by network.

The user can search the Tingle application for all things registered. By clicking on a thing in the list the user gets both location by description, latitude & longitude and the distance from the user's current location to the thing's location measured in kilometres or meters. The search results are listed by distance where the closest thing, to the user's current location, is first. If the search does not have a 100% match it looks for similar words up to a distance of 3 by the Levenshtein distance method.

## Minor Layout improvements

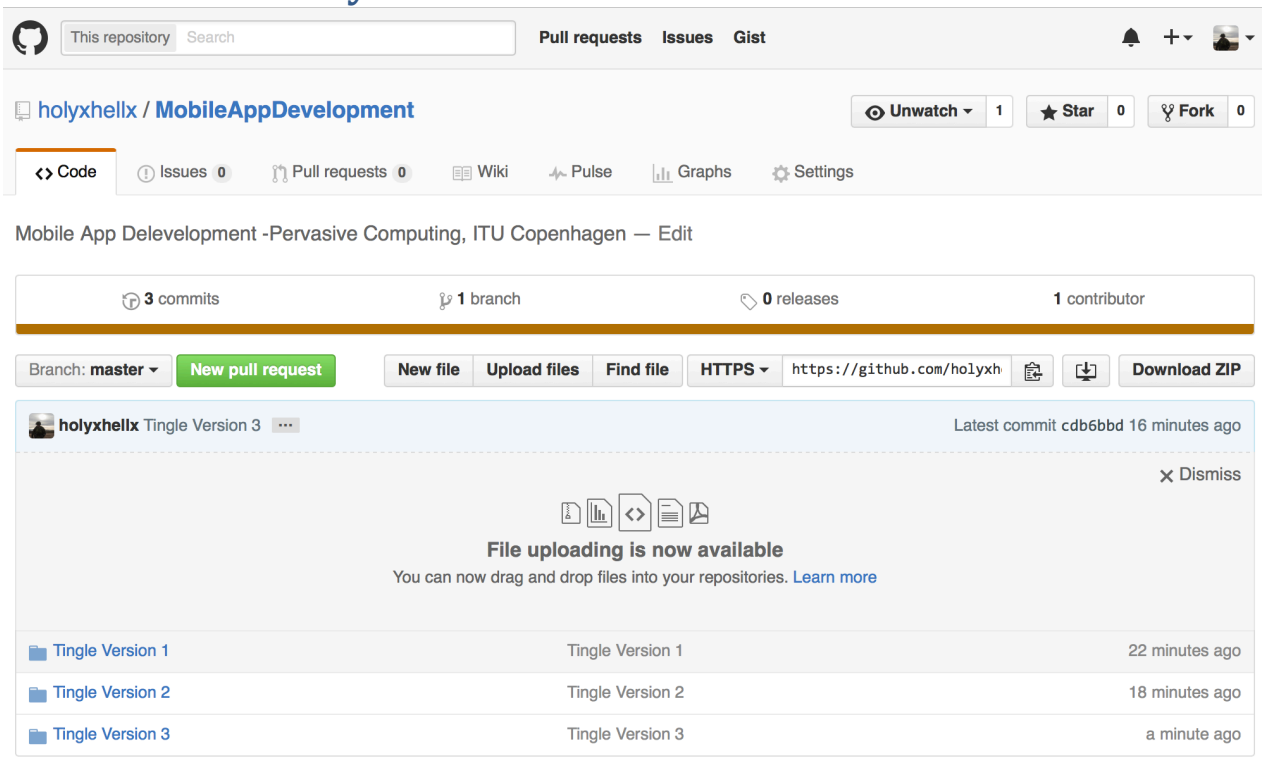
- It is only possible to write on a single line in the user input text-fields(editText);.
- Tabbing between editText with actionNext and actionDone.
- Hide keyboard when editText is no longer in focus.
- Trim() is implemented as the user searches through the list
- Search compares with lower case letters no matter the input letters provided.

