

14 Work Journal

Date	Category	Description	Link
06.06.2021	Organisation	Initial contact with Mr Killer through an email containing a short description of the project to check whether any API endpoints allowing students to log in using their Intranet credentials exist	
22.06.2021	Meeting	First meeting with Mr Killer to introduce the project in further detail and to get to know each other	
27.06.2021	Organisation	Created first draft of the contract (<i>Arbeitsvertrag</i>) based on the first meeting	
06.07.2021	Meeting	Second meeting with Mr Killer to discuss the first draft of the contract as well as additional discussions about the app itself	
10.07.2021	Organisation	Revisions to the contract based on the feedback provided in the first meeting	
13.07.2021	Organisation	Sent revised contract to Mr Killer via Microsoft Teams	
14.07.2021	Organisation	- Updated the contract based on Mr Killer's feedback on Microsoft Teams - Signed the contract in a short meeting - Submitted the contract to the secretary	
21.07.2021	Research	Analysed and compared various mobile app development approaches: native vs. hybrid, frameworks, programming languages, etc.	
25.07.2021	Research	Defined the technical stack of the frontend → Ionic, Capacitor and Angular using HTML, CSS and TypeScript	
07.08.2021	Research	Analysed and compared multiple authentication services like Google Firebase, Supabase and Auth0 → undecided between Supabase and Auth0	
14.08.2021	Research	Analysed the technical feasibility of the features I aspired to build by checking the existence of relevant APIs	
19.08.2021	Research	Created some user flows for the main features using a mix of short descriptions in keyword form and sketches as guideline for development	

24.08.2021	Research	Discussed the created user flows with some peers to ensure they make sense for them before investing time into developing them	
26.08.2021	Research	Meeting with Ms Bronner to present my plan to create the library feature and to get some initial feedback about any flaws/issues that could arise	
29.08.2021	Research	- Generated some test barcodes using a mobile barcode generator app - Realised that different barcode types exist and that scanners are sometimes configured to only detect specific types - Found out that book labels use ITF barcodes and student ID cards use Code 39 barcodes	
30.08.2021	Research	Compared different authentication methods (email/password, passwordless, social login, etc.) in regard to security, user experience and cost by consulting some articles, documentations, and videos	
06.09.2021	Research	Compiled various student discounts offered by businesses in the canton of Zurich into a Notion database to serve as data source for the app	Notion
10.09.2021	Meeting	Meeting with Mr Killer regarding: - progress over the summer holidays - difficulties with the library feature (barcodes not scannable and library database not exportable) - discussion of the authentication flow with student email OTP - approximate timeline for the following weeks	
13.09.2021	Research	Looked into and compared email API services to programmatically send emails with the user and book information required by the librarian to process the borrowing requests	
15.09.2021	Organisation	Created project timeline on Notion	Timeline
17.09.2021	Research	Decided to use Mailjet as email API due to its attractive limits on the free plan, (advertised) reliability and detailed API documentation	

18.09.2021	Research	Compared Supabase and Auth0 by building a simple test app using their code samples available in their respective documentations	
19.09.2021	Research	Decided to use Auth0 over Supabase because it offers more advanced features and due to the fact that Supabase was still a beta product at the time of testing (frequent API changes were to be expected)	
25.09.2021	Development	Created JSON structure to store the user data	
01.10.2021	Research	Verified the privacy policies of third-party services used by the app (one.com for the hosting, Auth0 for authentication, Mailjet for email processing) to ensure they, at minimum, comply with the GDPR and store all data in the EU	
11.10.2021	Development	Created and configured a new Auth0 tenant	
12.10.2021	Development	Created OTP authentication and borrowing request email templates	
13.10.2021	Development	Created the app via the Ionic CLI	b4be27f
15.10.2021	Development	Purchased the domain name <i>studentity.ch</i> and a hosting plan fulfilling the project's needs	
17.10.2021	Development	- Configured the website's assets structure - Disabled the listing of certain folders and documents on search engines - Created several email addresses needed for the project	
23.10.2021	Research	Investigated into ways the library database could be exported	
30.10.2021	Development	Developed Python script to restructure the JSON data from the export into a format the frontend can easily interpret	Script
01.11.2021	Development	Pushed the project to the <i>studentity-frontend</i> repository on GitHub	e941cd0
05.11.2021	Research	Discussed a sample borrowing request email sent by the app with Ms Bronner to verify it contains all data necessary to be easily imported into the school's library system	

