

WITSNAV

March 14, 2020

Division of Labour

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1 Introduction

Any University in general is large and have many buildings, fields, etc. First year of varsity is a very overwhelming experience. It is difficult and confusing to locate lecture halls, exam venues, etc. It is stressful not being able to find a lecture venue on the first day. No one wants to be late for their lectures. On the other side, being shy inhibits you from requesting assistance from anyone around campus. The venue abbreviations making it more difficult to find the lecture venues around campus.

WITSNAV is mobile application that will be used mostly by first year students to find their way around campus, relieving them from getting lost, stress and tardiness, helping them to transition more easily into university life. It will also help students locate their friends around campus since Wits is a very big and intimidating place.

1.1 Scope

1.2 Definitions and Conventions

Administrator: team behind the app that collects and stores the apps information for the users. They then update and maintain the system ensuring all information is correct and up to date.

App: an application, especially as downloaded by a user to a mobile device

Personal statement: a written description of one's achievements, interests, etc., included as part of an application for a job or a place at university or college.

User: any person(s) looking to study at a public university in South Africa for the first time.

UCAS: Universities and Colleges Admissions Service

UK: United Kingdom

1.3 Overview

The following document is a walk through of the proposed application/website.

It covers the following:

- Any similar existing systems and how the proposed idea is better
- How the app will work, as well as its pros and cons
- The proposed system
- The requirements as set by the proposed user
- Functional requirements
- Non-functional requirements

- System Models

2 Current Systems

- UCAS

UCAS is a online admissions portal service that is only offered in the United Kingdom, and is a service that requires the user to pay a specific fee. For a single application it costs 18 euros and for multiple applications it costs 24 euros. The service specifically aids undergraduates with their applications for universities within the United Kingdom, as well as offer services for postgraduates and teachers.

The current UCAS system helps prospective students with the following:

- Filling out the application and tracking it once it has been sent in
- The service helps the student with their personal statements. .
- The service further aids students in getting references to help the applicant stand out.

However, some of the downsides to this service include the fact that:

- It is not free, unlike what we propose for our website/app.
- Their service is very limited and does not cover as much information we propose to cover.
- Their information is very general and not tailored for each student.
- Limited to universities in the UK

(<https://wwwucas.com/> - reference)

- CommonApp

Another present system currently in use is the CommonApp. The CommonApp is another undergraduate college admissions application that applicants may use to apply to more than 800 colleges and universities in the US, Columbia, Canada, China and many other European countries. Its mission is to "promote access, equity and integrity" in the college admission process, which includes subjective factors such as essays and recommendations alongside other objective criteria such as class rank. The CommonApp further allows applicants to self-report standardized test scores and international educational qualifications.

One of the biggest limitations of this existing system, again, is the limited range in terms of which countries are able to use and implement this system.

Here in South Africa there currently is no similar system in place. Prospective students looking to study here in South Africa have to work with are all the separate websites and emails that correspond to each university and/or financial aid.

Our proposed system looks to collect all the above information and much more, and tailors it to each individual student according to their registered profile. The proposed system looks to help students looking to study in any public South African university, and further takes the current application proceedings and makes it more efficient and less demanding of the user.

3 Proposed System

The following section will discuss in detail how the proposed app/website will work.

3.1 Product Perspective and Functions and User Characteristics

User perspective: there will be a system in place in the form of an app or a website for prospective students to access information regarding them, during their application process to public South African universities.

All students are required to register an account providing us with all the necessary information to tailor the vast amount of information to them. As mentioned before the app is profile based and therefore will be presented to them as such. In each users profile will be all the information regarding them separated into different categories. Students will be able to edit their profile information but nothing else. They would not have the permissions necessary to modify any information that other users have access too.

Example:

User A wants to study law, specifically an LLB. They have an A aggregate and are looking to stay in a university residence. The basic categories on User As profile will be:

Account:

- Personal information - name, residence etc.
- Academic transcripts - matric marks and/or any previous tertiary education results
- Financial information - i.e. monthly household income

Applications:

- Closing dates
- Application help
- General information

Course information:

- Course outline - in this case a breakdown of the LLB course.
- Requirements - current available marks, final matric marks, APS and age exemption explained
- Careers - what can the student do with their degree?
- Curriculum - modules, credits explained, prerequisites etc.

Fees and Funding:

- Estimated first year costs - tuition, text books.
- Residence costs - food and accommodation
- Bursaries and scholarships

Residence:

- Different residences within each university
- Entrance requirements for each residence and the requirements to remain in the residence
- Brief explanation of res life.

Administration perspective: this would be a separate server where admin can modify and update the information provided to the user. Admin would have their own accounts and login information. They can modify the information provided however they do not personally have access to students personal information as this will be kept private and is merely used to filter information.

3.2 Constraints and Assumptions

One big constraint includes the fact that the user and admin will require access to a mobile device in which they can use the app or website.

Additionally, for the proposed app/website to work, an active internet connection is required. The average webpage uses around 3MB to load and will download in seconds. Due to the apps very basic functionality, if the user is able to load a webpage, their internet speed will be good enough to run the app. Hence a basic 3 Mbps download and 1.5 Mbps upload should be sufficient.

The app will have to ask permission to access files on whatever device the user accesses it from. This is due to needing verified academic transcripts from the user in order to complete their profile.

The app will not require GPS to track the users location as it is not necessary for any functionality within the app. Nor will it require access to the camera or microphone.

4 Requirements Elicitation

The brainstorming session yielded the following basic points:

- Connect students to the universities
- Help inform students about degrees, courses, scholarships etc.
- The app should be account based/personal to the user
- Account should include personal information, results and financial status
- Results of the account information filters information
- Detailed explanations on courses.
- Calculate APS
- Notifies user of the deadline for applications(academic and financial)
- Local public universities - start small

Online survey:

To obtain alternative perspectives we set up an online survey using Survey Monkey to get feedback from prospective students - our target market.

The questions were as follows:

- Please enter your name. (Optional question)
- Have you applied for university?
- If yes for Q2, how did you find the application process?
- Does the proposed app sound useful?
- Do you feel you have/had all the information that you personally needed for tertiary education during the application process? i.e course outlines, degree descriptions, fees, payment options etc.
- If you like the idea of the above app, what functionalities would you recommend we included? In other words, what information would like to be included?
- In order for the information to be personalized, the app requires input from the user. This would be in the form of setting up an account and inputting information such as personal information, academic record and household income. Would you be fine with this? Everything would be kept private
- Lastly would a public chatroom within the app interest you? This would be to connect to other prospective students

The results of the conducted survey were as follows

Question 1: answers for this question were not relevant to the functionality study

Question 2:

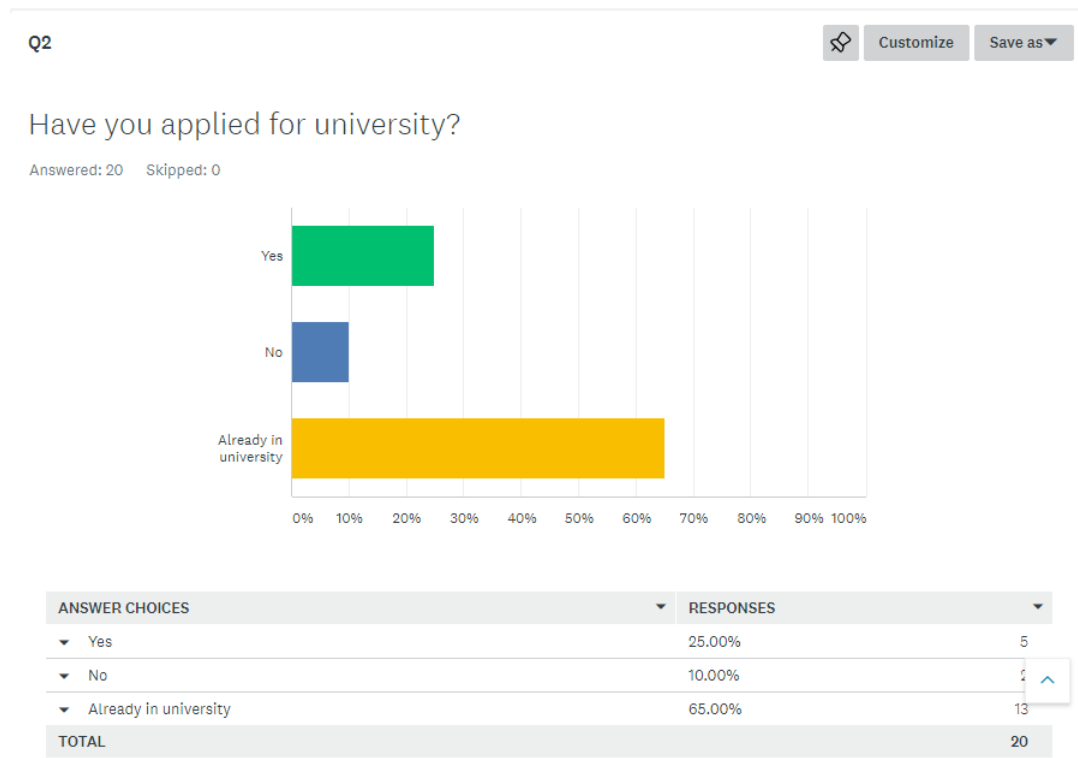


Figure 1 – Percentage of students that have applied for university

Question 3:

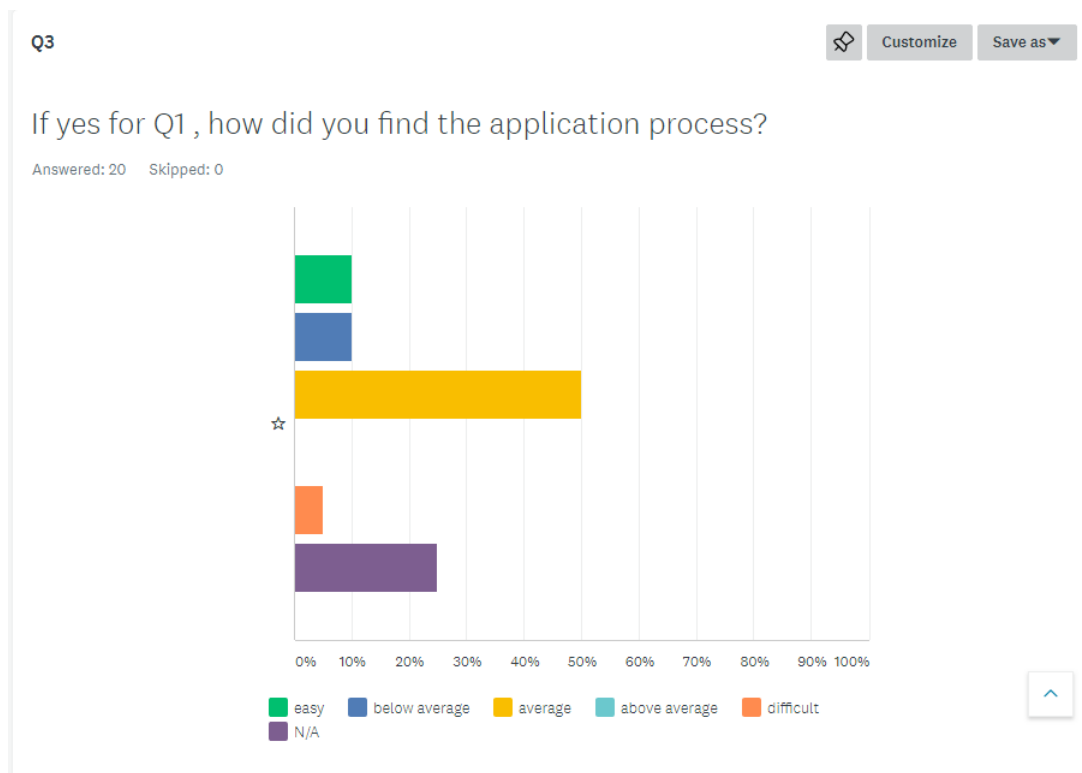


Figure 2 – Percentage of the applicants that found the application process

Question 4:

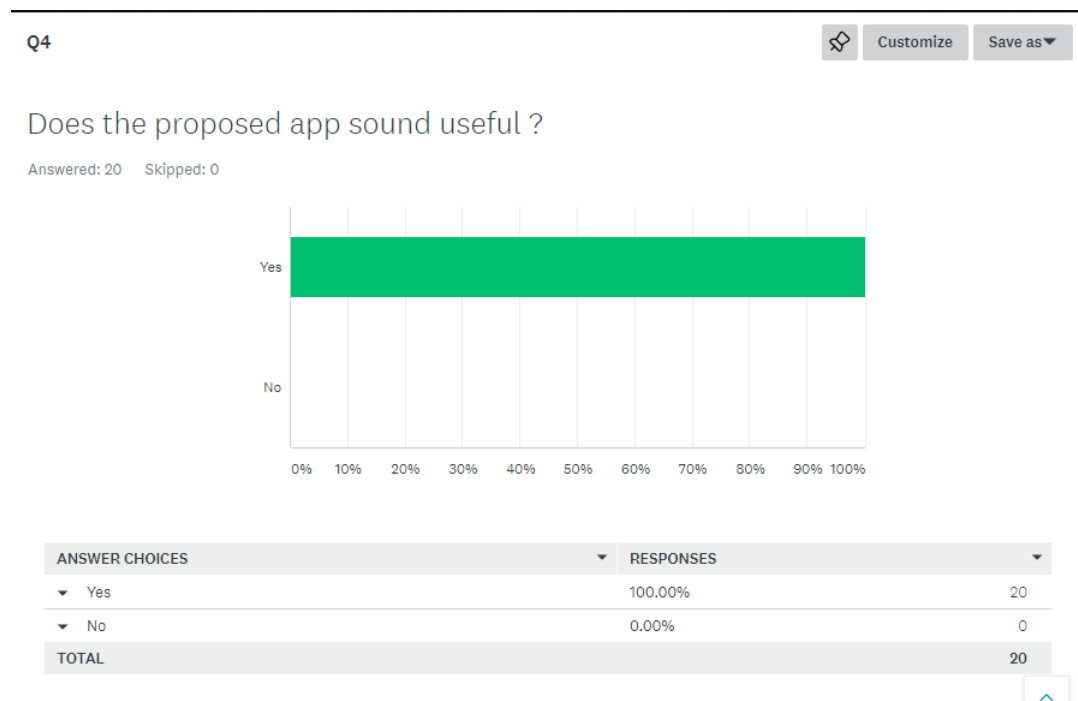


Figure 3 – Percentage of students who found the proposed system useful

Question 5:

If you like the idea of the above app, what functionalities would you recommend we included? ie what information would you like to be included?

