KIT607 Assignment 2 Documentation

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1. Introduction

This application was created to assist in the efficient input of accurate and detailed information. The purpose of this application is to assist university tutors keep track of their students' grades, maintain class lists and grade summaries, and even help them understand their students' level of understanding. The target users are university tutors who are expected to be of all ages. Tutors are responsible for managing students, checking student understanding, answering questions, preparing and conducting classes, and many other tasks.
Therefore, our goal for this application was to make it easy to use, accurate, and efficient for the user. Keeping this in mind, the application was designed and developed using the Usability goal and Don Norman's design principles.

This report first describes the changes from prototype to post-development, then describes the goals in development: Usability Goals and Design Principles, Don Norman's design principles, and finally Code Documentation. Based on the results of the previous usability test, the menu screen, which had been a problem, was changed to be easier to understand and simpler, further improving usability.

2. Differences to Assignment 1 Prototype

2.1. Creating new mark menu

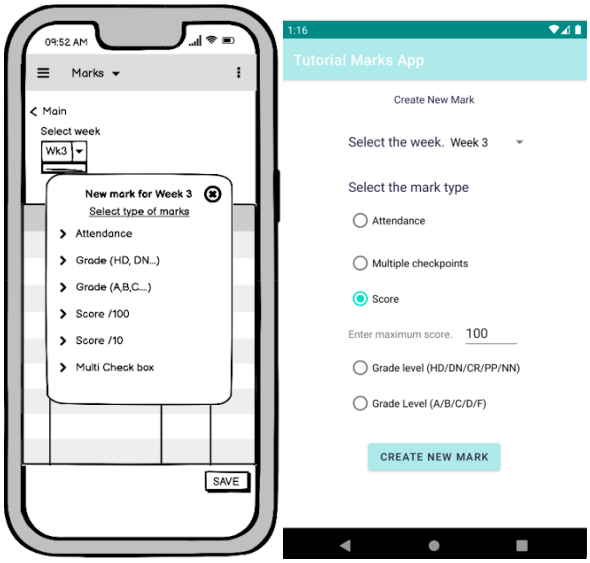


Figure 1Creating new mark menu

The Creating new mark menu (Figure 1 Creating new mark menu) is displayed by moving the activity from the pop-up window.
In the prototype, pop-up window would make the creating new mark menu easier and more convenient to use. However, there is a limit to the number of detailed markings that can be set in the pop-up window. For example, it is difficult to set the maximum score or the number of multiple checkpoints, and the more menus there are, the more difficult it becomes to see and operate.
By setting up a new activity, a new work cost was incurred, but if the user wants to add a new setting, the work cost can be added lower.

2.2. Removing student from student list

Secondly, the method of deleting student information from the student list was changed in order to prevent operational errors. In the prototype, a remove icon was placed above the student list so that students could be easily deleted. However, removing a student is not a frequent operation because it is not done unless the student leaves the unit. In addition, student information is the most important information in this application, and deleting student information will also delete all grades, therefore, the decision was made that it should not be an easy operation to delete. Therefore, the way to remove a student has been changed so that you can select the student from the student list, click on the "edit" mark, and then use the "edit student" activity to remove the student.
As a result, the student list is now simple and easy to read, and the possibility of deleting students due to operational errors has been reduced, which is thought to have improved the failure-resistance described in 3.1.3.