## Testing

Testing Schema

| View | Function test description | Expected output | Status |
|---|---|---|---|
| Front-View | Hide keyboard on focus change | The keyboard hides after focus has changes touching pushing "search" | Working - but unable to reach due to overlap. |
| | Search: "TingleApp" | All output listed | Working - TingleApp2 is closest |
| | Search "TingleApp4" | One output listed TingleApp4 | Working |
| | Search ""*(no input)* | Non output listed | Working |
| List-View | Hide keyboard on focus change | The keyboard hides after focus has changes touching the headline | Working - extend to all elements |
| | Search "Tingleapp" | List output TingleApp2 closest/first and TingleApp10 furthest/last | Working |
| | Search "Tingleapp4" | One output listed TingleApp4 | Working |
| | Search: ""*(no input)* | (Special cases during development) All output listed in dist. Order | Working |
| | "onClickList" | Display toast: location description, lat/lng and distance in km/m | Working |
| | Search-results in increasing order | OnClickList first to last will be in increasing order from current location | Working |
| Create-View | Hide keyboard on focus change | The keyboard hides after focus has changes touching the headline | Working - extend to all elements |
| | Add new element: "TingleApp" | Added to List-View as the first/closest thing in a full search | Working |
| | Delete element: "TingleApp" | Deleted from List-View and is no longer shown in a full search | Working |
| | Scan QR code | Returns format and value just above the scan buttons | Working |
| | Scan Bar code | Returns format and value just above the scan buttons | Working |
| | Scan Bar code<br>(Android book barcode) | Replaces edit-text-field with "Android Programming The Big Nerd Ranch Guide, from outpan.com | Working |
| | Current Location (ITU) | ITU - latitude: 55.659640 longitude: 12.591040 | Working (off by 22 meter) |

## Version Control by Github




## Further Development

The Tingle App still needs a lot of testing and minor changes to suit possible outer-edge cases. The Create-View is still under development and needs some serious layout changes to help improve the user-experience and for it to become user-friendly. The Google-map implementation via API needs a lot more work and was removed from the hand-in version. The app has a fatal flaw on startup "unable to reach package" - see the appendix: console print. The application is able to self-rebuild and overcome this error after the user pushes "OK" on the device.
- I have not been able to eliminate this error and it is likely to originate from the removed code in the Google map implementation.

## Sources:

Most of the sources are stated as comment in the program
Barcode sample explained:
http://www.mysamplecode.com/2011/09/android-barcode-scanner-using-zxing.html

The Levenshtein method:
https://en.wikipedia.org/wiki/Levenshtein_distance

# Appendix: Console print

```
04-25 22:27:11.134 26948-26948/tingle.tingle E/AndroidRuntime: FATAL EXCEPTION: main
    Process: tingle.tingle, PID: 26948
    java.lang.RuntimeException: Unable to instantiate application android.app.Application: java.lang.IllegalStateException: Unable to get package
        at android.app.LoadedApk.makeApplication(LoadedApk.java:569)
        at android.app.ActivityThread.handleBindApplication(ActivityThread.java:4634)
        at android.app.ActivityThread.access$1500(ActivityThread.java:156)
        at android.app.ActivityThread$H.handleMessage(ActivityThread.java:1412)
        at android.os.Handler.dispatchMessage(Handler.java:102)
        at android.os.Looper.loop(Looper.java:211)
        at android.app.ActivityThread.main(ActivityThread.java:5373) <2 internal calls>
        at com.android.internal.os.ZygoteInit$MethodAndArgsCaller.run(ZygoteInit.java:1020)
        at com.android.internal.os.ZygoteInit.main(ZygoteInit.java:815)
    Caused by: java.lang.IllegalStateException: Unable to get package info for tingle.tingle; is package not installed?
        at android.app.LoadedApk.initializeJavaContextClassLoader(LoadedApk.java:415)
        at android.app.LoadedApk.makeApplication(LoadedApk.java:561)
        at android.app.ActivityThread.handleBindApplication(ActivityThread.java:4634)
        at android.app.ActivityThread.access$1500(ActivityThread.java:156)
        at android.app.ActivityThread$H.handleMessage(ActivityThread.java:1412)
        at android.os.Handler.dispatchMessage(Handler.java:102)
        at android.os.Looper.loop(Looper.java:211)
        at android.app.ActivityThread.main(ActivityThread.java:5373)
        at java.lang.reflect.Method.invoke(Native Method)
        at java.lang.reflect.Method.invoke(Method.java:372) <2 more...>
```