Answered: 17 Skipped: 3

RESPONSES (17) WORD CLOUD TAGS (0)

Sentiments: OFF ☐

☐ Apply to selected Filter by tag Search responses

Showing 17 responses

☐

When you choose the degree, show all the APS points needed from every university. Career options for each degree.

5/2/2019 8:46 AM

[View respondent's answers](#) [Add tags](#)

☐

Real time chat (signalR) with provided agents for the app (designates student body, deans, prof or administrative workers at UNI, even NISFAS admin)

5/2/2019 7:12 AM

[View respondent's answers](#) [Add tags](#)

☐

Not necessarily a functionality, but the security of users' personal information should definitely be top priority. I recommend that students who have completed the course should be able to do write ups about the course. It may be a lot of work to find these students and actually get them to do it, but I do believe it will help prospective students make the right decision, as nobody can explain a course like a person who has done it. And universities obviously won't give their honest opinion on the courses they offer.

5/1/2019 10:47 PM

[View respondent's answers](#) [Add tags](#)

Figure 4 – Percentage of students who felt they had all the necessary information when applying

Question 6:

<input type="checkbox"/>	The different degrees/ courses available , fee structure , course requirements , important information regarding the different courses and subjects for example requirements and expectations	5/1/2019 8:02 PM	View respondent's answers	Add tags ▼
<input type="checkbox"/>	The documentation process when applying is somewhat tiresome and repetitive. A simple upload of all documents should be made at once.	5/1/2019 7:23 PM	View respondent's answers	Add tags ▼
<input type="checkbox"/>	The above is fine	5/1/2019 6:44 PM	View respondent's answers	Add tags ▼
<input type="checkbox"/>	Everyone is perfect	5/1/2019 5:41 PM	View respondent's answers	Add tags ▼
<input type="checkbox"/>	Outline of fees for the year Textbook list An outline of what each course entails and what is required	5/1/2019 5:35 PM	View respondent's answers	Add tags ▼
<input type="checkbox"/>	It's perfectly fine	5/1/2019 4:31 PM	View respondent's answers	Add tags ▼
<input type="checkbox"/>	Recent updates	5/1/2019 3:07 PM	View respondent's answers	Add tags ▼
<input type="checkbox"/>	All the modules within the degrees. How transferring from one uni to the other works. And maybe people's testimonials on the university, just to add character to the site/app, this is something that could be beneficial to prospective first years. And just things to help first years stay, like advice etc	5/1/2019 3:03 PM	View respondent's answers	Add tags ▼

Figure 5 – Responses to what students would like to see be included

Question 6 (continued):

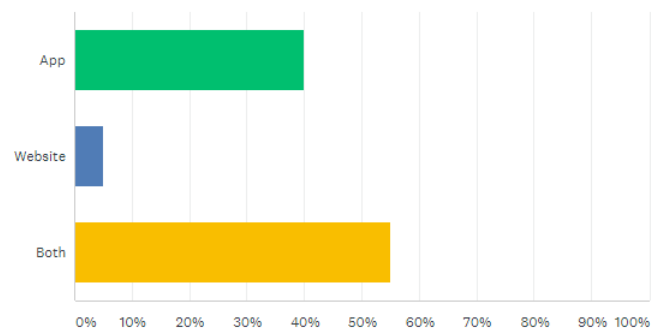
<input type="checkbox"/>	It focuses mainly on the academic component, maybe consider the prospective students extra curricular activities such as sports for the application	5/1/2019 2:38 PM	View respondent's answers	Add tags ▼
<input type="checkbox"/>	View all APS requirements for a specific degree from several universities on one platform	5/1/2019 2:14 PM	View respondent's answers	Add tags ▼
<input type="checkbox"/>	Specific degree requirements. Not just minimum requirements but recommend requirements to have a decent chance of actually getting in. Details on what specific courses actually entail and what aptitudes are useful for successfully completing the course.	5/1/2019 2:58 PM	View respondent's answers	Add tags ▼
<input type="checkbox"/>	Future employment opportunities for said degree	5/1/2019 2:54 PM	View respondent's answers	Add tags ▼
<input type="checkbox"/>	Different fees for different degrees . How many years different courses are . APA requirements .	5/1/2019 2:52 PM	View respondent's answers	Add tags ▼
<input type="checkbox"/>	explanation of different degrees i.e what career can you go into if you choose the degree Different financial aid requirements Bursary options	5/1/2019 2:41 PM	View respondent's answers	Add tags ▼

Figure 6 – Responses to what students would like to see be included

Question 7:

What format would you prefer?

Answered: 20 Skipped: 0



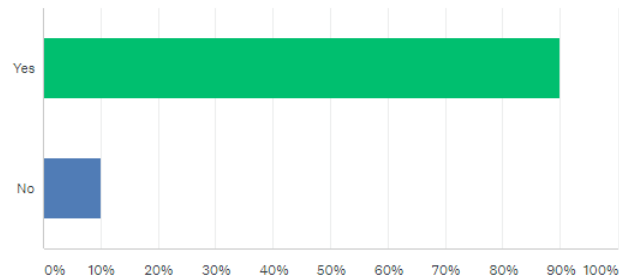
ANSWER CHOICES	RESPONSES	
App	40.00%	8
Website	5.00%	1
Both	55.00%	11
TOTAL		20

Figure 7 – Format preference

Question 8:

In order for the information to be personalized, the app requires input from the user. This would be in the form of setting up an account and inputting information such as personal information, academic record and household income. Would you be fine with this? Everything would be kept private.

Answered: 20 Skipped: 0



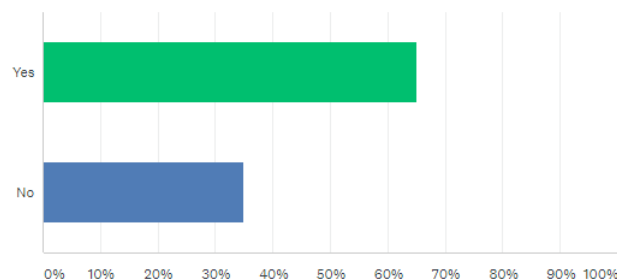
ANSWER CHOICES	RESPONSES	
Yes	90.00%	18
No	10.00%	2
TOTAL		20

Figure 8 – Percentage of students who would be fine with the app accessing personal information

Question 9:

Lastly would a public chatroom within the app interest you? This would be to connect to other prospective students.

Answered: 20 Skipped: 0



ANSWER CHOICES	RESPONSES
Yes	65.00% 13
No	35.00% 7
TOTAL	20

Figure 9 – Percentage of students who would like the idea of a potential public chatroom within the app

Synthesizing the requirements from existing systems

From the existing systems which were identified earlier in the document, the following requirements were extracted:

A. User requirements

- Enable the user to search or query information about their degree of choice.
- Connect the users to the university officials and current students of the universities in order for them to ask questions about the university experience and find out more about the university.
- Offer career guidance to users by providing information about the different types of careers they can pursue and the study requirements based on their profile.
- Provide information about open days and enable the users to book tours.
- Initiate the application for the users by sending all the information in their profile to the university application systems. This will allow the users to apply to more than one university simultaneously

These requirements were firstly extracted from the conducted survey in which students of varying age participated in. Furthermore, gathering information about these university application systems from various websites, as well as exploring the comments and reviews made from people who used the system before, we were able to extract these requirements. Through this method the inner workings of the systems were made visible

5 Functional Requirements

5.1 User Class

5.1.1 Downloading the Application

The website will be available and accessible on the internet (e.g. Google chrome browsers) for laptops, desktops and mobile devices. Therefore, to access the website the user only needs to download a web browser.

5.1.2 Registration

Each user will be required to enter his or her own personal details about themselves in order to generate their profile. This personal information would include name, address, phone number, and email address.

For the user to register, they would need to have working email address. This is for the purpose of active communication and so that the user is able to be reached. Furthermore, the user will need to create their own unique username and will be required to create a password for his/her account.

The following will be shown on the website before a successful login or creation of an account:

- Do you already have an existing account? If yes, go to LOGIN button. If not, create a new account.
- If user has an existing account: Username and Password required.
- If the user chooses to create a new account, the first steps, asking for the users personal details such as name, surname, age etc. will be asked
- Next: Create a username by entering your email address
- Create a password (must include upper and lower case characters, and a number or special character)
- A confirmation email with an activation link will be sent to the user's address once the user has clicked confirm.
- Once account activated: You have successfully activated your account will be displayed on the website.

Following on from an activation email being sent, the user will be given one day to activate the account before having to re-complete the process.

If the user enters an incorrect email address or password when logging in, the website will automatically inform the user that the username or password is incorrect. In the event that this occurs, the website will further indicate red colours to the both of the relevant blocks.

In the event that the user inputs an existing username when registering, the website will automatically inform the user about this.

If all the details are correct it will submit all this information to the administrator and a message will automatically be displayed on the screen saying that an email, with a link to sign into the website, has been sent to the user.

5.1.3 Forgot Password

There will be an option on the home screen which asks the user if he or she has forgotten their password. If this is the case, the user will have to:

- Re-enter their email address and click enter
- An email with a link to reset the password will be sent to the respective email address

5.1.4 Intuitive and Easy Navigation

Note that intuitive navigation and overall usability are the key functions our users need in our website. Minimizing clicks and actions is a good idea of increasing the website experience. Without the use of a mouse and a keyboard, it's more difficult to select objects and input information on the website.

5.1.5 A Rich Experience

Our website is going to be accessed frequently by users and we offer some experience that is not available elsewhere.

5.1.6 Seamless Checkout

Our website will have small touches that make the process faster and easier for users. As with other areas of our website, fields and buttons are optimized to be easily selected.

5.1.7 Personalized Experiences

Website personalization can be achieved based on factors such as demographics, actions that users take in the website and the user's current location.

5.1.8 Instant Query Results

Such a feature will enable the user to view the search results instantly for each character he/she types into the search bar as opposed to typing the whole search key and then waiting for the results to appear.

5.1.9 Real-Time Communication with university officials

This feature enables the user to communicate through an interactive chatbox with the university officials to find out more information about that university. This is real time communication and so there are no delays in receiving messages.

5.1.10 Viewing and Editing Account Information

With this feature, the user will be able to view his/her account information and edit it through the button controls and inputting information in the corresponding text fields.

5.1.11 Receiving Notifications

This feature enables the user to receive notifications from the universities about the application deadlines and any other relevant information. This is achieved through an inbox containing a message list.

5.1.12 Building a Profile

Save Current Progress

By clicking the save button the user will be able to save the current progress of filling in the application information into the forms. The user can then return to the form at a later stage and continue with the process.

Automatic Redirection

When the user clicks the submit button on any form, the website will automatically redirect the user to the next page (according to the flow of the website).

Form Validation

When the user clicks the submit button on any form, the website will perform validation on the data inputted into the form. This is to ensure that only valid and error-free data is stored in the database.

Fee estimator

This feature enables the user to get an estimate of the first year university fees based on the parameters the user provides, these include the course, the funding type and the university.

Document uploader

This feature enables the user to upload the required documents into the website, selecting the document from local storage. It also enables the user to remove an uploaded document.

5.2 Administrative Class

This will include everyone who will be training users, making troubleshoots, performing diagnosis, maintaining the website etc.

5.2.1 Admin Information device

This class is used to specify meta information of a device administrator component. They also enforces remote/local device security policies.

5.2.2 Admin receiver device

This ensure that only the system can interact with the receiver (no other service can be granted this permission). This prevents other services from abusing the administrator's device.

5.2.3 DNS server log service

This allows the administrator to view the current logs of the website from their own devices. This will keep the administrator up to date about the state of the website.

5.2.4 Viewing the metrics of the website

This will allow the administrator to view the traffic that the website has, the throughput rate, and many more metrics. The administrator will be able to view this data in a graph, this is to ensure easy interpretation of information.

5.2.5 Unique login portal

The administrators will have their own secure login portal, unique from the login portal for the users. They can access this portal from the original website but through a different port.

5.2.6 Dashboard

The administrators can access this service via their login portal. The dashboard is a very useful tool in that it enables the administrators to edit the website content and also view the website metrics.

6 Non-functional Requirements

6.1 Reliability

The reliability of the website could prove to be essential in terms of introducing and implementing this system nationwide. One of the most important things for a website like ours to be reliable is stability and security. This essentially means that the functionality of the website would need to experience a limited amount of errors that may disturb or hinder our users from using the website. Additionally, it would mean that the website would need to be able to safely secure the personal information provided by the user, to a point where only the user and the intended university can access this information. (Admin maybe?)

If the website was to not respond, it could cause added frustration and stress in the users who may end up resorting to previous methods. Furthermore, in entering one's personal information such as marks, the user trusts the website to keep this information safe. Therefore a website which operates at a quick speed, as well as one that could notify users when there is a problem would be ideal for prospective users.

Crashing and freezing are just some of the ways the website may hinder the user from processing their university application or obtaining specific information. Therefore, in surrounding our code with catch block statements and creating application app offices, the admin will be able to identify and report an error and its details moments before the website crashes. We may also potentially use HP App Pulse mobile which is another tool that also tracks website crashes. In this way, we need to modify our website first and check the reliability of our website. The use of tools such as crittercism, which is used by MobileDay, could further help prevent issues from rising.

Our website works with internet connection and without the connection one would not be able to access and operate it. If an active internet connection is not present, the website will automatically display to the user that there is no internet connection and ask the user to check for a connection. If the user disconnects or loses connection, the same message will be displayed.

This website is required to be fairly reliable and to function as efficiently as possible 100% of the time as any failure to do so will lead to an unprocessed or invalid application for the user to the university of his/her choice. In cases where there are connection failures the website will store the users data to the browser's cache so that when the connection is restored, the website will retain its previous state.

6.2 Performance

In an event that the user is creating his/her profile:

- The website is expected to have a maximum response time of 10 seconds 90% of the time and a maximum response time of 30 seconds for the remaining 10% of the time. This applies to all internet connection speeds.
- The website is expected to have a maximum page load time of 10 seconds 90% of the

time on internet connection speeds that are 4Mbps and above, for any speed lower than that the website will have a maximum page load time of 15 seconds. For the remaining 10% of the time the website will have a maximum page load time of 20 seconds for all internet connection speeds.