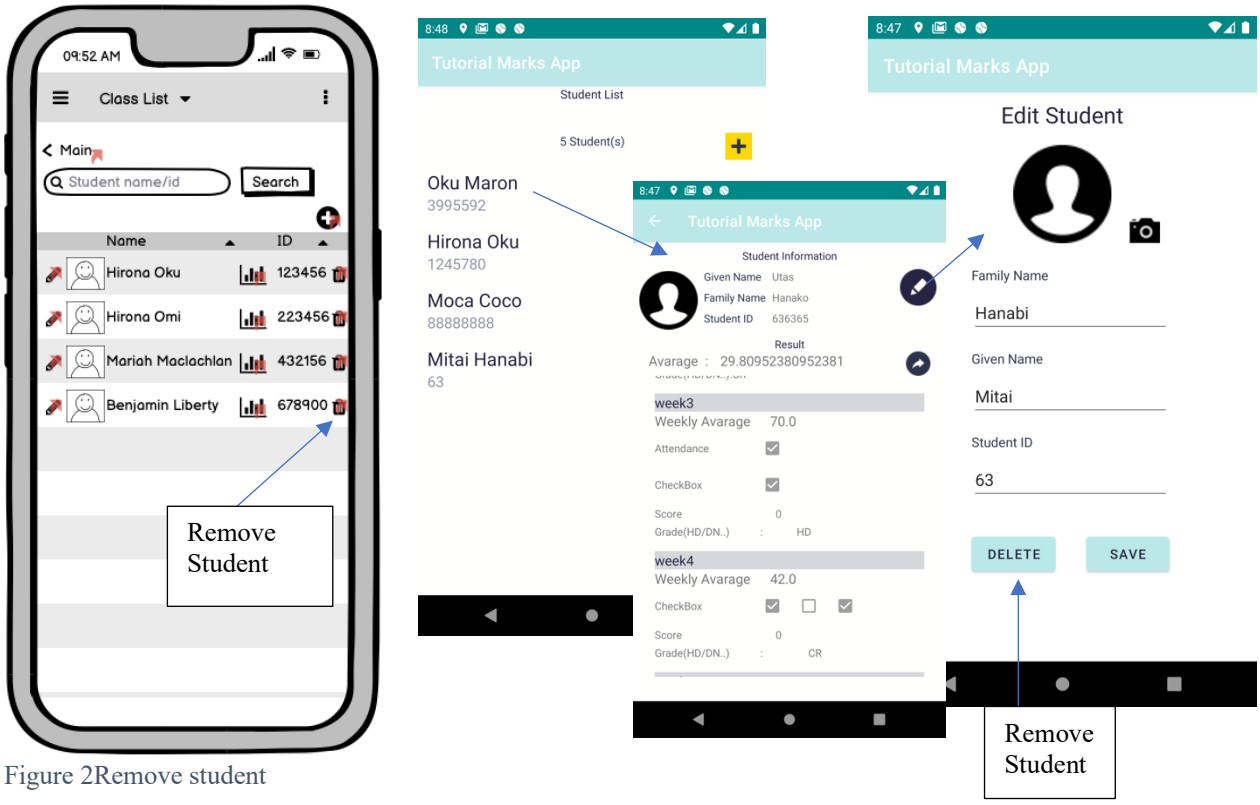


Figure 2Remove student

3. Usability Goals and Design Principles Self-Critique

3.1. Usability Goals

In developing this app, the Usability Goals that we considered important were Learnable on first use, Efficient, and Failure-resistant. Since these are essential items for an app that deals with important information, it is necessary to make sure that the app would be able to handle all of these items. In this section, it will describe some of the Usability Goals considered in this application, such as learnable on first use, Efficient, and failure-resistant.

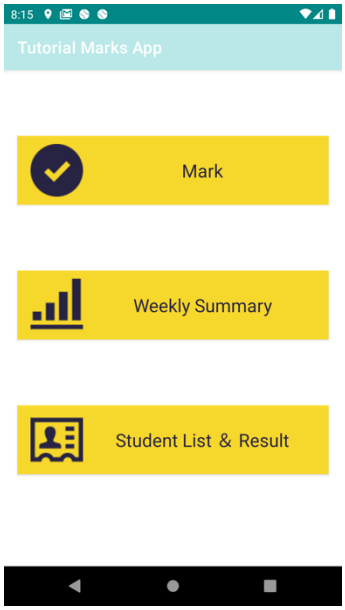


Figure 4Main menu

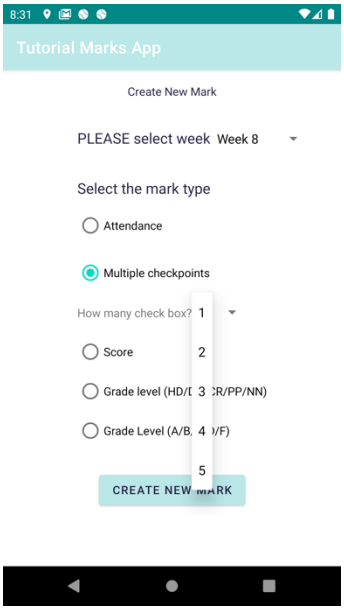


Figure 3create new mark menu

3.1.1. Learnable on first use

When using a new app, some users may feel a little uncomfortable. This app was designed to be easy to use, even for first-time users. As an example, I will explain the two activities, the main menu and the create new mark menu.

