UniBuddy

Design document

**Date**

10th March 2018

**URL’s:**

* **Website**

<http://itsuite.it.brighton.ac.uk/jlf40/tmc/a2/landing.html> *(normal)*

<http://itsuite.it.brighton.ac.uk/jlf40/tmc/a2-mini/landing.html> *(minified)*

* **APK (click Android tab, download the apk)**

<https://gonative.io/share/jewdkd> *(normal)*

<https://gonative.io/share/xprqmw> *(minified)*

* **QR Images (testing)**

<http://itsuite.it.brighton.ac.uk/jlf40/tmc/a2/qr-images.html>

* **Google Drive (shared)**

<https://tinyurl.com/y82kk2pm>

**Team Name**

Next Level Solutions

**Team members**

|  |  |
| --- | --- |
| **Name** | **Student Number** |
| Jack Finn | 16832245 |
| Cameron McDermid | 16824149 |
| Rupert Garland | 16832350 |

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# Pitch

Our project aims to give students immediate access to resources that support their day to day activities. Whether it’s a map to find their lecture room or a QR code that tells them when a room is free to use and the available software, our goal is to make the integration into university life as easy and informative as possible.

# Competition and Inspiration

After we had established the core components of the application, we did some research into our would-be competitors. The applications we found enabled us to mould our own project into one that offers unique and desired properties.   
  
The first application, and the one that had the most in common with our own initial idea, is the *University of Nottingham* application. This app contains core features that we intended to implement into our own design such as a floor plan for the university buildings and a personalised timetable. This also confirmed our research that we’d collected through a series of questionnaires that these specific features are highly desired. Studying this application further allowed us to focus on improvements what we can make for better usability. We did feel that this application contained a little too much information, with a variety of content that seemed to be ‘filler material’, which made accessing the core features a bit of a chore for the user.

Another app that is comparable to ours is *My Study Life*, namely the timetable and planning feature. This app has an extremely comprehensive planning structure that we would not be able to match in our application without changing the projects intentions. This was a great point in our research as we could focus on developing our own timetable and other features that could be an alternative to My Study Life.

In terms of design we had two main applications as inspiration; *BBC Sports App* and *Spotify*. The main design cue that we wanted in our project was the navigation in both applications. We enjoyed the user experience (UX) from both apps due to the speed and ease of navigation. In a few taps the user can access any section of the app, which is exactly what we wanted to provide. Furthermore, Spotify’s menu display for categories was an instant joy to use, with such clarity on what each ‘button’ would provide we felt that the layout would be perfect for our floor plan menu.

# Target audience

Our primary target audience are first year students, who use a smart phone on a day to day basis for help and guidance for their studies and traversing the campus.

# Usability issues

One of the usability issues that we believe may arise would be that some people may find it hard to capture a good enough picture of the QR code to be processed by the app. The main struggle we have experienced seems to be when the QR code is captured from a computer monitor. In reality though, the code would be printed out and posted by each room, making it easy for the user to know if the room is going to be occupied within the next hour or so without going anywhere or interrupting a class.

A further usability issue, that has partially been resolved, would be to know if a book reservation have gone through or not, as well as the duration of the loan. Therefore, we have implemented the ability to see what books have been reserved by the user, all they will have to do is click ‘Show’ at the top of the screen to see their current books they have reserved or on loan at the moment. We felt this was a super simple and easy way for the user to see what is going on with the book they want. In the future, we hope to add more detail of reserved books, i.e. return dates, multiple authors and the location of the resource. Hence, ‘partial resolution’.

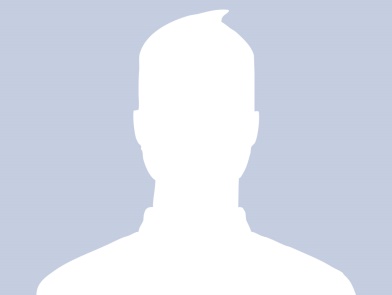
We would have liked to have used true user login recognition for the use of this app, to give proper personalisation throughout on almost every page, giving the user a better sense that the app is specifically made for them. This issue has temporarily been resolved for this project by implementing a switch statement based on test usernames, to populate the following user confirmation page with pre-set values. We have tried in places to continue the idea of personalisation and create a better user experience. An improvement on this would be integrating a ‘settings’ feature, for app styles and themes.

