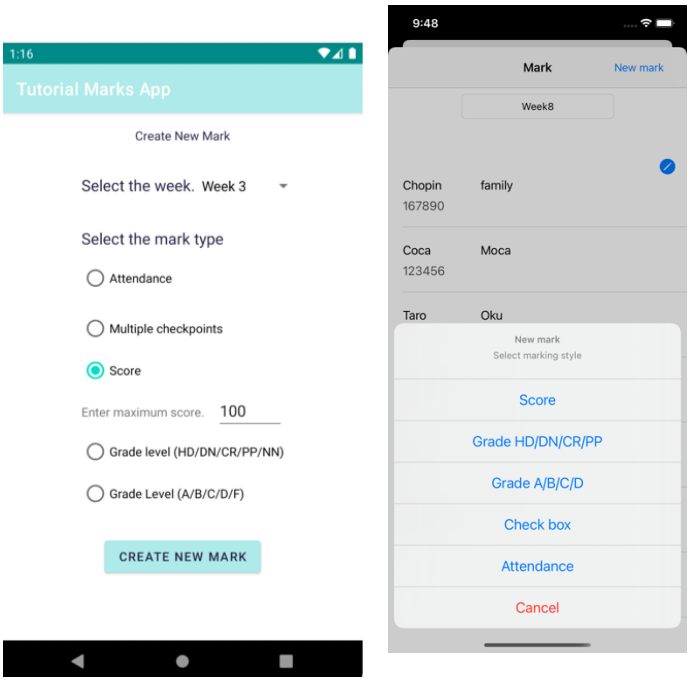
Hirona Oku

1. Introduction

The purpose of this application is to allow tutors to efficiently enter accurate and detailed information about university grades. The idea is to help university tutors keep track of their students' grades, maintain class lists and transcripts, and even monitor students' understanding of the course. The target user is the university tutor, who is expected to be of a wide age range. Tutors perform a variety of tasks, such as managing students, checking their understanding, answering questions, preparing and conducting lessons.

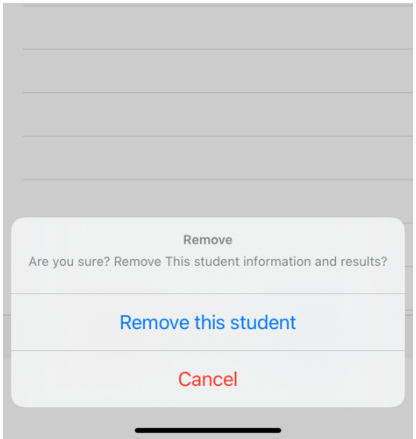
The goal of the application was therefore to be user-friendly, accurate and efficient. To achieve this, the Usability goal and Don Norman's design principles were used in the design and development of the application. This report first describes the changes from prototype to post-development, and then describes the goals in development. The usability goals and design principles, Don Norman's design principles and finally the code documentation. Following the results of the last usability test, the problematic menu screens have been changed to make them clearer and simpler, further improving usability.

2. Differences to Assignment 1 Prototype and android assignment

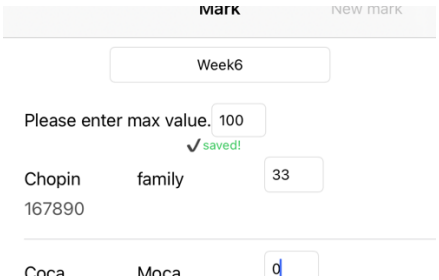


The difference between the big Android applications is the number of screens. With the Android application, marking a new item requires a new screen to be displayed. However, the iOS application uses the alert function to reduce the number of screens.

Figure 1 display of create marking schema



The alert function is also used to improve the user's resistance to failure by displaying a confirmation alert when deleting.



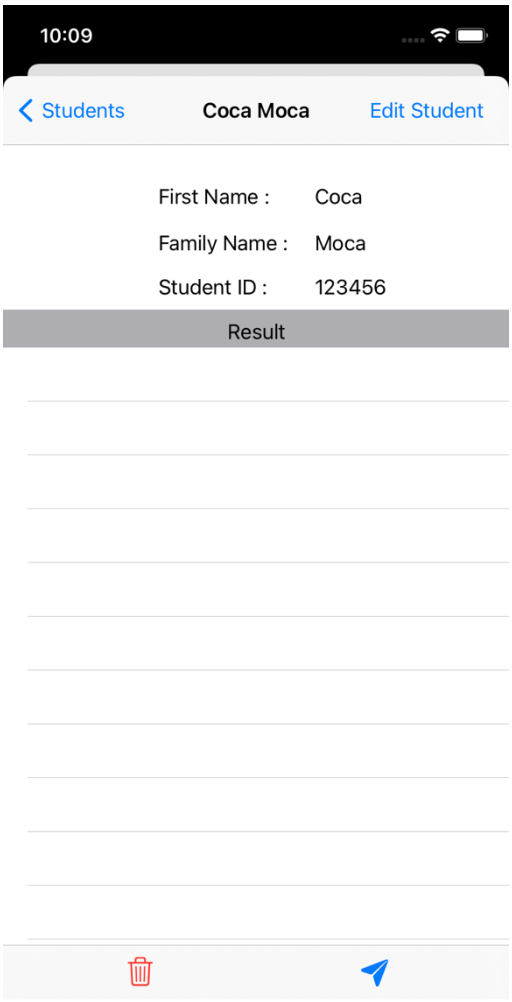
3. Usability Goals and Design Principles