The main menu (Figure 4 Main Menu) is designed to be very simple, with only three buttons, and icons along with simple text to show users what they can do briefly. Secondly, in the create new mark menu (Figure 3 create new mark menu), there are five-mark types which tend to be complicated, however, placed five simple radio buttons. And once the user selects a multi-checkpoint option, the text "How many check boxes?" is displayed along with a spinner to select a check box. In the same way, it has also introduced the display of the maximum score setting when selecting a score. Therefore, users can operate the system without hesitation if they follow the displayed instructions.

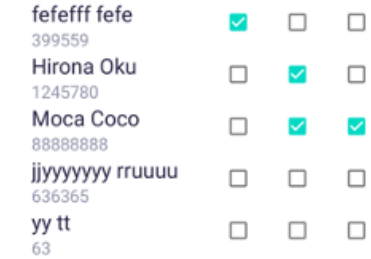


Figure 5Marking multi check points

3.1.2. Efficient

This app is also important for efficiency for tutors who observe a lot of students. For example, a tutor may want to keep track of students' workshop achievements as a checkpoint. Instead of opening and recording each student's information one by one, the user can record multiple checkpoints for all students at once. Besides, this is updated in the database each time one checkbox is ticked, so users don't need to bother with the save button. This is efficient and prevents the user from forgetting to save the data, thus allowing the user to continue checking even if the battery runs out of charge in the middle of the marking.

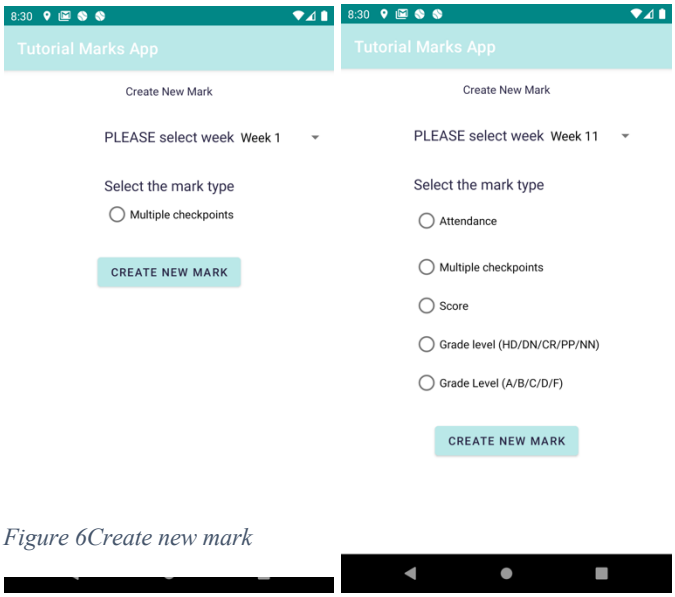


Figure 6Create new mark

3.1.3. Failure-resistant

Due to the design of the database, this application can record each of the five types of marks once in a single week. For example, if user record score in week 1(Figure 6 create new mark), the other 4 mark types can be recorded in the same week.
Therefore, in order to protect important records, once a record has been made, the mark type will not be displayed in the mark type setting screen, but only the mark type that can be recorded will be displayed.
This configurable mark type display is updated every time the week is changed in spinner, so it is easy for the user to understand, and it also successfully prevents data conflicts with the

database, which is the main goal. In addition, Cowan (2001) stated that the amount of information that can be processed by short-term memory is about 4±1. According to this theory, making the user search for or select more than 4±1 pieces of information will increase the load on the brain because short-term memory cannot be used. Therefore, it would be effective to have the user select five radio buttons first, and then display the setting screen.

3.2. Don Norman's design principles

This application was created with simplicity as a consistent goal. The icons that were crammed into the prototype were removed as much as possible during the development of the application.
Jacobs' Law states that users already know many sites and want them to work like the rest (cited in Ganesh, KR 2019), and Nielsen Norman Group (2009) also states that people dislike change, and novel designs are resisted when they are actually used. (cited in Ganesh, KR 2019). However, internal creators tend to seek out novel designs. However, internal creators tend to seek out fresh designs.