# Personas

Personas are based off the types of people that took our survey on app design.

**01.**

*Name:* Toby Davison



*Gender:* Male

*Age:* 19

*University:* Brighton University

*Year:* 1

*Studies:* Law

*Residence:* Halls

*Description:* Toby is a very outspoken person and feels he needs to put as much effort into his studies as he can, he will make sure to be in class exactly when it starts and no later. Being a law student there is a lot of reading involved so he spends a lot of his study time in the library looking into all the catalogues of books they have. He would find his life a lot easier if he didn’t have to go all the way to the library to find out what books they have on the shelves or later find out that the one book he needs has already been taken out by another person already. Toby uses his phone a lot to communicate with his friends or find out what is happening around the university when he has time outside of all the reading and classes.

*Quote:* “Being a law student I do like to keep up to date with all the news happening”.

**02.**

*Name:* Eleanor Perry



*Gender:* Female

*Age:* 20

*University:* Brighton University

*Year:* 1

*Studies:* Maths

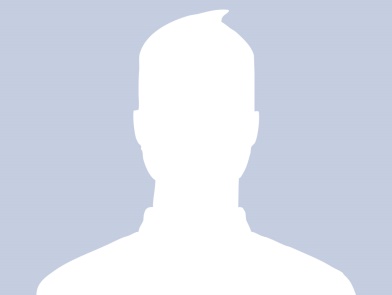
*Residence:* Halls

*Description:* Eleanor is a very adept mathematics student and has always been very good at being able to solve problems. For Eleanor, seeing a maths problem is a bit like a puzzle in that somehow, they will all fit together to create the full equation and answer. Eleanor is a student representative and is always wanting to stay in the loop with what is happening at the University, but there is only so much that social media will show her, as her feed is nearly always what her friends are doing, so there is potentially a large amount that might be lost due to no one talking about it.

*Quote:* “There is always more than one way to go at a problem”.

**03.**

*Name:* Oliver Wilks



*Gender:* Male

*Age:* 20

*University:* Brighton University

*Year:* 1

*Studies:* Maths

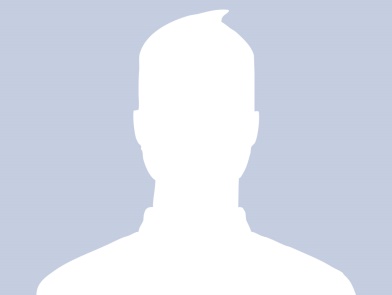
*Residence:* Halls

*Description:* Oliver likes to spend time with his friends both in class and outside of university. He has always had a very mathematical mind and has started to use it to his advantage outside of class by playing poker in his spare time. Oliver has become rather good at the game and is always looking for places and societies in the university to play poker with his friends. At the beginning of the year, Oliver had a lot of lectures and classes spread around the University and would feel lost on several occasions. He didn’t like carrying a map around as he would feel “sad”, he would have benefited to having something on his phone to look for the rooms discreetly.

*Quote:* “At some point I would like to be able to make a living off of poker”.

**04.**

Name: Ethan Glover



*Gender:* Male

*Age:* 20

*University:* Brighton University

*Year:* 1

*Studies:* Computer Engineering

*Residence:* Halls

*Description:* Ethan has always been a rather good programmer but has never been very good with keeping track of time for his classes or knowing when the deadline for an assignment is meant to be. He spends a lot of his time at the University playing catch-up in the computer lab sessions. There are also occasions where some of the rooms he wants to go to have classes in and he is not sure where else in the building is going to run the same software. He would have found it very useful if the classes had a list of the software they were running, to help him search for an appropriate room without needing to login, ask anyone or even walk through the door.

*Quote:* “I don’t mind how or where as long as I get the work done”.

**05.**

*Name:* Naomi Holt



*Gender:* Female

*Age:* 19

*University:* Brighton University

*Year:* 1

*Studies:* Biomedical Science

*Residence:* Halls

*Description:* Naomi has always been interested in chemistry and biology and has always wanted to go into the medical profession, she knows it’s a hard goal to achieve and that there is going to be a lot of research involved, especially when it comes to any projects and presentations for the subjects she has been given. She would have found it incredibly helpful to know where the best place is to find the information she needs, to complete a task either in the library or a classroom.

