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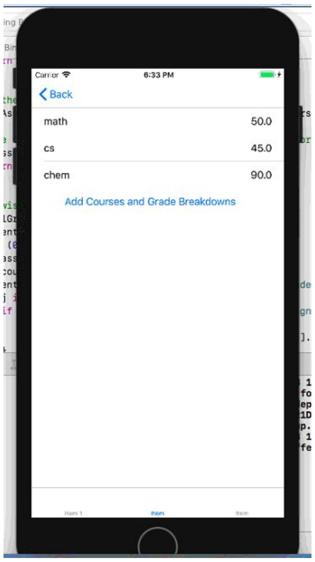
Project Write Up: Team 13

App Name: Binder

Description: A tool for students - high school and college alike - to consolidate the tasks of keeping track of grades and staying on top of deadlines. Key features are the adding of courses, grade breakdowns, assignment grades, tasks, and reminders.



math	50.0
cs	45.0
chem	90.0

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API’s, Third party Libraries and Services

Firebase

The app uses Firebase as the back end, with each of our classes (e.g. Courses, People, Assignments, Tasks) being represented as a child node of the main app. To encapsulate the adding, updating, and loading of data to and from Firebase a DataStore class was created. The children ID’s for a given class are assigned using the method childByAutoId() so that the app can function with simultaneous use of multiple users. Throughout the app, logical determinations - such as which users are in which courses - are made by iterating through this Firebase data.

Calendar

The app adds a calendar to the phone’s local calendar and adds tasks to the calendar that the user added to their task list. When a user edits their task the calendar is updated to reflect such change. When the user logs out the calendar is deleted and when the user logs in then their calendar is built with the information in firebase.

Notifications

The app sends notifications to be displayed on the phone for each task the user creates. When the user edits a notification a new notification is built using the new information provided. When the user logs in the notifications are built using the information in firebase.

Planned vs Actual Features

We originally planned to include features for comparing grades to other users, and for calculating what grade would be needed on a given assignment to obtain a certain grade in a course. We decided to forgo this in favor of Notifications - something which was not initially planned - for two reasons:

- The aforementioned planned features consist only of going through firebase and performing calculations, whereas notifications allowed us to learn and implement iOS specific functionality.

- We conveniently find ourselves agreeing with Dr. Witchel's input on our mock-up paper that the idea of centering college around optimizing grades to the third decimal place is not best way to get the most out of school.

Notable Difficulties and Lessons Learned

Our biggest difficulty was with setting up Firebase a few weeks before Dr. Witchel's lecture on the topic. We were able to do so successfully but had a mini-debugging nightmare which went as follows:

- Wondering why Firebase was not letting us read data, giving only the vague "executed bad instruction error".

- Realizing that firebase is picky about data types and wants occurances of the children classes (e.g. assignment0, assignment1) to be strings.

- Realizing that not only does Firebase wants these to be strings, but it wants strings which are not simply an integer casted as a string - rather, it seemed to want strings which begin with a letter.