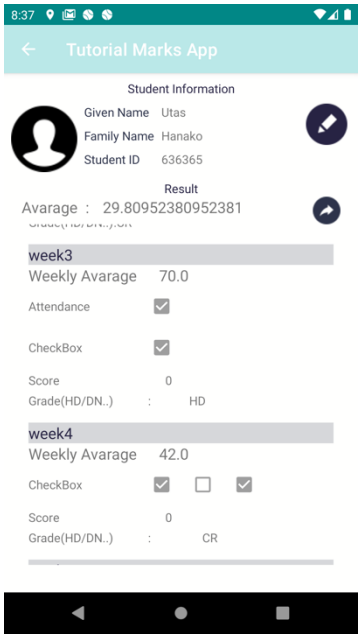


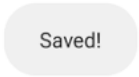
Figure 7Student result

3.2.1. Visibility

Icons have been placed where only necessary, such as the edit and share buttons in Student result activity(Figure 7 Student result), to improve visibility. Also, the weekly result is now displayed using checkboxes to improve readability.

3.2.2. Feedback

This app does not have much of a SAVE button because most of the recording is done dynamically and in real time.
Instead, it uses Toast to provide feedback to the user every time the data is saved to the database so that they can see what they have done.



3.3.3. Consistency

Consistency refers to the fact that each page is designed in the same way, making it easy for the user to see and operate.
This app uses a consistent and similar design throughout, so users will not be confused.

4. Code Documentation

4.3. Class Name: Main activity

4.3.3. Purpose of the class

Main menu for selecting “Mark”,”Weekly Summary”and ”Student List & result”

4.3.4. Resources of the code and references of images

Mark icon: https://iconmonstr.com/check-mark-4-svg/
Chart icon: https://iconmonstr.com/chart-4-png/
ID card icon: https://iconmonstr.com/id-card-10-png/
Tutorial week 5 Movie

4.4. Class Name: EditStudent

4.4.3. Purpose of the class

Edit the student's information include camera, add records, and store them in the database.

4.4.4. Resources of the code and references of images

Share icon https://iconmonstr.com/share-9-png/

4.5. Class Name: Mark

4.5.3. Purpose of the class

The recorded marks are displayed by week.

4.6. Class Name: Marking

4.6.3. Purpose of the class

Record attendance, checkpoints, scores, and grades.

4.6.4. Resources of the code and references of images

IME info using to get what was typed in the edit text.
https://developer.android.com/reference/android/view/inputmethod/EditorInfo

spinner KIT305-607 Self Study - Week 04 - Android.pptx and SpinnerSample
https://mylo.utas.edu.au/d2l/le/content/434620/viewContent/3918536/View

4.7. Class Name: MarkType

4.7.3. Purpose of the class

As a dataset class, it defines a mark type data type.

4.7.4. Resources of the code and references of images

Week5 tutorial Tutorial - Android Data Persistence with Firebase Firestore<
https://mylo.utas.edu.au/d2l/le/content/434620/viewContent/3918536/View>

4.8. Class Name: Student

4.8.3. Purpose of the class

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

4.8.4. Resources of the code and references of images

Week5 tutorial Tutorial - Android Data Persistence with Firebase Firestore<
https://mylo.utas.edu.au/d2l/le/content/434620/viewContent/3918536/View>

4.9. Class Name: StudentList

4.9.3. Purpose of the class

Display a list of students in the tutor's class.

4.9.4. Resources of the code and references of images

Creating the Recycler View (Week 4 Tutorial - Android ConstraintLayouts and RecyclerViews (Lists))

4.10. Class Name: StudentResult

4.10.3. Purpose of the class

It displays recorded student information and grades.