*Quote:* “It scares me only 20% of students get into my field, this means I have to work extra hard”.

# Scenarios

*Include at least one scenario per persona to exemplify application usage.*

**01.**

*Toby* is in his room in halls, it’s a Wednesday and he doesn’t have any classes to attend today, but he does want to get on with some study work. Although he’s got everything prepared for the day, he’s forgotten to get a law book out of the library that’s a 20-minute walk away. He texts one of his friends to see if they are in the campus and could go collect the book for him, but they are in a lecture. Worried about wasting time on a journey, Toby decides to check if the book he wants is currently in the library through UniBuddy. He signs in and navigates to the library page and searches for the book. Upon seeing it is there, he reserves it and makes his way to the library. Although the journey is long, he’s pleased that there is value in his use of time.

**02.**

*Eleanor* is out with her classmates for lunch, they’ve been discussing ideas for student events for Eleanor to bring up, at the next student meeting. A few of them had already been discussed and were happening later in the month, although Eleanor wasn’t sure of the full details. To help her friends, she opened UniBuddy and checked the home page for the University events feed and found the information she was looking for and passed it onto to her fellow students.

**03.**

*Oliver* was at a poker society event in an unfamiliar building on campus. Although he was enjoying his time, he was acutely aware that his lecture was in 10 minutes and he did not know where the room it had been changed to is located. He didn’t want to leave the game early, however if he didn’t leave soon he would be late to his lecture as he’s most likely going to get lost a few times at least. Instead, he pulls out his phone and checks UniBuddy’s floor maps and easily locates the room for his lecture. Feeling relaxed, he finished up his game of poker with his friends and attended his lecture on time.

**04.**

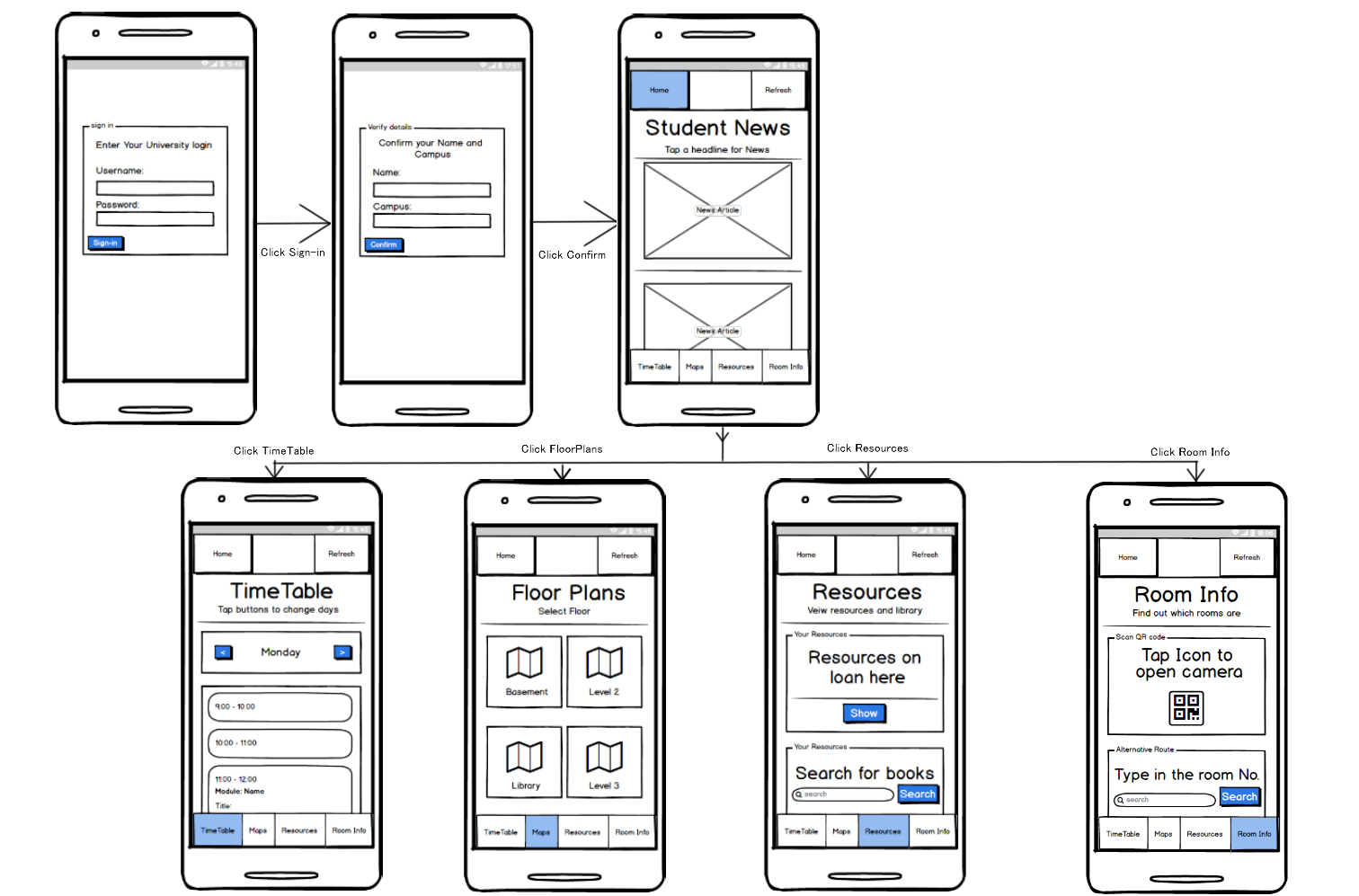
*Ethan* has several assignments looming and is generally on top of them, unfortunately he’s deciding to miss a few lectures to make sure he gets them done in time. For fear of wasting his day he heads into university to work on his programming in a quiet room, however not all rooms have the software he needs. Instead of going into each room, logging on and checking, he simply approached the door, opened UniBuddy and scanned the QR code. After looking at all the information about the room, he saw that although the room had software he needed, there was a lecture in half an hour. Knowing that, he moves on to another room, feeling positive that this is the quickest way for him to get his desired working environment.

