**Umeå University**
Department of Computing Science

# Development of Mobile Appliations 7.5 p
# 5DV155

## User Interface for Mobile Systems

Submitted 2017-07-20
Author: Lorenz Gerber (dv15lgr@cs.umu.se lozger03@student.umu.se)
Instructor: Johan Eliasson / Jonathan Westin

## Contents


1 Introduction 1
2 The Desktop Mail Client - Apple Mail 1
2.1 Description of main UI of Apple Mail 1
2.2 Description of Menu accessible Functionality in Apple Mail 2
3 Desktop to Mobile Transformation 2
3.1 Establishing the Mobile App Functionality Profile 2
3.2 Interpretation and Translation of UI 3
3.3 Notifications 3
4 Design with Android Elements 3
5 Some design examples from Android Studio UI Designer, some pen paper designs 4
6 describe how all main functionality in the app 4
7 Describe needed changes for another mobile platform 4
References 4

# 1 Introduction

The aim of this assignment is to translate a desktop mail client application to a mobile app. This includes both functional and design related aspects. The functionality shalls be described in terms of android elements and concepts such as activities, layouts, menues, dialogs, fragments and messages. A main aspect is to decide and reason which functionality should be stripped from the desktop version and eventual additional functionality needed in the mobile app.

The design shall account for usability aspects following concepts from the course litterature [1] and platform guidelines [2]. The report has to include several prototype designs of which at least one shall be made in 'Android Studio' and one by hand or any design/drawing application of choice.

Further, one section of the report shall describe differences and changes in the design when the proposed Android application would be ported to another mobile platform of choice.

# 2 The Desktop Mail Client - Apple Mail

Here the 'Apple Mail' client was chosen as the application to be ported into an Android mobile app. The version at hand was 10.3 (3273) in a macOS Sierra Environment (10.12.5). Initially, a systematic inventory of the available functionality in Apple Mail was conducted.

## 2.1 Description of main UI of Apple Mail

The main UI of Apple Mail is shown in figure **??**. It consists of three columns of which only the 'Mail List' and 'Mail Details' column are shown by default. The 'Mail List' presents all mails of the active mailbox. the list entry can be customised in the 'Preferences', accessible through the 'File' drop down menu. The 'Mail List' has by default a sort/filter bar with a drop down menu for various list sort methods and an icon button to apply filters. The 'Mail List' scrolls vertically when not all mails of the mailbox fit on the screen. Inspired by the Apple iOS interface, mail list items implement horizontal swipe actions. By default, to the right for deleting and to the left for toggling read/unread.

The 'Mail Details' frame shows the detail view of one email, the one selected in the 'Mail List'. This view scrolls if needed both vertically and horizontally. Various options regarding the visualization can be chosen in the 'Preferences' menu. By default, the header of the mail contains a number of 'hyperlink' style functionality for toggling visibility of some less often needed information but also as shortcut for the common mail actions 'Delete', 'Reply', 'Reply to all', 'Forward' and access to attachments.

The 'Mailbox List' column can be toggled visible/invisible by a button in the 'Favorites' bar which otherwise contains text buttons for the available mailboxes.

Above the 'Favorites' bar there is the 'Toolbar' that contains in the default setup nine buttons and a search field. The buttons are from left to right: 'Get new messages', 'Compose new mail', 'Archieve selected', 'Delete selected', 'Selected to junk', 'Reply', 'Reply All', 'Forward' and 'Flag selected'. The search field allows for text search in all or in a specific mailbox. Both the content and the layout of the 'Toolbar' is freely customizable with a number of addtional functions/buttons not visible in the default setup.

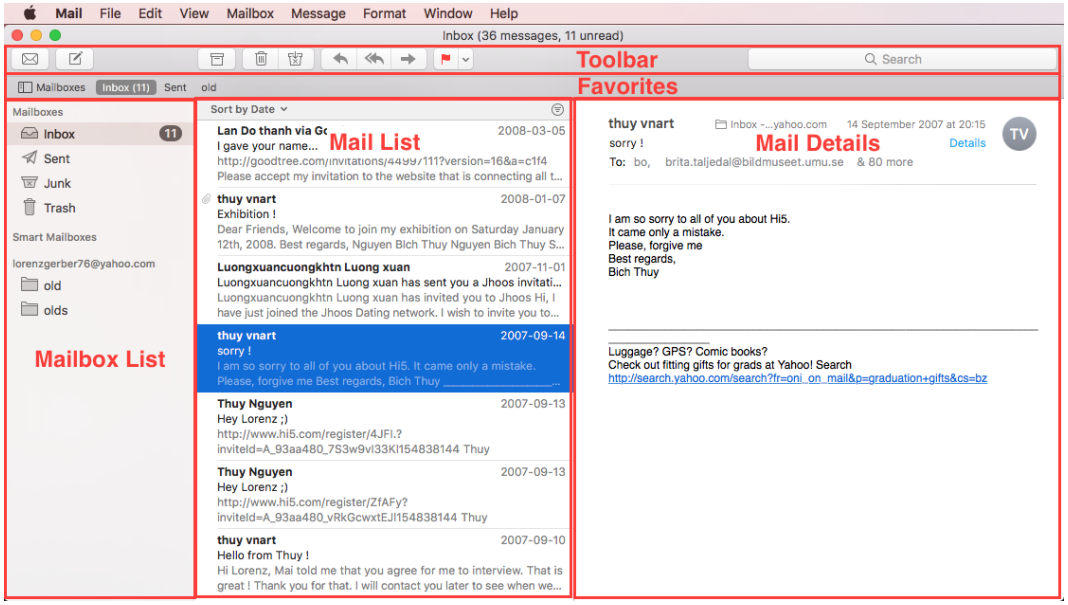


**Figure 1:** *The main view of Apple Mail has three columns: 'Mailbox List', 'Mail List' and 'Mail Details'. The 'Mailbox List' column is however hidden in the standard configuration.*