- The website is expected to have a maximum throughput of 100Mbps 70% of the time and a maximum throughput of 50Mbps for the remaining 30% of the time.

In an event that the user is performing queries:

- The website is expected to have a maximum response time of 7 seconds 80% of the time on internet connections speeds that are 4Mbps and above, for connection speeds lower than 4Mbps a minimum response time of 12 seconds. For the remaining 20% of the time the website will have a maximum response time of 15 seconds for all internet connection speeds.
- The website is expected to have a maximum page load time of 5 seconds 90% of the time for internet connection speeds higher than 2Mbps, for any speed lower than that the website will have a minimum page load time of 10 seconds. For the remaining 10% of the time the website will have a maximum page load time of 10 seconds for all internet connection speeds.
- The website is expected to have a maximum throughput of 50Mbps 90% of the time and a maximum throughput rate of 70Mbps for the remaining 10% of the time.

In an event the event that the user is uploading a document:

- The website is expected to have a maximum response time of 7 seconds 80% of the time on internet connections speeds that are 4Mbps and above, for connection speeds lower than 4Mbps a minimum response time of 12 seconds. For the remaining 20% of the time the website will have a maximum response time of 10 seconds.
- The website is expected to have a maximum page load time of 5 seconds 90% of the time for internet connection speeds higher than 2Mbps, for any speed lower than that the website will have a maximum page load time of 10 seconds. For the remaining 10% of the time, the website will have a maximum page load time of 7 seconds.
- The website is expected to have a maximum throughput of 150Mbps 90% of the time and a maximum throughput rate of 100Mbps for the remaining 10% of the time.
- The website is expected to have a maximum upload rate of 10Mbps 80% of the time for internet connection speeds that are 4Mbps and above, for speeds lower than that a maximum upload rate of 2Mbps. For the remaining 20% of the time, the website will have a maximum upload rate of 2Mbps for all internet connection speeds.

6.3 Supportability

The website will have a customer service line where the users can contact consultants for any information or queries they might have or to report unprocessed or invalid applications or

confirm processed applications or to report any trouble with creating a profile or accessing their existing user profiles.

The website will also have an email address where the users can put forward any suggestions on how to improve the website.

6.4 Implementation

The website will be implemented using the structural development methodology. Using this method will enable us to first identify all the user requirements and then after that develop the website.

The website will also be divided into modules that will then be developed in parallel, allowing for faster development. In developing our website we will be using HTML and CSS for the structure and design, Javascript for the animations and functionality and lastly Python and SQL for the backend/server-side.

6.5 Interface

The website will be fluid and so it will display optimally for any screen size. The interface will be intuitive, allowing the user to navigate to any part of the website seamlessly. The website will have interesting animations and blending hues that will optimize the website aesthetically.

6.6 Legal

The website will store great amounts of the user's data which will be secured at all costs, and never disclosed under any circumstances. The user will be required to accept the terms and conditions allowing the website to access his/her personal data. The user will have his/her personal password that will grant him/her access to his/her personal account.

In cases where the user attempts to access his/her account from a different device than the one it was previously accessed on, an email will be sent to the user that an unauthorized device was used to access the user's account. The website will require the user to provide some confirmation through a text message that will be sent to the users cellphone.

Consultants will not have access to any of the users personal information. The website's server will be protected by several firewalls and will have people in place ensuring the user's information stays secure and is only sent to the user's prospective universities. In cases where there is a security breach and some information was leaked, the administrators will be held liable.

7 System Models

7.1 The user registration process

Step 1 – The user is presented with a page to select whether he/she is in Grade 12 or in university. In the above mockup the user selected Yes for the first question and so the second question is disabled. After that the user can click next to proceed.

The mockup shows a web browser window titled "Register" with the URL `http://uninceda.co.za/registration#1/2`. The page header includes the UniNceda logo and navigation links: Home, Universities South Africa, Careers, and Courses. A "Sign in" link with a user icon is also present. The main content area is titled "Registration" and contains two questions. The first question, "Are you currently in Grade 12?", has a dropdown menu with "No" selected. The second question, "Which Year are you currently in?", has a dropdown menu with "Year 1" selected. A blue "Next" button is centered below the questions, with a mouse cursor hovering over it. The footer displays "UniNceda © 2019".

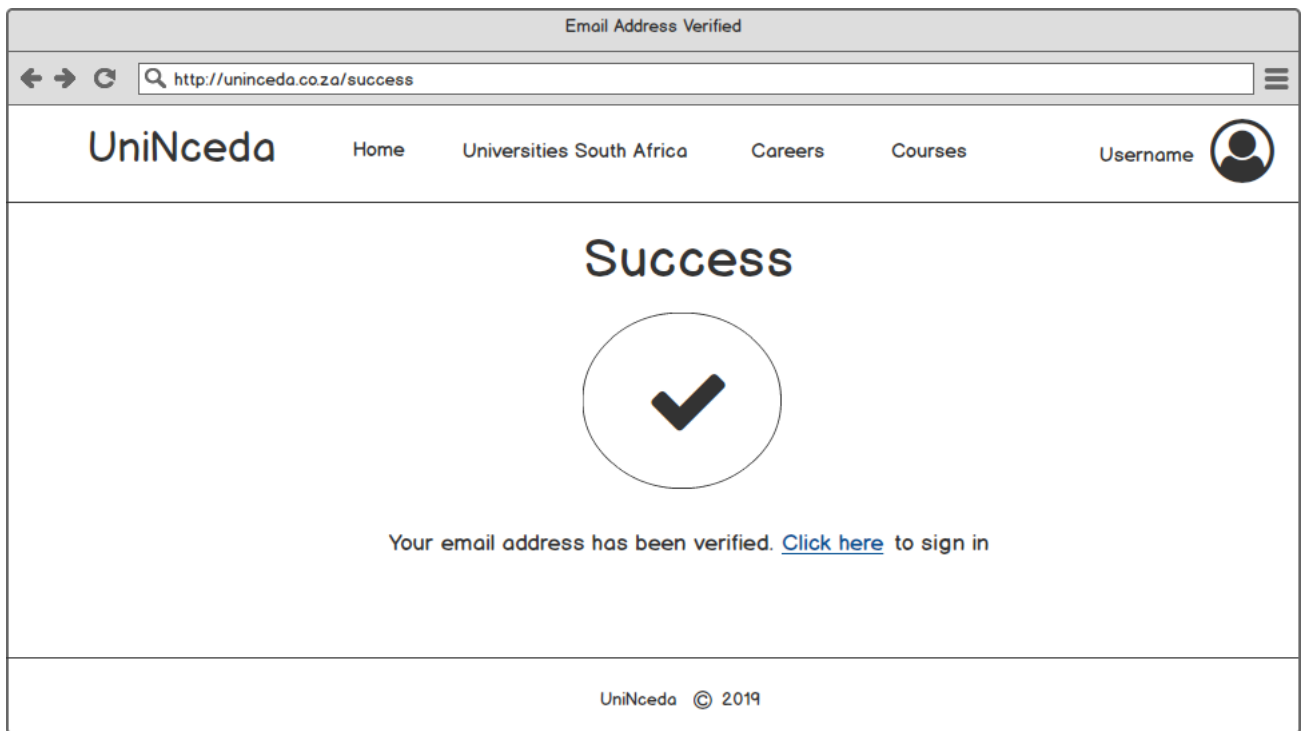
Step 1 – In the above mockup the user selected No for the first question and so the second question is enabled. After that the user can click next to proceed.

The screenshot shows a web browser window titled "Register" with the URL "http://uninceda.co.za/registration#2". The UniNceda logo and navigation links (Home, Universities South Africa, Careers, Courses) are at the top. A "Sign in" link with a user icon is on the right. The main heading is "Registration". The form contains five fields: Username (My Username), Email Address (me@email.com), Confirm Email Address (me_2@email.com), Password (****), and Confirm Password (****). To the right of the fields are three red error messages: "Username already exists", "Email addresses don't match", and "Password must be at least 8 character long". A blue "Register" button is at the bottom of the form, with a hand cursor pointing at it. The footer says "UniNceda © 2019".

Step 2 – The user is then presented with a page to enter his/her registration details which are mentioned in **Section 6:User class** under **Registration** and then click Register to proceed. When the user inputs incorrect details into the form the website will display a red coloured error message text next to each textboxes with incorrect input.

The screenshot shows the same UniNceda registration page, but with different input and a confirmation message. The Username field now contains "My Username_2", and the Email Address and Confirm Email Address fields both contain "me@email.com". The Password and Confirm Password fields are filled with "*****". To the right of the form, a white confirmation box with a grey border displays the text: "Verify email address", "A link to verify your new email address has been sent to you", and an "OK" button. The blue "Register" button remains at the bottom of the form, with a hand cursor pointing at it. The footer says "UniNceda © 2019".

Step 2 – In the above mockup the user inputted the correct details and so an alert box displayed notifying the user to verify the email address through the link sent to it. This is as mentioned in **Section 6:User Class** under **Registration**



Step 3 – As mentioned in **Section 6:User class 6** under **Registration**, the above mockup shows the page that displays when the user has clicked the link to verify his/her email address. The user can then proceed by clicking the link to sign in.

7.2 The Login process

The mockup shows a web browser window with the address bar displaying `http://uninceda.co.za/login`. The page header includes the UniNceda logo and navigation links: Home, Universities South Africa, Careers, Courses, and a Username field with a user icon. The main content area is titled "Sign in" and contains a login form. The form has two input fields: "Username:" with the value "My Username" and "Password:" with masked characters "*****". Below the password field is a blue "Sign in" button. Underneath the button are two links: "or create new account" and "Forgot password?". An alert box is displayed on the right side of the form, containing the text "Alert" and "Invalid username and/or password, try again.", with an "OK" button at the bottom. The footer of the page displays "UniNceda © 2019".

Step 1 – In the above mockup, the user is presented with a page to input login credentials which are his/her username and password and then click sign in to login to his/her account. The user here has inputted invalid login details and so a message box is displayed with a corresponding error message. When the user clicks OK in the alert box, the textboxes for the login credentials are cleared and then the user can make another attempt to login.

The mockup shows the same UniNceda login page, but the login form now contains valid credentials. The "Username:" field is filled with "My Username_2" and the "Password:" field is filled with masked characters "*****". The blue "Sign in" button is still present, along with the "or create new account" and "Forgot password?" links. The alert box is no longer visible. The footer of the page displays "UniNceda © 2019".

Step 1 – In the above mockup, the user has now inputted the correct credentials and so when he/she clicks the sign in button he/she will be given access to his/her account.

7.3 The Forgot password process

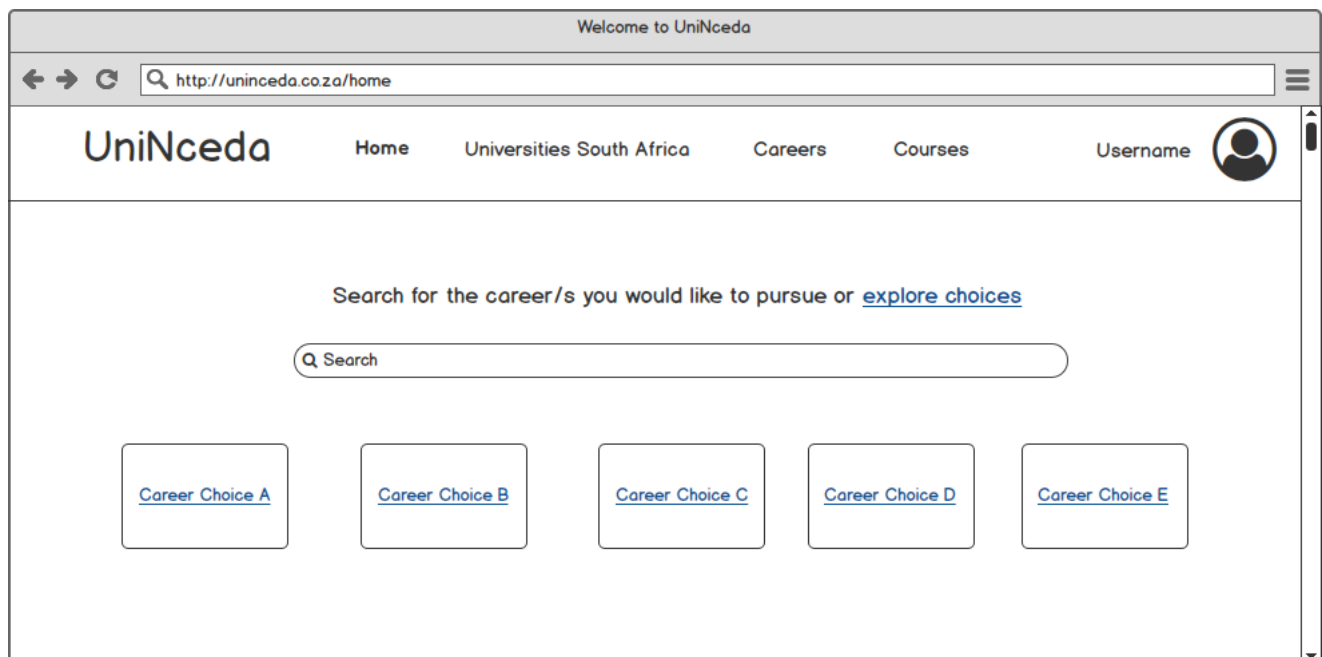
The screenshot shows a web browser window titled "Forgot Password" with the URL "http://uninceda.co.za/login". The UniNceda logo and navigation links (Home, Universities South Africa, Careers, Courses) are at the top. A "Username" field with a user icon is on the right. The main content area is titled "Forgot Password" and contains an "Email address" input field with "me@email.com" and a blue "Send link" button. A modal dialog box is open, displaying "Forgot Password" and the message "An email notification containing the password reset link has been sent", with an "OK" button at the bottom. The footer shows "UniNceda © 2019".

Step 1 – When the user clicks the forgot password link in the login page he/she is presented with this page. Here the user will input his or her email address as mentioned in **Section 6:User class** under **Forgot password** then click the send link button. An alert will display informing the user that an email with the link to reset the password will be sent to the email address.