**05.**

*Naomi* was at her desk in her room trying to focus on her chemistry study, but some other halls residents are being very distracting. She wants to go and work in the University but wants to make sure she’ll find some peace and quiet there too, so she opens UniBuddy. Immediately on the home page she sees that there are two different events taking place at the campus today, it could mean the university is busier than normal. Close to deciding that she is best to stay put, she checks to see if the library has any more useful books for her study, they’ve all been checked out, and hers aren’t due in for another week. Deciding that its best to stay in halls and work, she carries on with her revision, hoping that the other hall residents will be attending the events that start in an hours’ time.

# Wireframes

Wireframes were created using Balsamiq:



# Minimum viable product (MVP)

The application is intended to assist students with keeping up-to-date and connected with their course and the current affairs of their campus.

*The application must:*

1. *Show the user’s Timetable*
2. *Show the floor plans for the user’s campus*
3. *Display links for Student News*
4. *Search a database for Library Resources*
5. *Scan QR codes, to display Room information*

At the very least, the minimum this product should deliver are items 1 ,2 and 3 of the above list. Items 4 and 5 require an internet connection and will be very much limited in their use without. Not to mention they both require more backend development to create, support and maintain.

The application will be designed and developed under the pretence that it is officially affiliated with the University and that it will represent the current technologies used within Student Central. The application should:

* Accept user’s current login details, for the website and workstations
* Replicate the Library/Resource search
* Replicate the Timetable system
* Replicate the Student News blog

# Future features

Although we managed to get many features in our initial design into the product, there are few that we would include if we had more time and resources.   
  
In addition to our application, we would add the following features:

1. **Calendar**– Although we attempted to develop this during the project, we faced too many errors to implement it into our current application. The calendar would allow greater personalisation for each individual user, allowing them to dynamically add events. This will give the app longevity to the user; as the user progresses through university, their timetable and events will change too.
2. **Dynamic Content** –Currently our home page that contains student news is hard coded into the HTML doc. A future improvement to this feature would be creating a database for the news stories and pull them into the application, allowing for dynamic changes which will keep the app relevant and informative.
3. **Login System** – We are currently unable to integrate the University’s existing login verification functionality and have thus decided to implement a small example of the feature, based on a switch statement of test users directly scripted into the document. Given more time and access we would have liked to properly develop this function.