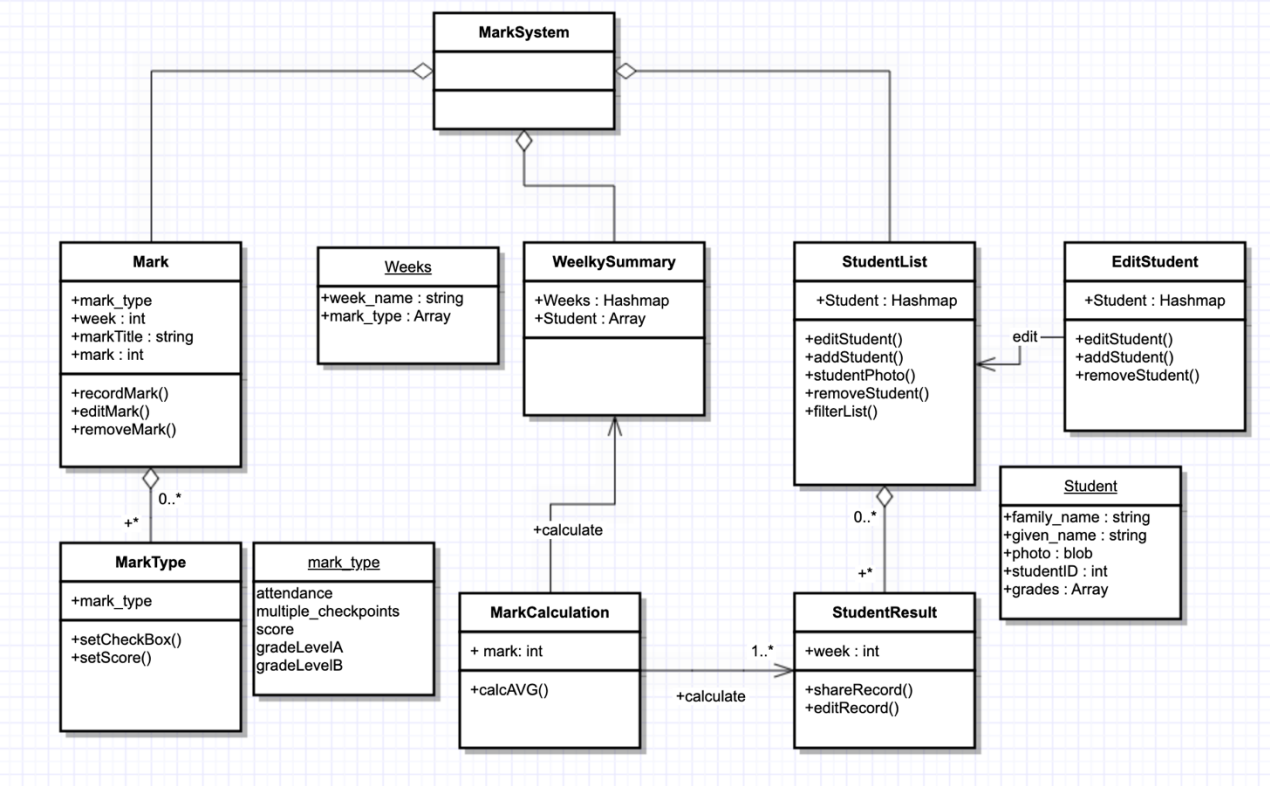
4.10.4. Resources of the code and references of images

Edit icon https://iconmonstr.com/edit-10-png/
Bin icon https://iconmonstr.com/trash-can-27-png/
Camera https://iconmonstr.com/photo-camera-4-png/

4.11. Class Name: WeeklySummary

4.11.3. Purpose of the class

Displays the average of all students for each week.



5. Conclusion

References

Cowan, N 2001, 'The magical number 4 in short-term memory: A reconsideration of mental storage capacity', Behavioral and Brain Sciences, vol. 24, no. 1, pp. 87–114, viewed 24 April 2021, <https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/magical-number-4-in-shortterm-memory-a-reconsideration-of-mental-storage-capacity/44023F1147D4A1D44BDC0AD226838496>.

Nielsen Norman Group 2009, Fresh vs. Familiar: How Aggressively to Redesign 2021, Nielsen Norman Group, viewed 23 April 2021, <https://www.nngroup.com/articles/fresh-vs-familiar-aggressive-redesign/>.

Ganesh, KR 2019, Using the power of familiarity in design - UX Collective, Medium, UX Collective, viewed 20 April 2021, <https://uxdesign.cc/familiarity-in-design-70df1979f80>.