### 2.2 Description of Menu accessible Functionality in Apple Mail

The 'Menu Bar' contains the dropdown menus 'File', 'Edit', 'View', 'Mailbox', 'Message', 'Format', 'Windows' and 'Help'. Most of the menu items are functionality that is also directly accessible in the UI. The menu shows keyboard shortcuts for much of the functionality. Menu items not found in the UI are either for configuration and customizing the UI, or for setting up and configuring the user data such as mailboxes accounts and smart assitant functions.

## 3 Desktop to Mobile Transformation

The prior section described in detail the source application 'Apple Mail'. In this section, the functionality and layout of the desktop application is structured and translated into the mobile context that will provide the conceptual framework for designing prototype layouts of the mobile application.

### 3.1 Establishing the Mobile App Functionality Profile

The components of the email application model are identified to be 'Mailbox Account' 'Mailbox Folder' and 'Mail Message'. From these components, the most important is for obvious reasons the mail message.

For the mobile app 'Mailbox folders' will be dropped. On a desktop, it makes sense to download all the messages and keep the inbox tidy by assigning mails to individual folders. On a mobile app, having the most important information availble as quick as possible seems more important. Hence a different message managment mode is envisioned for the mobile mail client: *From each mailbox account only the ten most recent messages are downloaded to the device. On synchronization with the mail account, the oldest mails over the limit are deleted. However, for 10 more mails, the header information are loaded and represented*

*in the list. Mails can be deleted or archieved. Delete, will remove them from the actual account/server. Archieving them will write a unique id for the mail into an archieve list kept on the phone. This will prevent the mails from showing up in the mail list, they are however not deleted on the account/server.*

Mailbox accounts are mostly a matter of application setup. During daily usage, they contribute structures as basis for data visualization in the UI. Note that there is no 'User' entity in the application model. This is because the email client is bound to the global system user account on the desktop system. The same concept will be used also for the mobile application. Hence all general settings in the application can be seen as the 'User' settings.

The functionality used most often is centered around single mail messages: 'Compose new', 'View Message', 'Reply', 'Reply All', 'Forward', 'Delete', 'Archieve', 'Flag' and 'Junk'. From these actions, the first five are directly related to the main purpose of the applications, 'sending and receiving mail messages'. The last four are secondary functionality to enable a more convenient organization and administration of the mail messages.

Functionality that acts uppon a selection of mail messages is 'Sort', 'Filter', and 'Search'.

From all the described functionality, it seems that in a mobile context receiving new information (i.e. mail messages) and retrieving information (i.e. searching) are the most important. Of course, there should be the possibility to also write and send mail messages, however this functionality is physically limited on a mobile screen keyboard. Short messages without the need for a more traditional layout are today mostly the domain of direct messaging apps. Hence, below follows the functionality profile for the mobile mail client app:

1. Receive and Present new Mail Messages
2. Search for Mail Messages
3. Write and Send Mail Messages

### 3.2 Interpretation and Translation of UI

The translation of the UI from desktop to mobile is driven by several factors such as 'Screen size', 'Functionality Profile', 'Touch vs. Mouse' and 'Platform Standards'. As a first consequence of the screen size limitation, the 2-(3) column design of the desktop app was changed into individual screens on the mobile app. The design elements are chosen from the google material design guidelines [2].

### 3.3 Notifications

Showing a status bar icon pulsing the device's LED peeking onto the current screen adding to the notification drawer

#### Mail Message Viewer

#### Scrollable Mail Message List

List, according to material desgin guidelines up to three lines of text. Swipe "Leave-behinds" for Delete/archieve floating action button for search (main activity)

reloading by swipe scrolling down at the top of the list.

Navigation Drawer

Thumb does most of the work 49% single handed with thumb plus 26% double handed still with thumb (chapter 1, 'How we hold our gadgets').

Independent of left or right hand, center and down to the middle of the screen (chapter 1, 'The Phone's thumb zone')

According to 'Desigining for Touch' (chapter 1, fig. 1.24), no navigation bar at the bottom, only a floating action button.

Touch target 7mm minimum 'Designin for Touch' (chapter2, Good enough Size: 7mm). 7-11mm depending on location. Thumb fan. 44 dp in Android corresponds to 7mm, 69 pixels is 11mm.

make the interface fast (chapter 3, 'Enable primary tasks directly form list view').

**Mail Message Editor**

Text Area

## 4 Design with Android Elements

How to splitup the functionality into activities, layouts, menues, dialogs, fragments and messages. Elaborate which functions that are most important and that should be included. Which functions can be left out to compensate for the mobile context Is there needed some additional functionality for the mobile context reflect on the different aspects regarding usability describe how the interaction shall happen. Motivate design descisions.

## 5 Some design examples from Android Studio UI Designer, some pen paper designs

## 6 describe how all main functionality in the app

## 7 Describe needed changes for another mobile platform

## References

[1] Josh Clark. *Designing for Touch*. A book apart, New York, USA, 2015.

[2] Google material design. `https://material.io`, 2017. accessed: 2017-07-18.