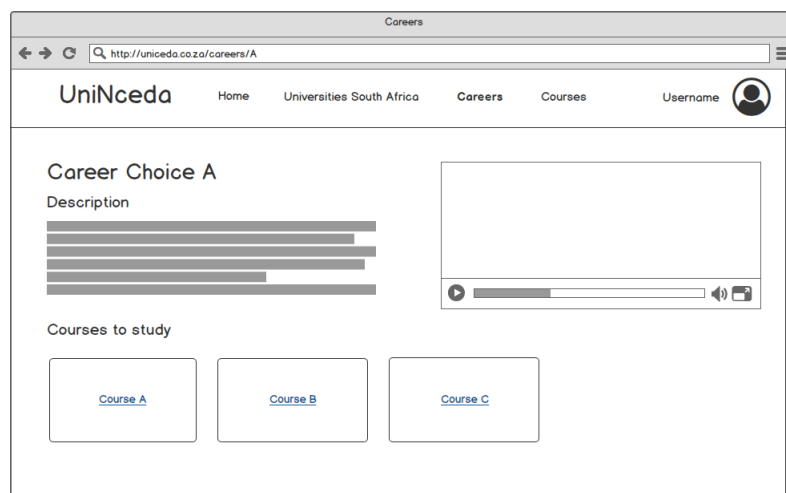
The screenshot shows the same "Forgot Password" page, but now with "New password" and "Confirm password" input fields, both containing masked text (asterisks). A blue "Reset" button is below them. A modal dialog box is open, displaying "Forgot Password" and the message "Password reset was successful", with an "OK" button at the bottom. The footer shows "UniNceda © 2019".

Step 2 – The above mockup is the page that is presented to the user after he/she has clicked the password reset link sent to his/her email address. Here the user will input the new password and its confirmation then proceed by clicking the reset link. An alert box indicating the success of the password reset process will display. When the user clicks OK he/she will be redirected to the login page.

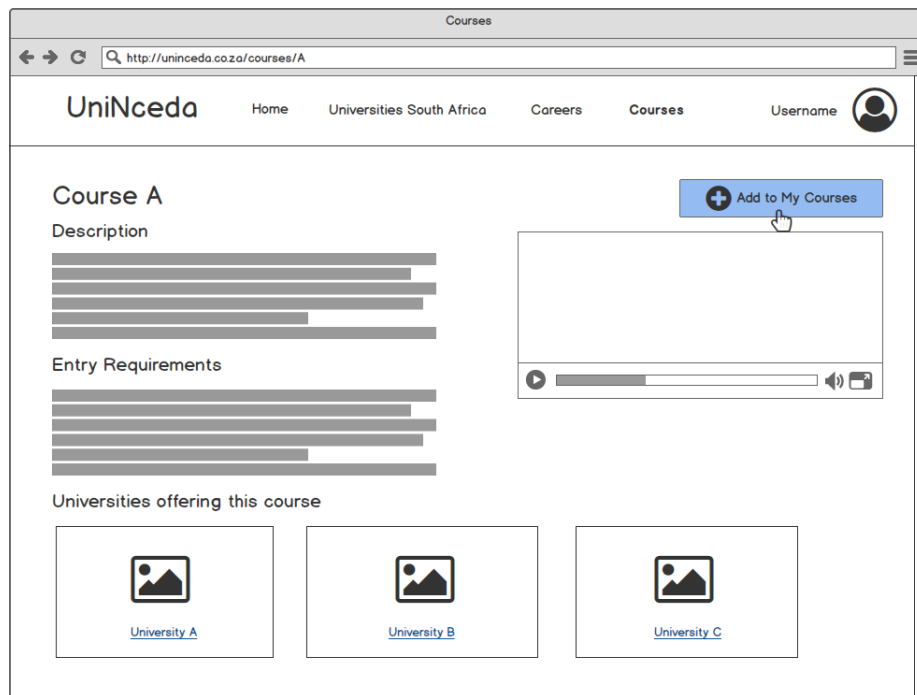
7.4 Inquiry process (starting from the Home Page)



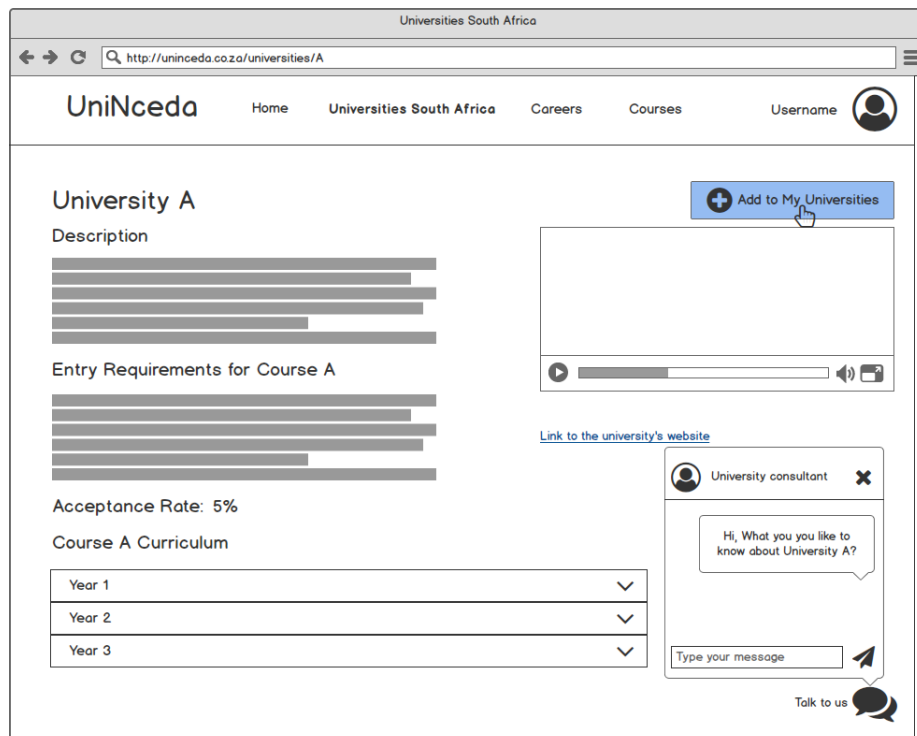
Step 1 – After the login process, the user is presented with the home page. Here the user can search for a career or view the careers page to explore various options. When the user inputs text in the search bar, the results are dynamically shown as seen in the mockup above. After searching, the user can then select any of the career choices displayed in the results, this will redirect the user to the careers page for the career that was selected. This is as mentioned in **Section 6:User Class** under **Instant Query Results**



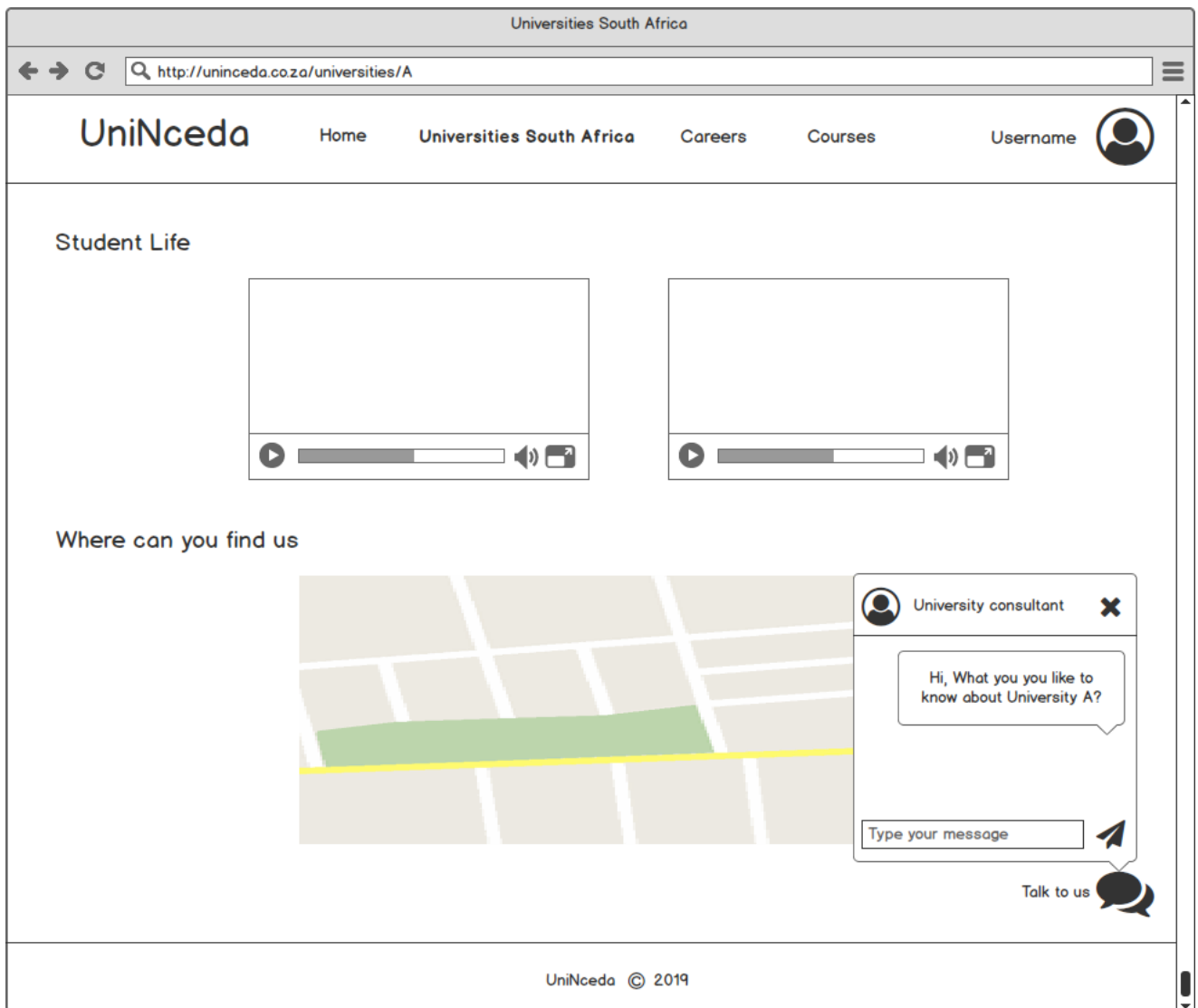
Step 2 – The mockup above shows the careers page for a career that the user has previously selected in the home page. Here the user can view more information about the career including descriptions and videos. The user can also view the courses to study to be able pursue that career and not only that but to also navigate through those courses by clicking any of them. This will redirect the user to the courses page.



Step 3 – The above mockup page is the courses page which shows more information about the course that the user selected from **Step 2**. The user has the option of adding the course to his/her profile by clicking the 'Add to My Courses' button. The user can view and select any of the universities that are offering the course, this will redirect the user to the 'Universities South Africa' page for the university offering the course.



Step 4 – After the user has selected the university from **Step 3**, he/she will be redirected to this page to view more information about the university (description, entry requirements, acceptance rate etc.. The user can also view the curriculum of the university for the course the user has selected and not only that but also chat to the university's consultants for that course through the interactive chatbox. The user has the option to add the university to his/her profile through the 'Add to My Universities' button.



Step 5 – The above mockup page is the content displayed after the user has scrolled down to the end of the page. It consists of even more information about the university (student life and location). The chatbox remains active on scroll so that the user can continue chatting to the university’s officials. This is as mention in **Section 6:User Class** under **Real-Time Communication With University Officials**.

7.5 Page Navigation

The following mockups show the main pages of the website that the user would navigate to in any order or flow.

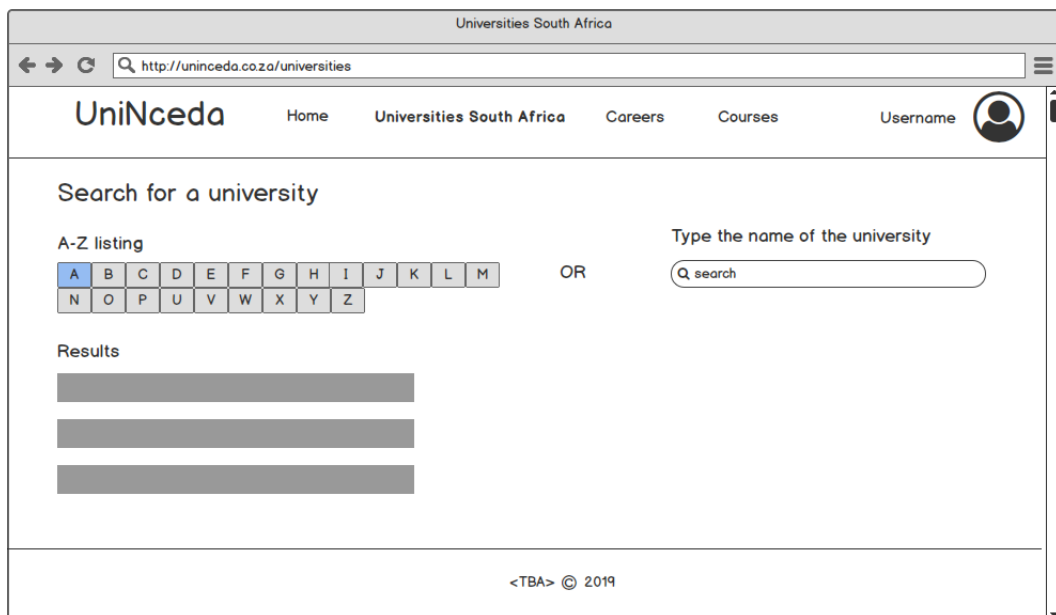


Figure 1 – The above mockup is the 'Universities South Africa' page, here the user can search for any university by either selecting from the A-Z listing or by inputting text into the search bar. The results of the search will then display below.