07.11.2021	Development	- Added initial push notification support for borrowed book reminders - Added access to the library catalogue via the in-app browser - Added first version of the confirmation modal - Added initial support to pass data to and from the confirmation modal - Updated the CSS styling of the student ID page	77b55c0
08.11.2021	Meeting	Meeting with Mr Killer with a progress update, demo of the app and preview of the paper	
13.11.2021	Development	- Improved push notification support for borrowed book reminders - Replaced fake user data in borrowing request email with the user's real data - Added paste OTP from clipboard feature on login page - Attempted to fix Android Gradle issues preventing the app from compiling	d96c219
16.11.2021	Development	Fixed Android Gradle issues by resolving a dependency conflict	87ff59c
16.11.2021	Development	Preparations to launch iOS beta testing via TestFlight (first build of every version must be verified by Apple's rigorous App Review process): - Created app on Apple's App Store Connect platform with all required metadata - Added alternative login solution for Apple's App Review team requiring all apps to provide them with login credentials to test the app ("john.appleseed@student.ksh.ch" with "Macintosh" as OTP) - Compiled and uploaded version 0.1 (2) using Xcode - Submitted version 0.1 (2) to Apple's App Review team to enable beta testing	7a3db40
22.11.2021	Development	- Disabled dragging of all images - Cleaned up the codebase	9b2cce2

22.11.2021	Development	- Added automatic user logout if the JWT has expired - Commented authentication service code	5e39c99
22.11.2021	Development	Commented authentication guard code	a841e52
22.11.2021	Development	Commented authentication and automatic login guard code	f3fcb13
22.11.2021	Development	Commented introduction guard code	0074bdb
22.11.2021	Development	Commented library confirmation and student ID pages code	e4e2ecb
24.11.2021	Development	- Updated UI of the borrowed book list - Implemented the storage of the borrowed book list (enabling the data to persist even after closing the app)	49a006d
27.11.2021	Development	Updated Android configuration files via Android Studio	0aae431
27.11.2021	Development	- Redesigned introduction slides - Updated layout of the login page - Added live date and time to the student ID as verification feature - Added dimming and screen locking prevention when the student ID card is shown - Added automatic logout when the student ID card has expired - Moved logout button to an action sheet - Redesigned library page with an empty state view and added details to the borrowed book list - Added further checks to the library feature (maximum of three borrowed books at a time, error when scanning an already borrowed book, etc.) - Added some placeholder information to the discounts page with a button opening the Notion database in the in-app browser - Improved overall performance - Bug fixes around edge cases	3c5bb5e
27.11.2021	Development	Commented new and updated code	b4fe028

27.11.2021	Research	Conducted usability test with six participants to ensure the app is easy to use and fulfils the goals set in the introduction (see chapter 7)	
28.11.2021	Development	- Added malicious date & time change detection while the app is paused - Added mechanisms to prevent memory leaks and performance degradation	9786c77
29.11.2021	Development	- Added action sheet with more options to the library and discounts pages (contact library, open library map/rules, suggest new discount, etc.) - Added a hint at the existence of the “swipe to mark a book as returned” feature - Fixed a bug where several quickly repeated clicks on the "Borrow book" button would cause the barcode scanner to fail and freeze	0b9c21e
29.11.2021	Development	Added dark mode support to Android	b2d628c
04.12.2021	Development	- Removed scanner text on Android - Improved app launch experience by preventing a rare white flash after the splash screen	26c73ec
04.12.2021	Development	Minor design changes for consistency to polish the app for the submission build	fa3931b
04.12.2021	Development	- Created <i>studentity-scripts</i> GitHub repository - Uploaded server-side script responsible to add custom claims to the JWT as part of the authentication flow - Uploaded library export files (original and processed JSON data, Python script and background information)	8808b07
10.12.2021	Meeting	Project closure meeting with Mr Killer - Demonstration of the final app build - Presentation of the paper with some last-minute feedback gathering	
11.12.2021	Writing	Final corrections of the paper based on Mr Killer's feedback	
12.12.2021	Organisation	Printed final paper in four exemplars	

13.12.2021	Organisation	Submitted paper to the secretary's office — product composed of the app and its source code are available digitally (see Appendix)	
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