3.1. Usability goals

The usability goals that were important to focus on when developing this app focus on Learnable on first use, Efficient and Failure-resistant. These are essential for any app that deals with important information. This section therefore describes the usability goals considered for this application, such as being learnable on first use, efficient and failure-resistant.

3.1.1. Learnable on first use

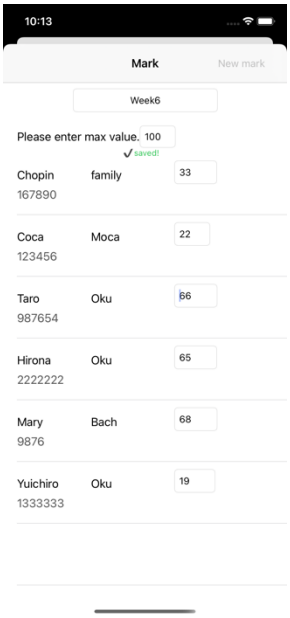
The screens have been designed to be as simple as possible, so that the user can quickly understand how to use them. Many of the buttons use the basic iOS buttons and navigation bar.



When using a new app, some users may feel intimidated. This app has been designed to be easy to use, even for new users.

As an example, we will illustrate the student details screen. This screen uses only the standard iOS navigation bar and buttons, with a button in each of the four corners to show at a glance what the user can do.

3.1.2. *Efficient*



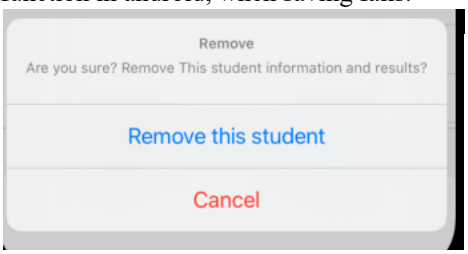
One of the most important aspects of Efficient is the recording of attendance, as tutors are likely to record attendance in class and need to be able to do so quickly to avoid wasting class time. Therefore, a very simple check box was placed on the table so that each student's attendance could be recorded in succession.

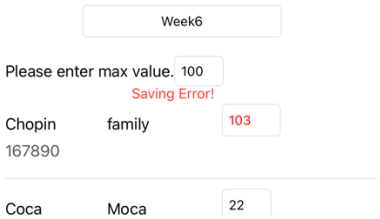
One of the most important aspects of Efficient is the speed of recording. Instead of having to open and record each student's information one at a time, the user can record all the students' scores at once. There is no need to press the save button, and the fact that it has been saved is indicated on the screen by a "Saved! or an error message will appear on the screen. You will never forget to save your data, so you can keep checking even if your battery runs out in the middle of grading.

Figure 2Display of marking score

3.1.3. *Failure-resistant*

As student records and list data are very important, it is imperative that operational errors are reduced as much as possible. Therefore, when deleting student data from the student list, an alert will appear and the user will have to tap 'Remove this student' again. This reduces the possibility of accidental deletion of data. We have also made it easier for users to notice mistakes by displaying an error message for a few seconds, like the Toast function in android, when saving fails.





3.2. Don Norman’s design principles

The prototype was designed based on Don Norman's design principles of Visibility, Feedback and Consistency. Here we explain the design and the importance of each of these elements.