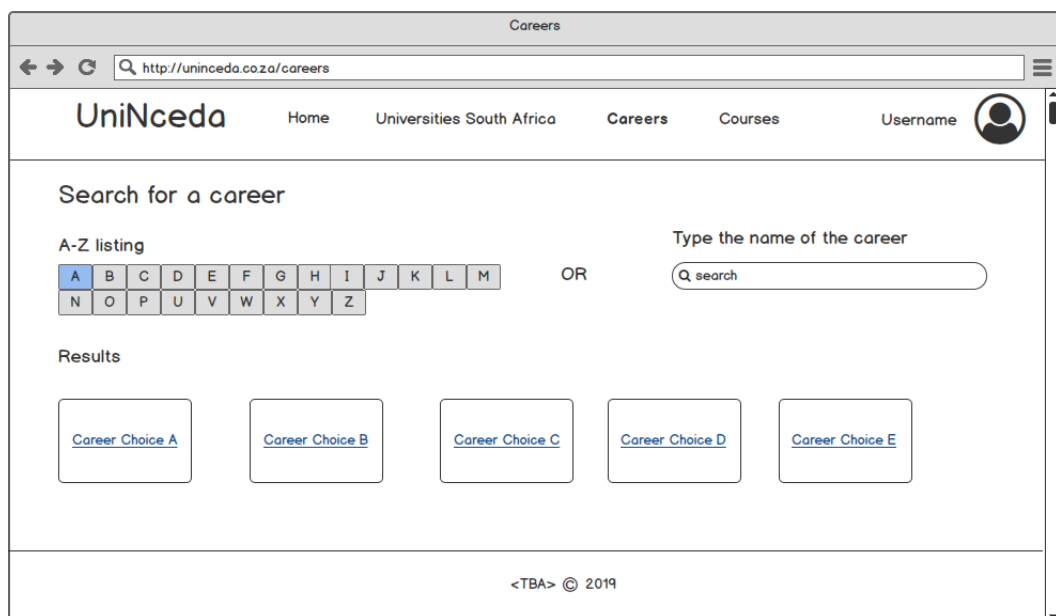


Figure 2 – The above mockup is the 'Careers' page, as in **Figure 1** the user here can search for any career by either selecting from the A-Z listing or by inputting text into the search bar. The results of the search will then display below.

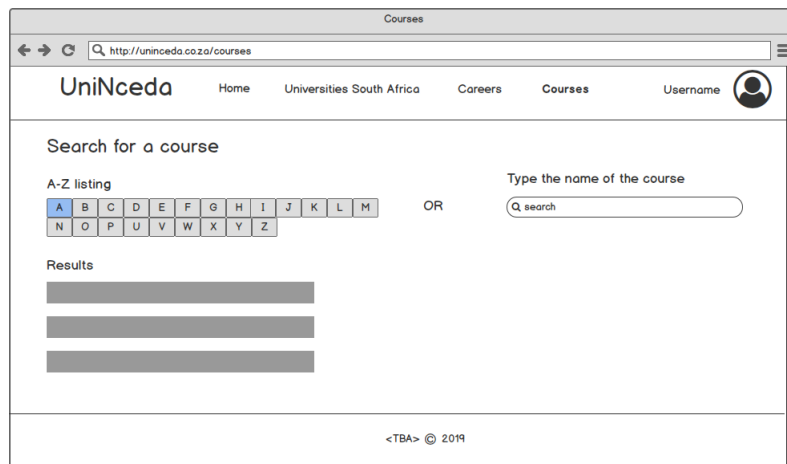


Figure 3 – The above mockup is the 'Courses' page, as in **Figure 2** the user here can search for any course by either selecting from the A-Z listing or by inputting text into the search bar. The results of the search will then display below.

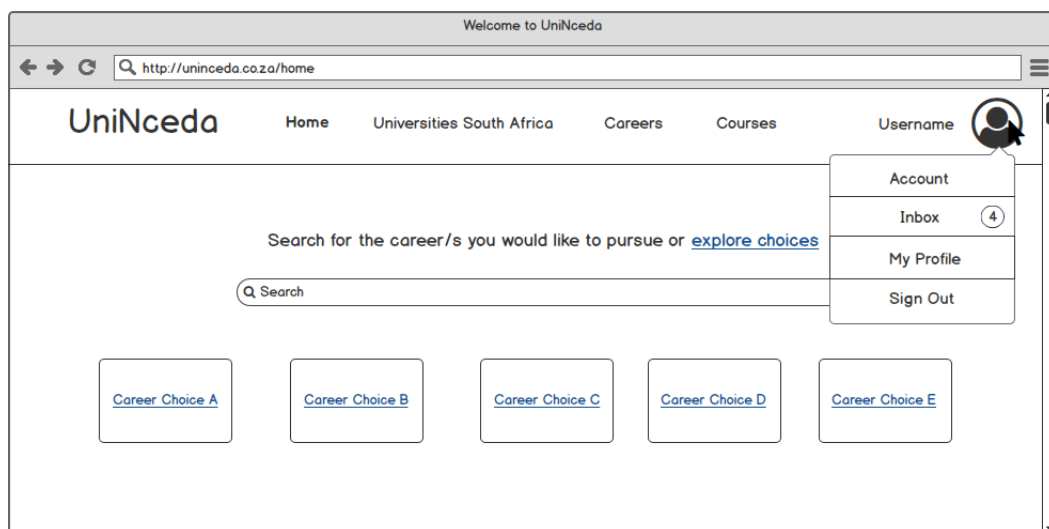


Figure 4 – The above mockup shows the dropdown menu that displays when the user clicks on the 'user icon' on the navigation bar. The dropdown menu consists of four links.

1. **Account link** - Clicking this link will redirect the user to the 'Account' page. This is where the user can view or edit his/her account information.
2. **Inbox link** - Clicking this link will redirect the user to the 'Inbox' page. This is where the user can view his/her latest notifications.
3. **My Profile link** - Clicking this link will redirect the user to the 'My Profile' page. This is where the user can build his/her profile by inputting information into the various forms.
4. **Sign Out link** - Clicking this link will log the user out of his/her account and redirect the user to the home page.

7.6 Viewing and Editing Account Information

The subsequent mockups are related to the functional requirements in **Section 6:User Class** under **Viewing and Editing Account Information**.

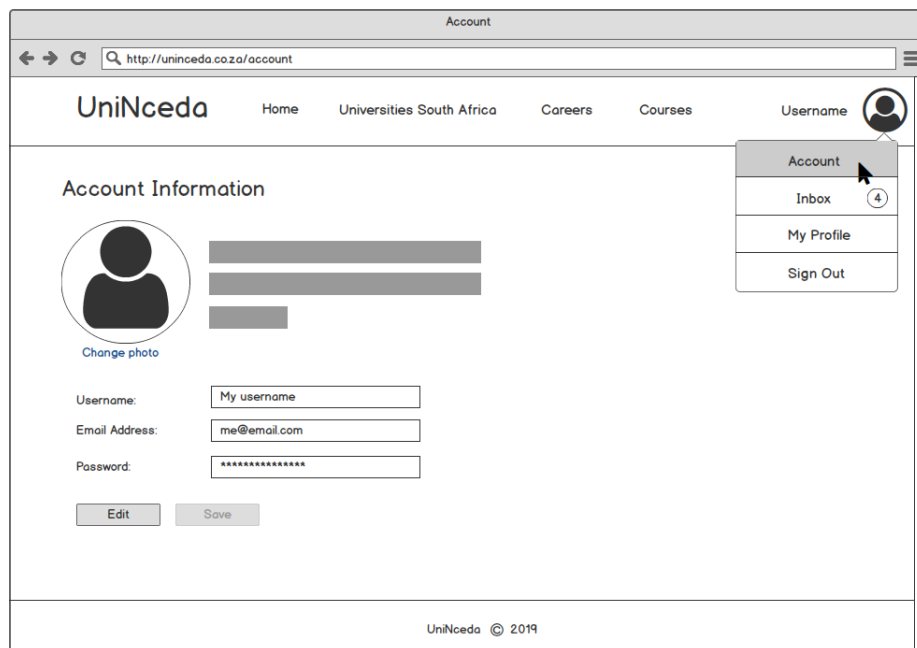


Figure 1 – The above mockup is the 'Account' page. Here the user is able to view his/her account information.

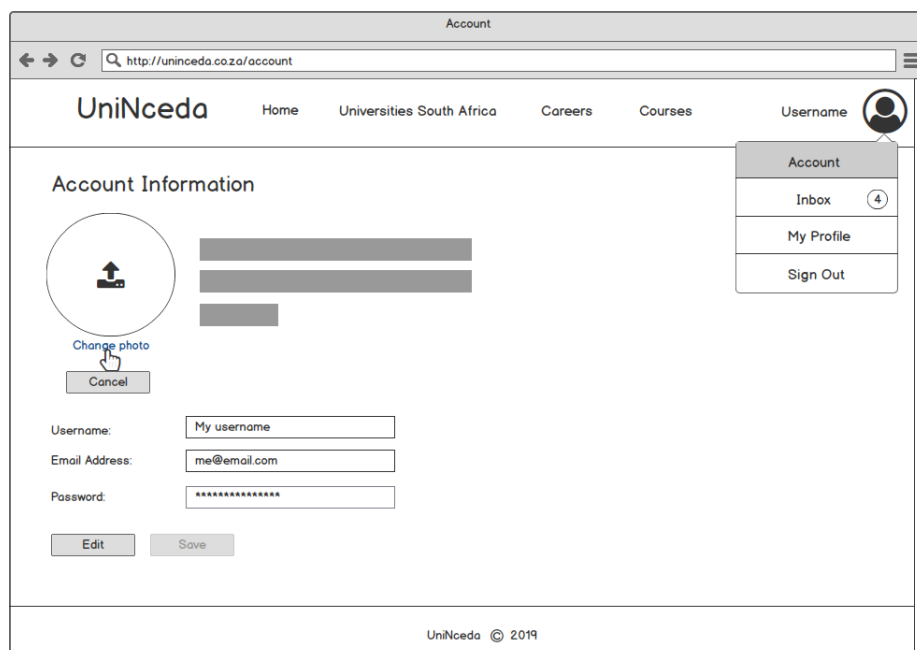
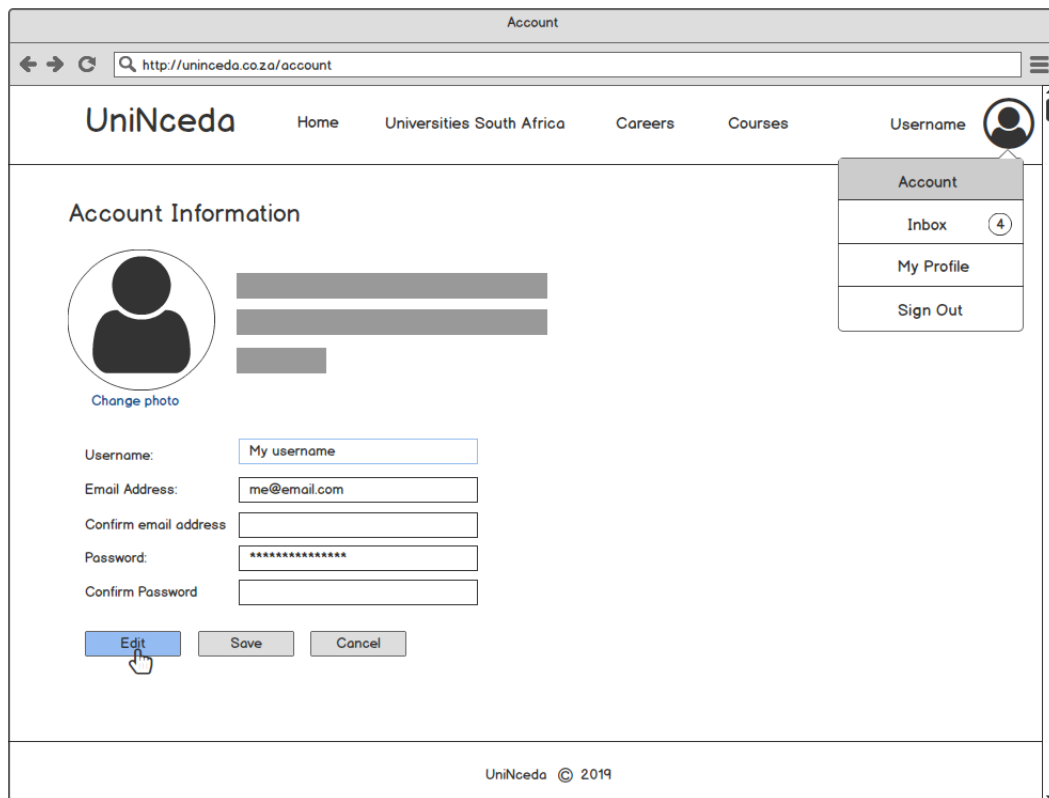
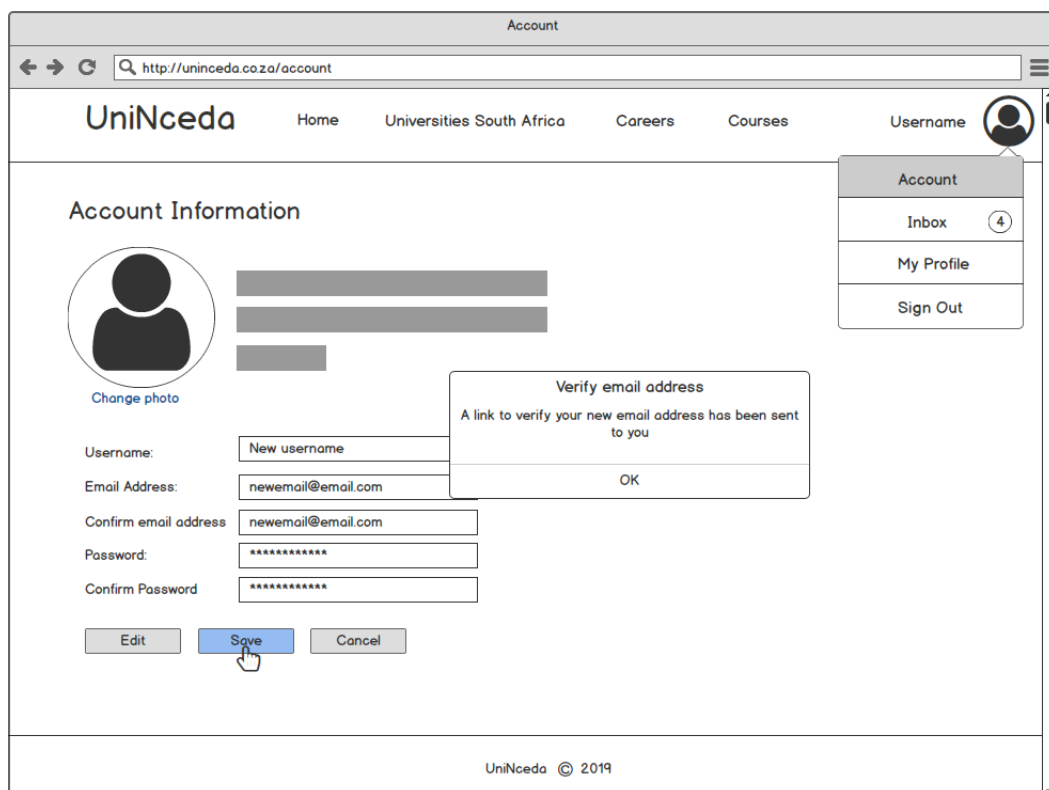


Figure 2 – The above mockup is the 'Account' page. Here the user has clicked the 'Change photo' link and so the website responded accordingly by displaying the upload button control that will enable the user to upload a new image. If the user decides to terminate this process and revert to the old image he/she can click the 'Cancel' button.