# Discrepancies

After much development and testing, we are proud to say that our final product completely matches the MVP. Not only have we been successful in creating an application that replicates the Login, Timetable, Resource search and Student News systems used by the University, but we have also successfully integrated a working QR code scanner that opens and closes the device’s camera from within the app and we have also made use of a device’s local storage; to keep any resources reserved from the library and the user logged in across sessions.

There are some minor bugs and issues within the application, they don’t currently have any adverse effect but are more or less just work-arounds to keep the functionality of various features working.

For the resource page of the application we have implemented a pagination feature, to reduce the number of results per page and enhance usability. After a user has searched for something and the results are being displayed, there is a secondary navigation bar to scroll through the pages generated from the results.

A check is performed each time one of these buttons is clicked, to either enable or disable the appropriate navigation buttons. When a user reserves a resource, the database is updated (available copies) and the results are requested again. This unfortunately redisplays the first page of results without changing the ‘current page number’ used by the secondary navigation to perform its check.

To work-around this, we have implemented a few lines of code that technically set the ‘current page number’ to 0 after a reservation, which temporarily fulfils the requirements of the check, but this also required a further modification for when you click ‘next page’ or ‘last page’, to ensure that it accounts for zero.

Another issue concerns some html elements that are created and inserted via JavaScript and DOM manipulation. When some elements are created, they may be assigned various styling attributes directly to that element. Upon reflection, a more appropriate way of styling these elements would have been to assign them a class and declare a class style. At the time this was thought to be sufficient, as there is the possibility that the document may not always possess these elements, for empty searches etc.

There are possibly other styling issues, such as using inline CSS to counter-act internal CSS, that may also be counter-acting an external CSS document. Towards the end of development, some styling had already been implemented which the usability of some functions relied on. Rather than refactor existing CSS, it was deemed acceptable at the time to simply overwrite these with inline styles.

Aside from the pagination bug, we believe most other issues are like the one above and are probably regarded more as cosmetic design flaws. These are the only discrepancies that we are currently aware of.

# Walkthrough

To view the application via APK download, please do the following:

1. Follow the APK links at the top of this document
2. Navigate to the Android Tab, on top of the phone window
3. Scroll to beneath the phone window
4. Click/Tap ‘Download the APK’ and follow instructions
5. You may be prompted to enable ‘Unknown Sources’
6. Install application, and Open

To view the application on desktop, please do the following:

1. Go to <http://itsuite.it.brighton.ac.uk/jlf40/tmc/a2/landing.html>
2. This page automatically redirects the user after roughly 2 seconds
3. Once in the Home page, press F12 to show developer console
4. Toggle to mobile mode and select iPhone 6/7/8

We believe that hopefully most of the application is self-explanatory and that the only notable difference from mobile to desktop, concerns the QR code scanner. On a mobile device, tapping the scan-icon will open the devices camera, but on desktop it opens the ‘Browse Computer’ dialog, to manually search your hard-drive for the image.

To use this feature on desktop, please perform the following steps:

1. Go to <http://itsuite.it.brighton.ac.uk/jlf40/tmc/a2/qr-images.html>
2. Click on room buttons to show the corresponding QR code
3. Right-click and save image(s).
4. Go to <http://itsuite.it.brighton.ac.uk/jlf40/tmc/a2/rooms.html>
5. Click scan-icon, to open Browse window
6. Select saved image of QR code, click Open
7. You should be presented with the correct room and software information

There are also about 19 example books within the dummy library resource, all to do with computing and development. We found that searching for the character ‘O’ should display all of them. Other keywords include:

* Design
* Java
* PHP
* Systems
* Object
* Unity

# Work log

|  |  |  |
| --- | --- | --- |
| **Student** | **Activity** | **Period** |
| **Cameron McDermid** | Developed MVP draft | February 2018 |
| **Jack Finn** | Researched potential development technologies | February 2018 |
| **Rupert Garland** | Created App development survey | February 2018 |
| **Cameron McDermid** | Developed draft wireframes | March 2018 |
| **Jack Finn** | Researched and tested online APK packaging tool | March 2018 |
| **Rupert Garland** | Developed App design survey | March 2018 |
| **Jack Finn** | Carried out feature testing for QR code scanner | March 2018 |
| **Cameron McDermid** | Developed home page login feature | April 2018 |
| **Jack Finn** | Developed resource page search feature | April 2018 |
| **Rupert Garland** | Developed final wireframes | April 2018 |
| **Cameron McDermid** | Researched and tested open source calendar | April 2018 |
| **Jack Finn** | Developed functionality for student news links | April 2018 |
| **Rupert Garland** | Created floor plan images, from fire safety references | April 2018 |
| **Jack Finn** | Developed DIY calendar function, extendable | May 2018 |
| **Rupert Garland** | Developed floor plan page and functionality | May 2018 |
| **Jack Finn** | Integrated individual workloads into final project | May2018 |
| **Cameron McDermid** | Finalised CSS | May 2018 |
| **Rupert Garland** | Alpha tested GoNative .apk files | May 2018 |
| **Jack Finn** | Minified HTML, CSS and JS. Compressed images | May 2018 |
| **Cameron McDermid** | Progressed with project documentation | May 2018 |
| **Jack Finn** | Progressed with project documentation | May 2018 |
| **Rupert Garland** | Progressed with project documentation | May 2018 |

# Media catalogue

Here is a list of media we have used in our project, including source and license, if known.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **File name** | **Mime type** | **Size (Kb)** | **Author** | **Obtained from** | **License** |
| **Logo02.png** | Image/png | 7.84Kb | Jack Finn | N/A | CC BY |
| **UoB\_Leaf.gif** | Image/gif | 6.95Kb | UoB | https://studentcentral.brighton.ac.uk/bbcswebdav/pid-3100321-dt-content-rid-5820103\_1/xid-5820103\_1 | N/A |
| **BasementFloorPlan.png** | Image/png | 58.7Kb | Rupert Garland | Original image provided by Student Services | CC BY-NC-ND |
| **HRStudentAreaLevel.png** | Image/png | 66.3Kb | Rupert Garland | Original image provided by Student Services | CC BY-NC-ND |
| **Level3FloorPlan.png** | Image/png | 97.1Kb | Rupert Garland | Original image provided by Student Services | CC BY-NC-ND |
| **Level4FloorPlan.png** | Image/png | 87.0Kb | Rupert Garland | Original image provided by Student Services | CC BY-NC-ND |
| **Level5FloorPlan.png** | Image/png | 49.2Kb | Rupert Garland | Original image provided by Student Services | CC BY-NC-ND |
| **LibraryFloorPlan.png** | Image/png | 69.4Kb | Rupert Garland | Original image provided by Student Services | CC BY-NC-ND |
| **book-small.png** | Image/png | 2.09Kb | Freepik | https://www.flaticon.com/packs/miscellaneous-elements | CC BY |
| **calendar-small.png** | Image/png | 2.22Kb | Freepik | https://www.flaticon.com/packs/miscellaneous-elements | CC BY |
| **home-small.png** | Image/png | 2.06Kb | Freepik | https://www.flaticon.com/packs/miscellaneous-elements | CC BY |
| **monitor-small.png** | Image/png | 2.06Kb | Freepik | https://www.flaticon.com/packs/miscellaneous-elements | CC BY |
| **placeholder-small.png** | Image/png | 2.22Kb | Freepik | https://www.flaticon.com/packs/miscellaneous-elements | CC BY |
| **reload-small.png** | Image/png | 2.09Kb | Freepik | https://www.flaticon.com/packs/miscellaneous-elements | CC BY |
| **floor-icon.png** | Image/png | 39.1Kb | Unknown | http://cdn.onlinewebfonts.com/svg/img\_551306.png | Unknown |
| **qr-code.png** | Image/png | 5.34Kb | Jack Finn | N/A | CC BY-NC-ND |
| **spinner.gif** | Image/gif | 77.4Kb | Loading.io | https://loading.io/ | CC0 1.0 |
| **accommodation.jpg** | Image/jpg | 64.8Kb | Unknown | https://blogs.brighton.ac.uk/studentnewsandevents/files/2018/01/househunting-blog-r7atky.jpg | Unknown |
| **ramadam.jpg** | Image/jpg | 47.8Kb | Unknown | https://blogs.brighton.ac.uk/studentnewsandevents/files/2018/01/ramadan-blog-header-28tcs4p.jpg | Unknown |
| **teaching-noms.jpg** | Image/jpg | 78.2Kb | Unknown | https://blogs.brighton.ac.uk/studentnewsandevents/files/2018/05/EFEL\_winners\_600x300-1i1ips6.jpg | Unknown |
| **travel-smart.jpg** | Image/jpg | 62.9Kb | Unknown | https://blogs.brighton.ac.uk/studentnewsandevents/files/2018/01/Travel-Smart-re-launch-studentcentral-blog-graphic-750x320-1lpm3ky.jpg | Unknown |
| **weather-update.jpg** | Image/jpg | 29.8Kb | Unknown | https://blogs.brighton.ac.uk/studentnewsandevents/files/2018/02/weatherupdate-zflbfp.jpg | Unknown |
| **wellbeing.jpg** | Image/jpg | 16.3Kb | Unknown | https://blogs.brighton.ac.uk/studentnewsandevents/files/2018/02/wellbeingworkshops-1tfd7ws.jpg | Unknown |