3.2.1. *Visibility*

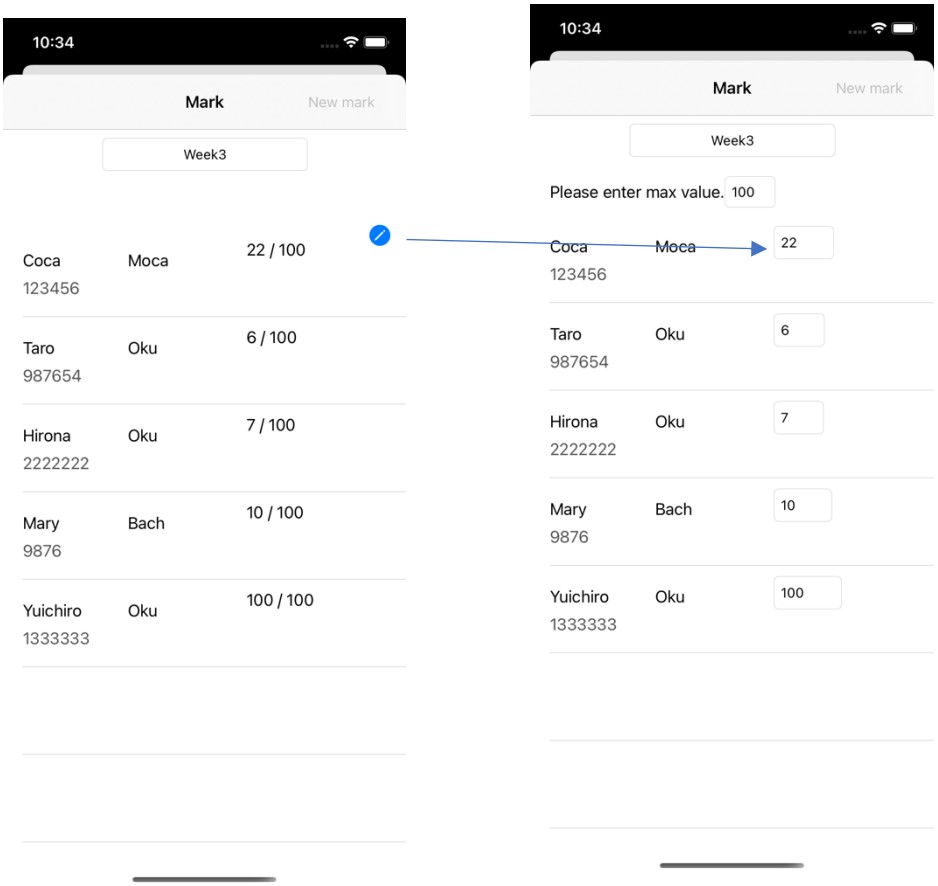
The application was created with a consistent focus on simplicity, taking advantage of the standard design of iOS. On top of that, as much padding as possible has been added to avoid cluttering up the screen and improve readability.

3.2.2. *Feedback*

As mentioned in the previous sections "Efficient" and "Failure-resistant", this application will alert you when you save or delete a file, or will display a feedback text for a few seconds in the
or feedback text for a few seconds. This makes it easy for users to get feedback on what they have done and what has been completed.

3.2.3. Consistency

The application has been developed to reduce screen movements and to complete operations on the same screen as much as possible. This gives the user the impression of a consistent design and makes it easy to use, as the editing and mark confirmation screens are almost identical.
For example, when confirming a mark, pressing the edit button will only switch from the text label to the text field, but the screen will remain the same.



4. Code Documentation

4.1. Class Name: AppDelegate

Purpose of the class

Several methods are defined at file creation time, and each method is executed when some action is taken by the application.

Resources of the code and references of images

No resources

4.2. Class Name: Student

Purpose of the class

As a dataset class, it defines a student list data type.

Resources of the code and references of images

Tutorial week9

4.3. Class Name: Week

Purpose of the class

As a dataset class, it defines a marked week list data type.

Resources of the code and references of images

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4.4. Class Name: SceneDelegate

Purpose of the class

A class that is created by default when you create a new project. It is not modified in any way.

Resources of the code and references of images

No resources

4.5. Class Name: MenuViewController

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Purpose of the class

Class that controls the first view that is displayed when the application starts

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4.6. Class Name: MarkTableViewCell

Purpose of the class

Class of the cell that MarkTableView is contine. Detects cell edits and sends notification to MarkTableView Controller

Resources of the code and references of images

Tutorial week9

textFieldDidEndEditing : *Apple Developer Documentation* 2020, Apple.com, viewed 20 May 2021, <https://developer.apple.com/documentation/uikit/uitextfielddelegate/1619591-textfielddidendediting>.

scheduledTimer: for display notice like Toast in android *Apple Developer Documentation* 2020, Apple.com, viewed 20 May 2021, < https://developer.apple.com/documentation/foundation/timer/2091889-scheduledtimer>.

4.7. Class Name: MarkTableViewController

Purpose of the class

Class to control the table to create a grading sheet, connect to firebase, display on screen and receive data.

Resources of the code and references of images

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textFieldDidEndEditing : *Apple Developer Documentation* 2020, Apple.com, viewed 20 May 2021, <https://developer.apple.com/documentation/uikit/uitextfielddelegate/1619591-textfielddidendediting>.

4.8. Class Name: StudentAddViewController

Purpose of the class

class for adding student information

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4.9. Class Name: StudentDetailViewController

Purpose of the class

Classes showing details including students' grades

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4.10. Class Name: StudentDetailTableViewCell

Purpose of the class

Class of the cell that StudentDetailView is contine.

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4.11. Class Name: StudentEditViewController

Purpose of the class

Classes to change student information

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4.12. Class Name: StudentUITableViewController

Purpose of the class

Class for displaying a list of students' information

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4.13. Class Name: StudentUITableViewCell

Purpose of the class

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Class of the cell that StudentUITableView is contine.

Resources of the code and references of images

Tutorial week9

Conclusion

This iOS application was able to implement the edit function for grades, which could not be implemented in the Android version. Furthermore, it have succeeded in improving the efficiency and consistency of the application. However, there are still many aspects that could not be implemented, and the application is far from complete.