Step 1 – The above mockup is the 'Account' page. Here the user has clicked the 'Edit' button and so the 'Confirm Email Address' and the 'Confirm Password' field appeared enabling the user to change the existing username, email address and password.



Step 2 – The above mockup is the 'Account' page. Here the user has clicked the 'Save' button and so the details are then saved into the user's account. An alert box that notifies the user to verify a new email address is displayed accordingly if the user changed his/her old email address.

7.7 Checking Inbox

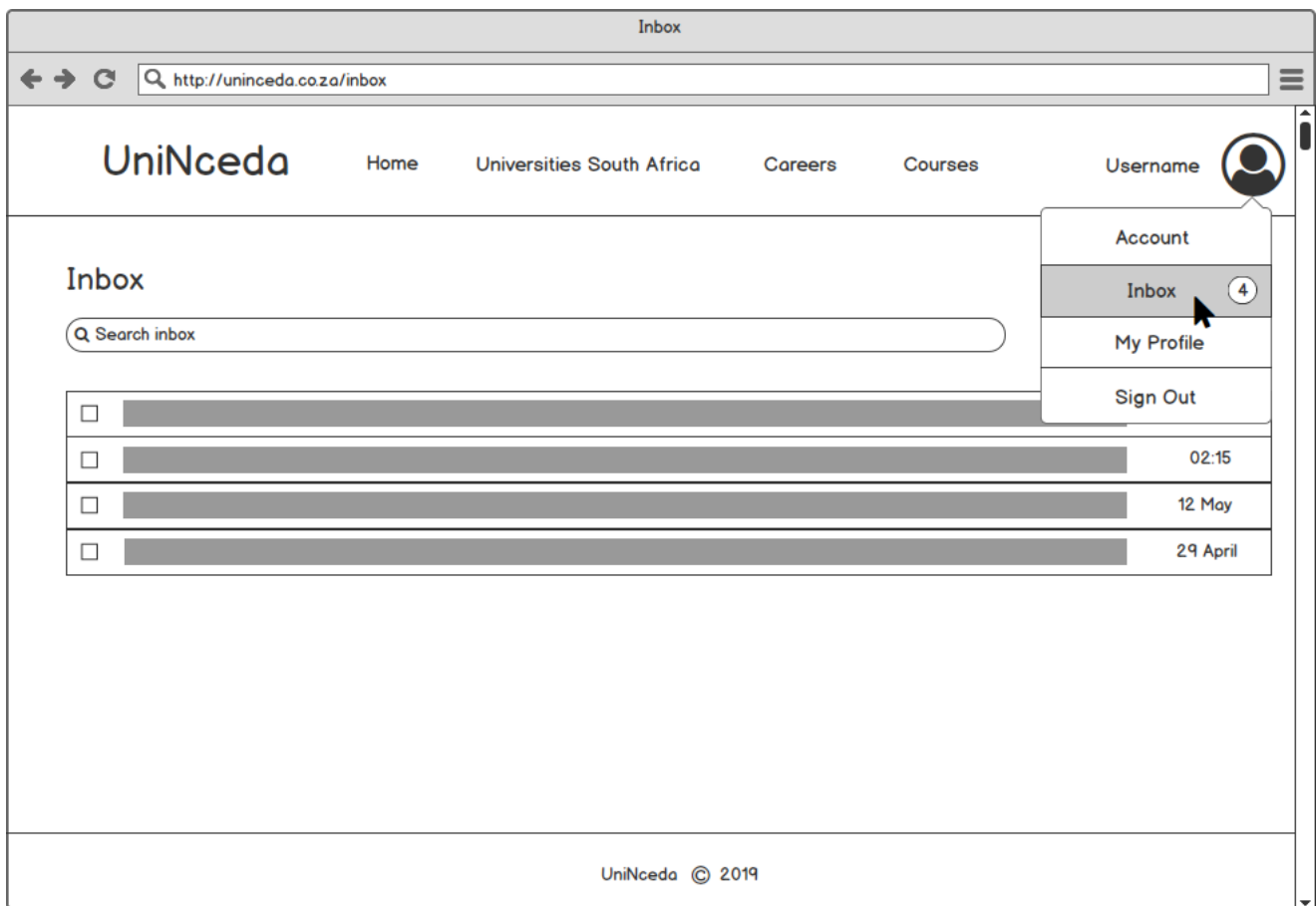


Figure 1 – The mockup above is the 'Inbox' page. Here the user is able to view the latest notifications sent to him or her from the universities, this includes notifications about the application deadlines, acceptance etc. This is as mentioned in **Section 6:User Class** under **Receiving Notifications**

7.8 Profile Creation

The subsequent sections are for the mockups in the 'My Profile' page they are related to the functional requirements in **Section 6:User Class** under **Building a Profile**. On the left of these mockups is a navigation bar that enables the user to navigate through the various pages.

7.8.1 Filling in Application Information

The subsequent mockups are for the 'Application Information' section of the 'My Profile' page. The user can access this section by clicking the corresponding link on the navigation bar, this will display the various pages contained within the section in a dropdown list below. Each page contains a form that has three buttons, the 'Save' button which enables the user to save his/her current progress, the 'Clear' button which clears all the text fields and resets all the controls in the form, and lastly the 'Submit' button which stores the user's error free data into a secure database and redirects the user to the next page.

The screenshot shows a web browser window with the URL <http://uninceda.co.za/profile>. The page title is 'Profile'. The header includes the UniNceda logo and navigation links: Home, Universities South Africa, Careers, Courses, and a Username dropdown menu. The left sidebar contains a 'My Profile' section with a dropdown menu showing 'Application Information' (expanded), 'Personal Details', 'Next of kin', 'Addresses', 'School Particulars', 'Health Information', 'Financial Aid', 'Residence', 'My Universities', 'My Courses', and 'My Documents'. The main content area is titled 'Personal Details' and contains a form with the following fields: Surname, Initials, Title (Mr), Full names, Date of Birth (02/05/2019), Gender (Male), Identity number, Home Language (Afrikaans), Martial Status (Single), Population Group (Coloured), Type of Citizenship (RSA), What is your present activity before you start your studies? (Grade 12 learner), and Name of high school (with a search prompt). At the bottom of the form are three buttons: Save, Clear, and Submit.

Step 1 – The above mockup is the 'Personal Details' page. Here the user is presented with a form to fill in his/her personal details (surname, name, date of birth etc.). After filling in the form successfully the user can click the 'Submit' button which will validate the data inputted into the form and if it is correct, it will redirect the user to the 'Next of kin' page. This page is presented to a current high school student.

The screenshot shows the UniNceda profile page. The browser address bar displays 'http://uninceda.co.za/profile'. The top navigation bar includes 'Home', 'Universities South Africa', 'Careers', 'Courses', and a 'Username' link with a user icon. A dropdown menu is open, showing 'Account', 'Inbox (4)', 'My Profile' (highlighted with a mouse cursor), and 'Sign Out'. The left sidebar contains a 'My Profile' section with a hamburger menu icon, and an 'Application Information' section with a chevron icon. Below these are links for 'Personal Details', 'Next of kin', 'Addresses', 'School Particulars', 'Health Information', 'Financial Aid', 'Residence', 'My Universities', 'My Courses', and 'My Documents'. The main content area is titled 'Personal Details' and contains the following form fields: Surname, Initials, Title (Mr), Full names, Date of Birth (02/05/2019), Gender (Male), Identity number, Home Language (Afrikaans), Martial Status (Single), Population Group (Coloured), Type of Citizenship (RSA), What is your present activity before you start your studies? (University Student), and Name of institution (with a search prompt). At the bottom are 'Save', 'Clear', and 'Submit' buttons.

Step 1 – The above is the same as the one in **Step 1**. This page is presented to a current university student.

The screenshot shows the UniNceda profile page with the 'Next of kin' form displayed. The browser address bar displays 'http://uninceda.co.za/profile'. The top navigation bar is the same as in Step 1. The left sidebar is the same, but the 'Next of kin' link is highlighted with a mouse cursor. The main content area is titled 'Next of kin' and contains the following form fields: Relationship to applicant (radio buttons for Father, Mother, Stepfather, Stepmother), Initials, Title (Mr), Full names, Date of Birth (02/05/2019), Gender (Male), Identity number, Home Language (Afrikaans), Martial Status (Single), Population Group (Coloured), Type of Citizenship (RSA), Cell, Telephone (H), and Email Address. At the bottom are 'Save', 'Clear', and 'Submit' buttons.

Step 2 – The user is presented with a form to be filled in by his/her next of kin. When the user clicks the 'Submit' button, the information is validated and if correct the user will be redirected to the 'Addresses' page.m This form is only presented to users under the age of 18, otherwise the user will be redirected to the 'Addresses' page.

Profile

http://uninceda.co.za/profile

UniNceda Home Universities South Africa Careers Courses Username

My Profile

Application Information

Personal Details

Next of kin

Addresses

School Particulars

Health Information

Financial Aid

Residence

My Universities

My Courses

My Documents

Addresses

Applicants Residential Address

Street

City Johannesburg Province Gauteng

Postal Code

Applicants Postal Address

☒ Same as residential address

Street

City Johannesburg Province Gauteng

Postal Code

Save Clear

Step 3 – The user is presented with a form to input address information (residential address and postal address). When the user checks the 'Same as residential address' checkbox the input fields it below are disabled. After filling in the information successfully, the user can scroll down to proceed.

Profile

http://uninceda.co.za/profile

UniNceda Home Universities South Africa Careers Courses Username

My Profile

Application Information

Personal Details

Next of kin

Addresses

School Particulars

Health Information

Financial Aid

Residence

My Universities

My Courses

My Documents

Next of kin's Residential Address

☒ Same as applicants residential address

Street

City Johannesburg Province Gauteng

Postal Code

Next of kin's Postal Address

☒ Same as residential address

Street

City Johannesburg Province Gauteng

Postal Code

Save Clear Submit

Step 4 – This part of the page appears when the user scrolls down to end to the page. Here the user is presented with a form to input the next of kin's address information. When the checks the 'Same as applicant's residential address' checkbox the input fields below it are disabled, the same applies to the 'Same as residential address' checkbox. After filling in the required information, the user can click the 'Submit' button which will validate the information inputted into the form and redirect the user to the 'School Particulars' page.

Profile

http://uninceda.co.za/profile

UniNceda Home Universities South Africa Careers Courses Username

My Profile

Application Information

Personal Details

Next of kin

Addresses

School Particulars

Health Information

Financial Aid

Residence

My Universities

My Courses

My Documents

School Particulars

Matriculation date 08/05/2019

Grade 11 Results

Subject	Marks as percentage	Level
Select a subject		1
Select a subject		1
Select a subject		1
Select a subject		1
Select a subject		1
Select a subject		1
Select a subject		1

Save Clear Submit

Step 5 – The user is presented with this form to input his/her matriculation date and Grade 11 results. The user does this by selecting a subject ,typing in the obtained mark as a percentage and selecting the subject level. When the user clicks the 'Submit' button the form is validated and the user is redirected to the 'Health Information' page.

Profile

http://uninceda.co.za/profile

UniNceda Home Universities South Africa Careers Courses Username

My Profile

Application Information

Personal Details

Next of kin

Addresses

School Particulars

Health Information

Financial Aid

Residence

My Universities

My Courses

My Documents

Health Information

Medical Aid Information

Name of medical aid Medical Aid Number

Main member

Title Mr Initials Surname

Identity number Tel/Cell

Relationship to applicant Father

Specific medical conditions

Save Clear

Step 6 – The user is presented with this form to input his/her medical aid information (if available). The user can then scroll down to finish filling in the rest of the form. This form is optional so the user can choose to skip it.

Profile

[←](#) [→](#) [↻](#)

UniNceda
Home
Universities South Africa
Careers
Courses
Username

My Profile

Application Information

Personal Details
Next of kin
Addresses
School Particulars
Health Information
Financial Aid
Residence
My Universities
My Courses
My Documents

Do you make use of a wheelchair? Wheelchair type

Have you been places under administrative order by court? Specify the date

Has a court declared you mentally unfit? Specify the date

Disability

Do you have any form of disability?