# Optimisation

The following chart represents the reduction in file size generated by minifying the contained code:

|  |  |  |  |
| --- | --- | --- | --- |
| **File name** | **Original Size (Kb)** | **Minified Size (Kb)** | **Reduction (Kb)** |
| **Landing.html** | 1.13Kb | 0.3Kb | 1.10Kb |
| **Home.html** | 20.3Kb | 16.3Kb | 4.0Kb |
| **Timetable.html** | 12.1Kb | 8.78Kb | 3.32Kb |
| **Floors.html** | 5.99Kb | 4.18Kb | 1.81Kb |
| **Resource.html** | 4.34Kb | 3.42Kb | 0.92Kb |
| **Rooms.html** | 4.39Kb | 3.45Kb | 0.94Kb |
| **Style.css** | 2.73Kb | 2.18Kb | 0.55Kb |
| **Resource.js** | 15.7Kb | 10.0Kb | 5.7Kb |
| **Rooms.js** | 6.98Kb | 4.88Kb | 2.1Kb |
| **TOTAL** | 73.66Kb | 53.49Kb | 20.17Kb |

|  |  |  |  |
| --- | --- | --- | --- |
| **File name** | **Original Size (Kb)** | **Minified Size (Kb)** | **Reduction (Kb)** |
| **accommodation.jpg** | 990Kb | 64.8Kb | 925.2Kb |
| **ramadam.jpg** | 208Kb | 47.8Kb | 160.2Kb |
| **teaching-noms.jpg** | 170Kb | 78.2Kb | 91.8Kb |
| **travel-smart.jpg** | 72.4Kb | 62.9Kb | 9.5Kb |
| **weather-update.jpg** | 136Kb | 29.8Kb | 106.2Kb |
| **wellbeing.jpg** | 113Kb | 16.3Kb | 96.7Kb |
| **TOTAL** | 1689.4Kb | 299.8Kb | 1389.6Kb |

The following chart represents the reduction in file size generated by compressing some of larger images.

Overall, through minifying our HTML, CSS and JavaScript, and compressing some of ours images, we have reduced the overall size of the application from 2.53Mb to 1.12Mb.

After converting to an .apk file, the normal version registers as 7.63Mb, and the minified version is about 7.22Mb. We assume there is an amount of data integrated through conversion.

# References

List for any sources to literature, projects or products we referenced in our proposal.

**Student News images**

All images used for student news were obtained from:

<https://blogs.brighton.ac.uk/studentnewsandevents/>

**Image Compression**

All images in ‘<site>/images/studentlinks/’were compressed using:

<http://compressjpeg.com/>

**Icons image pack**

Designed by ‘Freepik’ from Flaticon, edited by Jack Finn

<https://www.flaticon.com/packs/miscellaneous-elements>

<https://file000.flaticon.com/downloads/license/license.pdf>

**Logo02.png, UoB\_Leaf.gif**

Zip folder released by University for project

<https://studentcentral.brighton.ac.uk/bbcswebdav/pid-3100321-dt-content-rid-5820103_1/xid-5820103_1>

**QR Codes**

QR codes used for this project were created using:

<https://www.the-qrcode-generator.com/>

**Minifying HTML, CSS and JavaScript**

Documents were minified using the following online tool:

<https://www.willpeavy.com/minifier/>

**Floor plan images**

Images were provided by Judy Adams of Student Services, edited by Rupert Garland

[j.adams@brighton.ac.uk](mailto:j.adams@brighton.ac.uk)

**Android and iOS native app converter**

Prototype .apk files were converted and packaged using:

<https://gonative.io/>