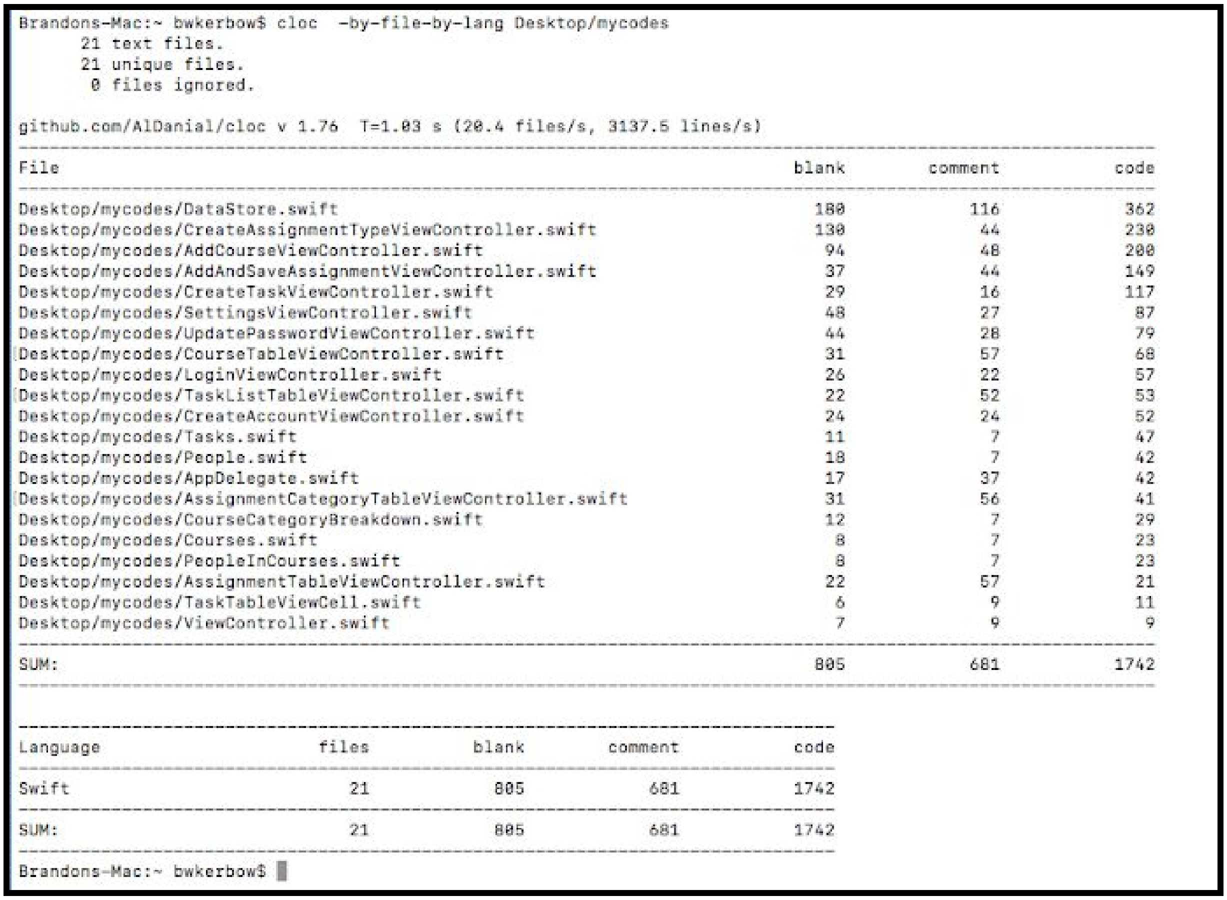
After we thought we had completed our Firebase configuration, we realized from Dr. Witchel's lecture the importance of using childByAutoId() to allow simultaneous use. We decided to implement this and for this reason - coupled with the need to tie this identifier to every class to allow for updates on firebase - we had to restructure a lot of our code to add a "firebaseRandomID" attribute to every class.

Another notable difficulty was with calendars and notifications. Specifically, dates and times. When writing to the calendar, it requires a specific format and so learning to deal with such format was difficult. It required refactoring the code and format of the project to be able to have a user friendly app and have well written code.

The main lesson we learned was that implementing functionality which may seem simple is a lot more involved than we initially thought. This was especially true as we implemented settings using core data and user defaults (before we made the switch to Firebase).

Lines of Code - Summary

Included as a screenshot instead of text so that the format is maintained.



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Brandons-Mac:~ bwkerbow$ cloc  -by-file-by-lang Desktop/mycodes
      21 text files.
      21 unique files.
       0 files ignored.

github.com/AlDanial/cloc v 1.76  T=1.03 s (20.4 files/s, 3137.5 lines/s)
--------------------------------------------------------------------------------------------------------------
File                                                                           blank        comment           code
--------------------------------------------------------------------------------------------------------------
Desktop/mycodes/DataStore.swift                                                  180            116            362
Desktop/mycodes/CreateAssignmentTypeViewController.swift                         130             44            230
Desktop/mycodes/AddCourseViewController.swift                                     94             48            200
Desktop/mycodes/AddAndSaveAssignmentViewController.swift                          37             44            149
Desktop/mycodes/CreateTaskViewController.swift                                    29             16            117
Desktop/mycodes/SettingsViewController.swift                                      48             27             87
Desktop/mycodes/UpdatePasswordViewController.swift                                44             28             79
Desktop/mycodes/CourseTableViewController.swift                                   31             57             68
Desktop/mycodes/LoginViewController.swift                                         26             22             57
Desktop/mycodes/TaskListTableViewController.swift                                 22             52             53
Desktop/mycodes/CreateAccountViewController.swift                                 24             24             52
Desktop/mycodes/Tasks.swift                                                       11              7             47
Desktop/mycodes/People.swift                                                      18              7             42
Desktop/mycodes/AppDelegate.swift                                                 17             37             42
Desktop/mycodes/AssignmentCategoryTableViewController.swift                       31             56             41
Desktop/mycodes/CourseCategoryBreakdown.swift                                     12              7             29
Desktop/mycodes/Courses.swift                                                      8              7             23
Desktop/mycodes/PeopleInCourses.swift                                              8              7             23
Desktop/mycodes/AssignmentTableViewController.swift                               22             57             21
Desktop/mycodes/TaskTableViewCell.swift                                            6              9             11
Desktop/mycodes/ViewController.swift                                               7              9              9
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SUM:                                                                             805            681           1742
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Language                     files          blank        comment           code
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Swift                           21            805            681           1742
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SUM:                            21            805            681           1742
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Brandons-Mac:~ bwkerbow$ 
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