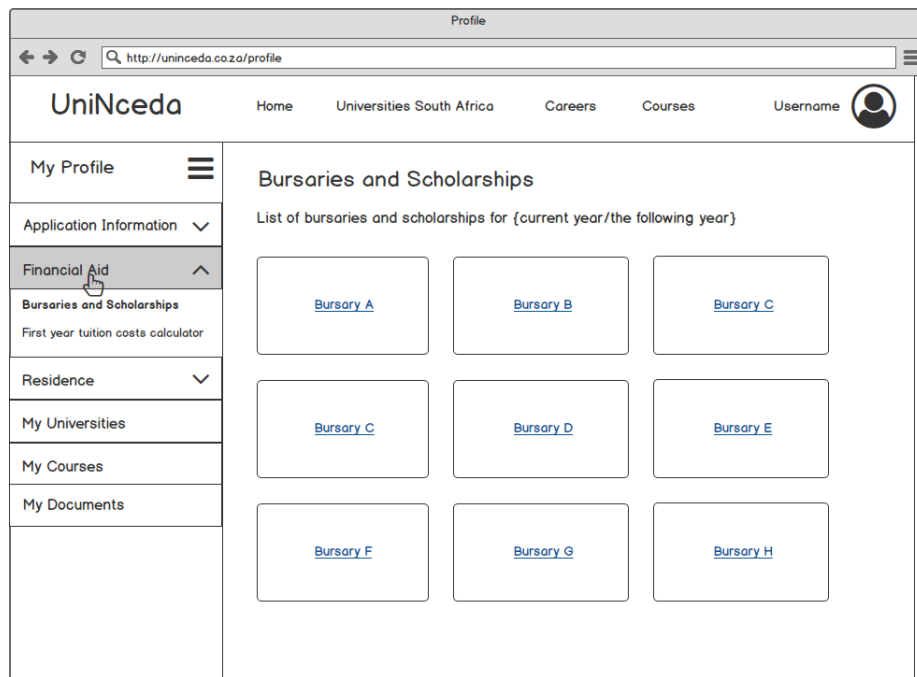
Disability type
☐ Blind or partially sighted
☐ Hearing (even with a hearing aid)
☐ Cognitive (difficulty in learning)
☐ Communication (talking, listening)
☐ Emotional (Behavioural or psychological)

If others please specify

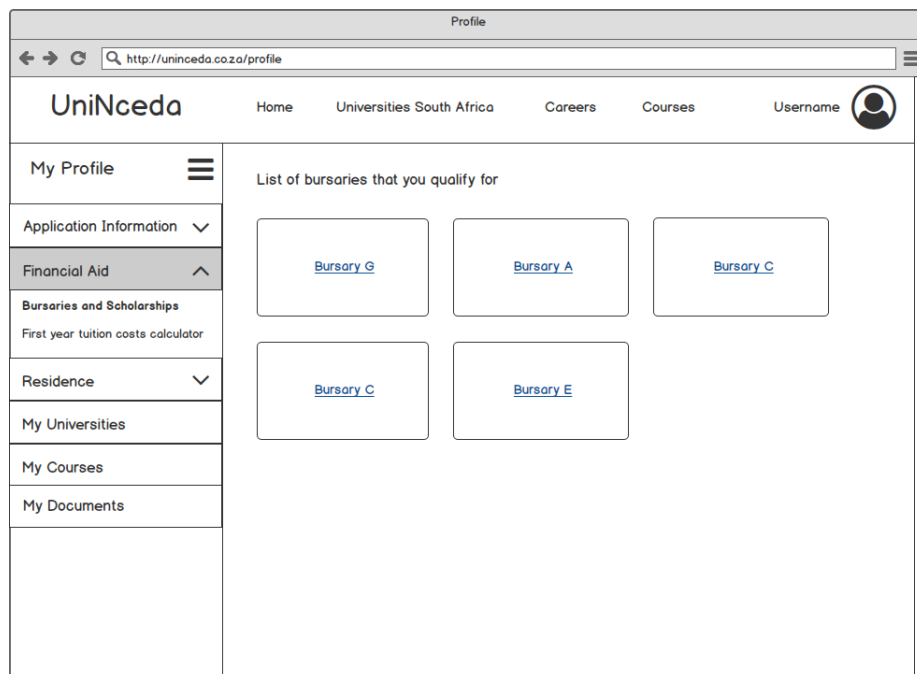
Save Clear Submit

Step 7 – When the user scrolls down to end of the page he/she is presented with this part of the form to input information about his/her disability. When the user selects 'No' for the question 'Do you have any form of disability?', the input fields below it are then disabled. The user can click the 'Submit' button when finished with filling in the form, this will then validate the form.

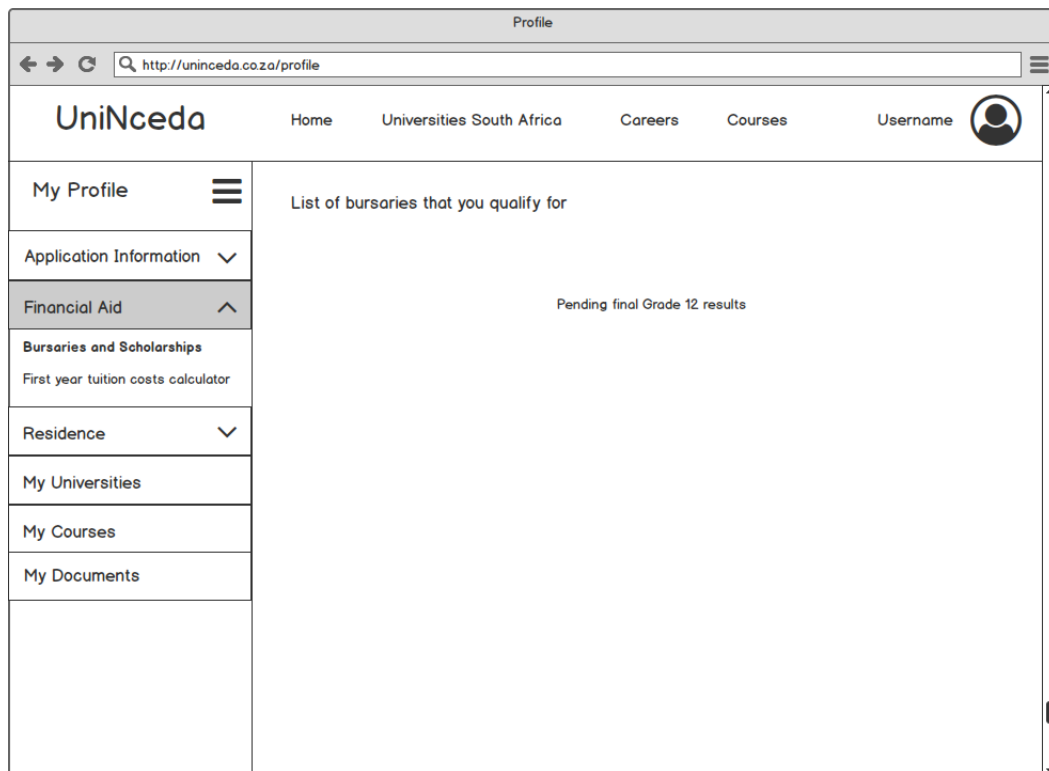
7.8.2 Viewing Financial Aid Information



Step 1 – In the above mockup, the user is presented with the 'Bursaries and Scholarships' page that lists the bursaries and scholarships available for that current year. The user can scroll down to view more information.



Step 2 – This page appears when the user scrolls to end of the page. Here the user is presented with a list of bursaries he/she qualifies for based of his/her final results.



Step 2 – This page appears when the user scrolls to end of the page. Here the message 'Pending final Grade 12 results' has appeared because the user hasn't yet uploaded his/her final results.

The screenshot shows the same web browser window, but the 'First year tuition costs calculator' form is now visible. The sidebar menu remains the same, with 'Financial Aid' highlighted. The main content area features the calculator form with the following fields and options:

- Funding type: Bursary (dropdown)
- Select a course: My Courses (dropdown)
- Select a university: My Universities (dropdown)
- ☐ Include textbooks in fee
- Get Estimate button

Below the form is a table with the following structure:

Description	Per unit	Amount
Total		

Figure 1 – Here the user is presented with a form to calculate his/her first year tuition costs based his/her selections. After the user makes the selections he/she can click the 'Get Estimate' button which will show the price estimates in the container below.

7.8.3 Viewing and editing My Residences

The screenshot shows the UniNceda profile page. The left sidebar contains a menu with 'My Profile' expanded, showing 'Application Information', 'Financial Aid', 'Residence' (selected), 'Preferences', 'My Residences', 'My Universities', 'My Courses', and 'My Documents'. The main content area is titled 'Preferences' and contains a form with the following fields:

- Institution: My Universities
- City: Select a city
- Funding type: Private paying
- Occupation date: 08/05/2019
- Room type: Single

Below the form is a 'Show results' button. Underneath is a table of residences:

	Residence	Location	Price (R)	
1				Add to My Residences
2				Add to My Residences
3				Add to My Residences
4				Add to My Residences

Step 1 – The user is presented with a form to create preferences of the residences that he/she wants. After making the selections, the user must click the 'Show Results' button which will show a list of residences that fit the user's preferences in the container below. The user is also able to add any of these residences to 'My Residences' by clicking the 'Add to My Residences' button next to the corresponding residence.

The screenshot shows the UniNceda profile page with the 'My Residences' section. The left sidebar is the same as in the previous screenshot. The main content area is titled 'My Residences' and contains a list of five residences, each in a box with a link:

- [Residence A](#)
- [Residence B](#)
- [Residence C](#)
- [Residence D](#)
- [Residence E](#)

Step 2 – Here the user is presented with a list of residences that he/she added. The user is able to click the link at any residence, which will redirect the user to the website for that residence on a new tab.

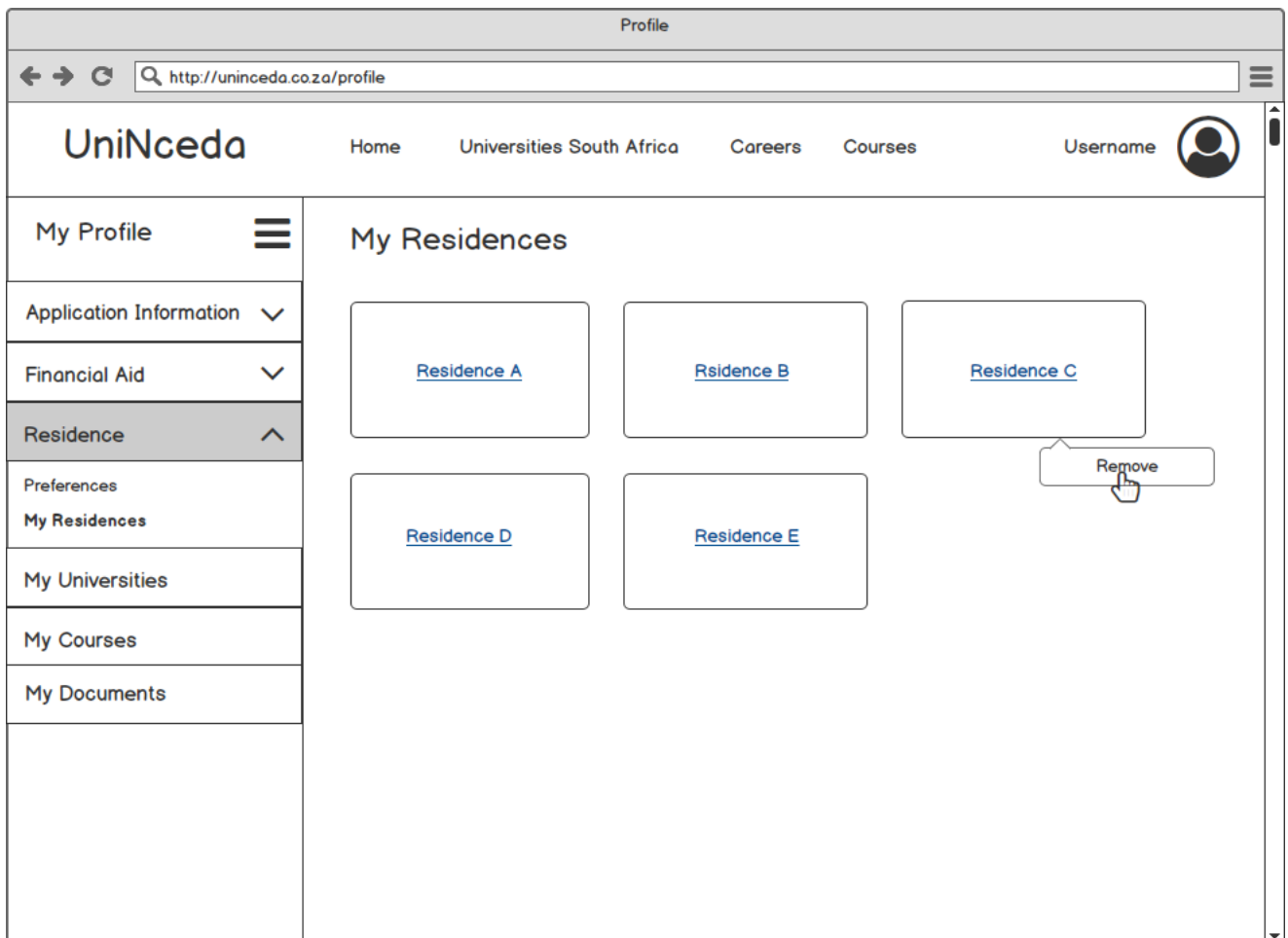


Figure 1 – The user is able to remove a residence by right-clicking on it, then a tooltip with the text 'Remove' will appear. Clicking on this tooltip will remove the residence.

7.8.4 Viewing and Editing My Universities

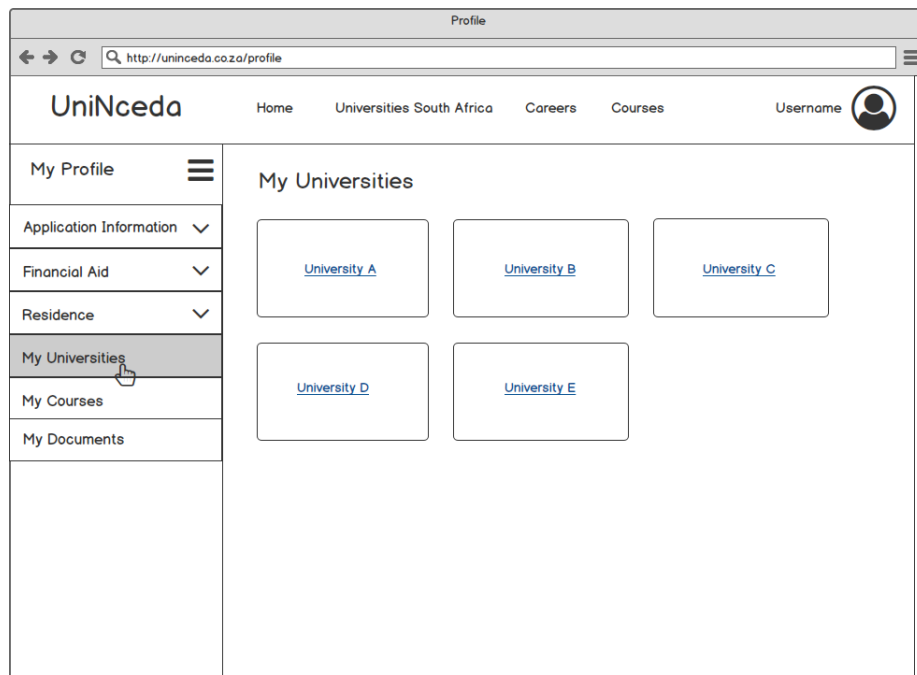


Figure 1 – Here the user is presented with a list of universities that he/she added. The user is able to click the link at any university, which will redirect the user to the page that contains the university's description on a new tab.

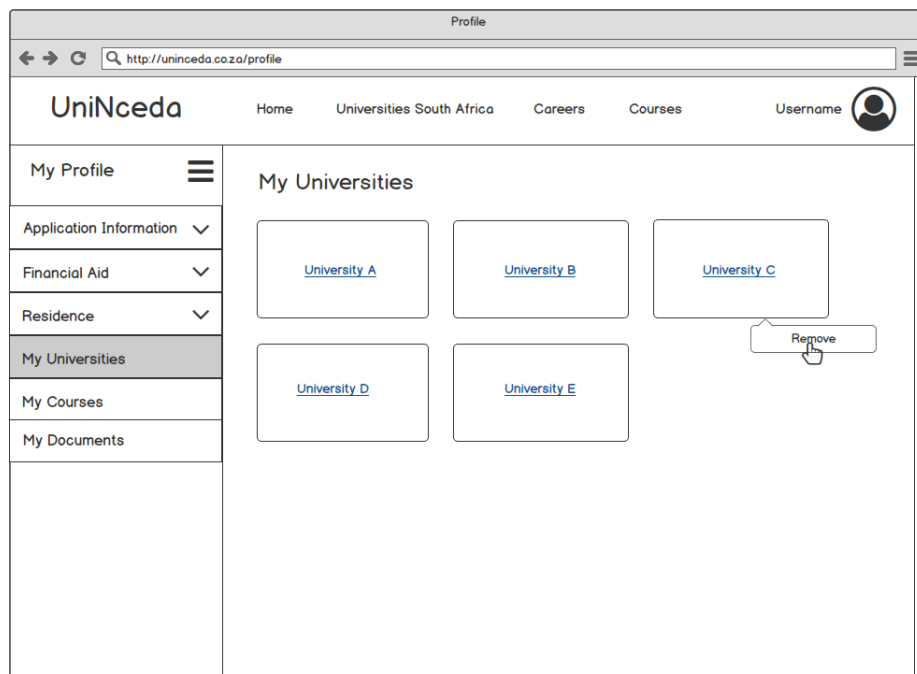


Figure 2 – The user is able to remove a university by right-clicking on it, then a tooltip with the text 'Remove' will appear. Clicking on this tooltip will remove the university.

7.8.5 Viewing and Editing My Courses

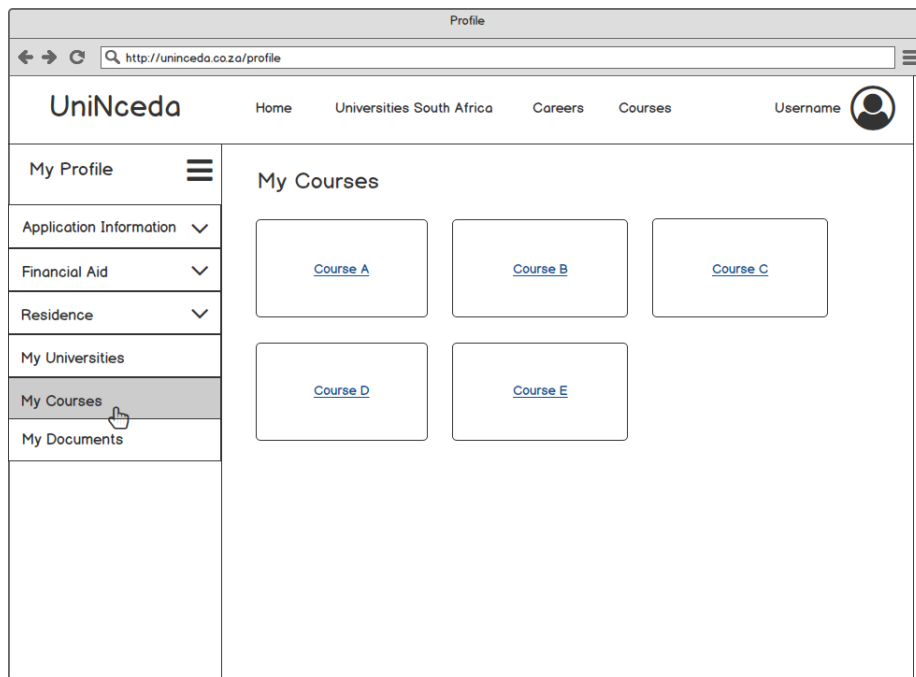


Figure 1 – Here the user is presented with a list of courses that he/she added. The user is able to click the link at any course, which will redirect the user to the page that contains the course description on a new tab.

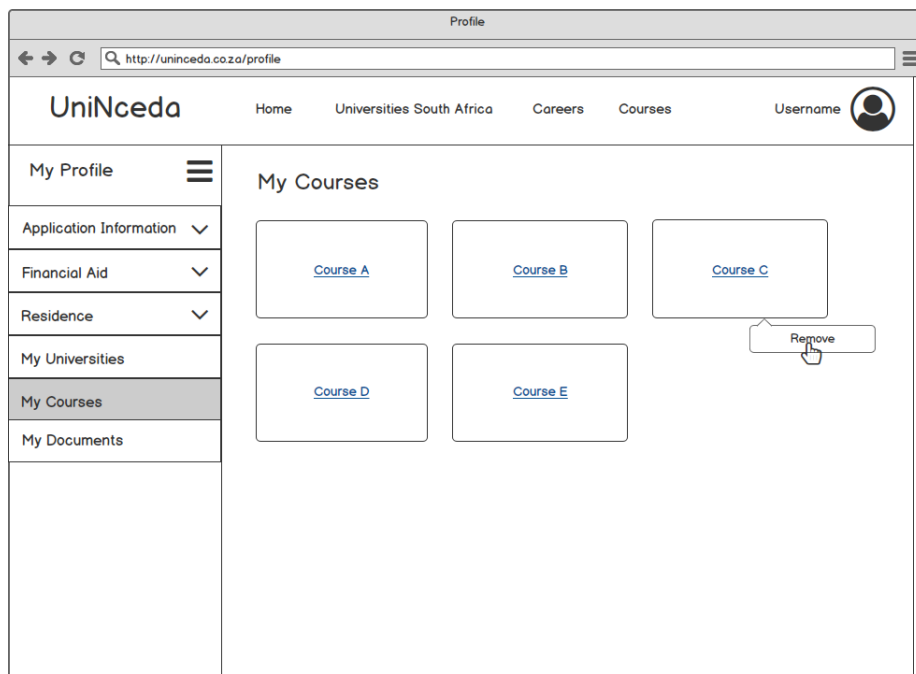


Figure 2 – The user is able to remove a course by right-clicking on it, then a tooltip with the text 'Remove' will appear. Clicking on this tooltip will remove the course.

7.8.6 Viewing uploaded documents

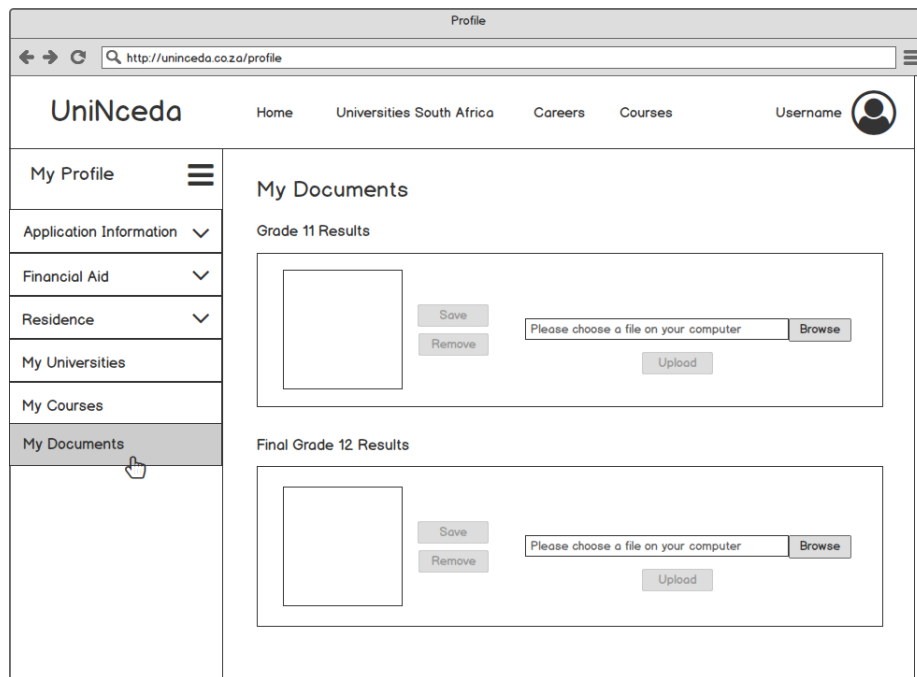


Figure 1 – Here the user is presented the uploaded documents. The user can scroll down to view more documents.

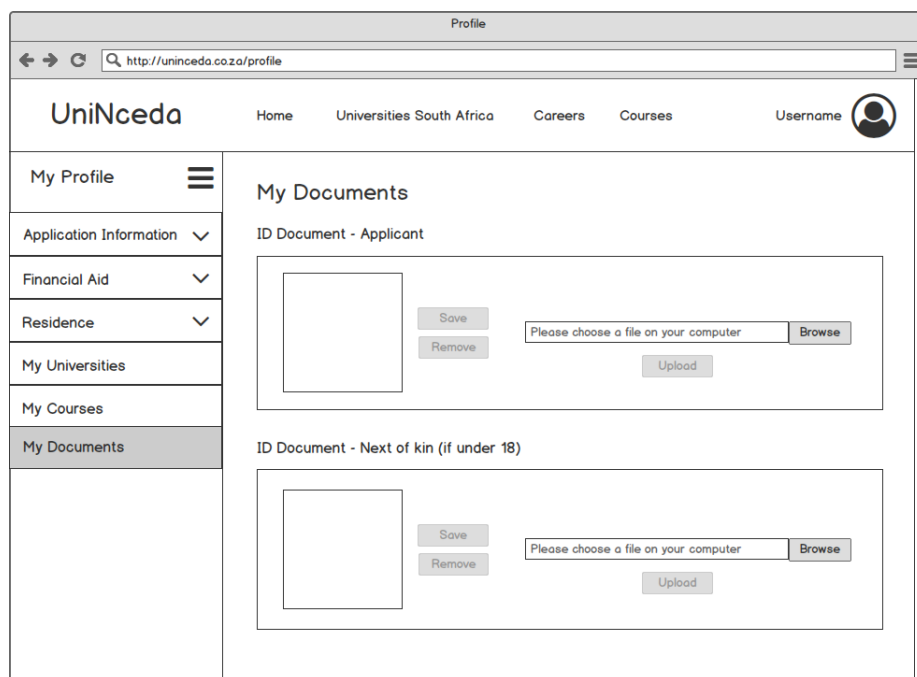
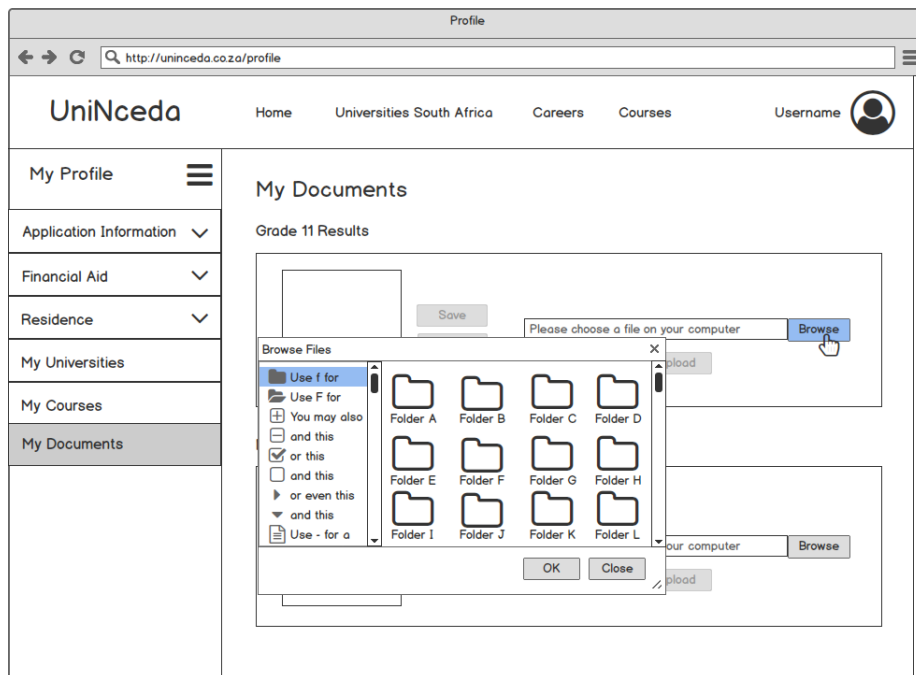
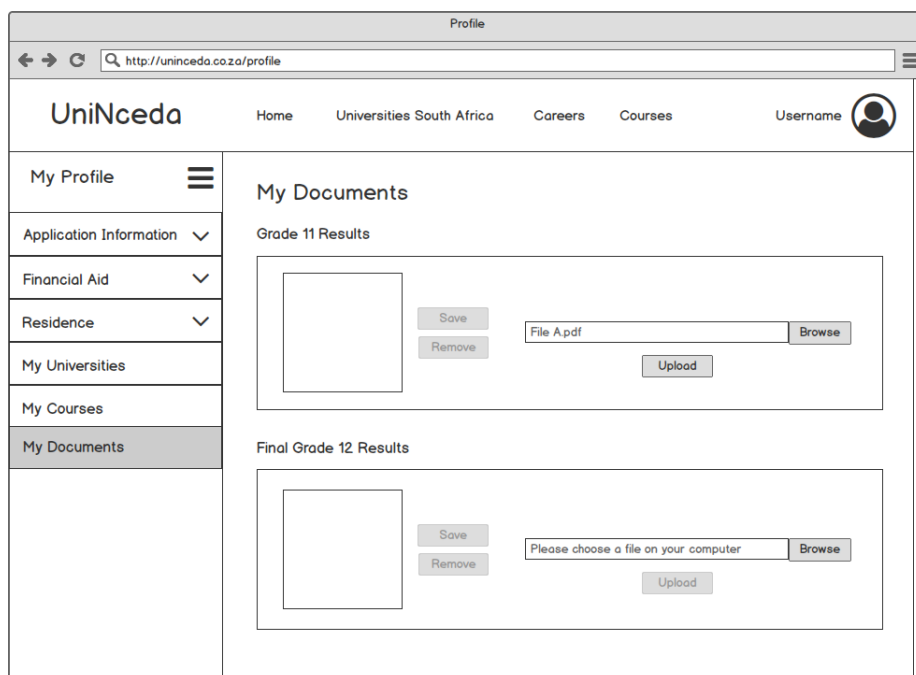


Figure 2 – When the user scrolls down to the end of the page he/she is presented with more uploaded documents.

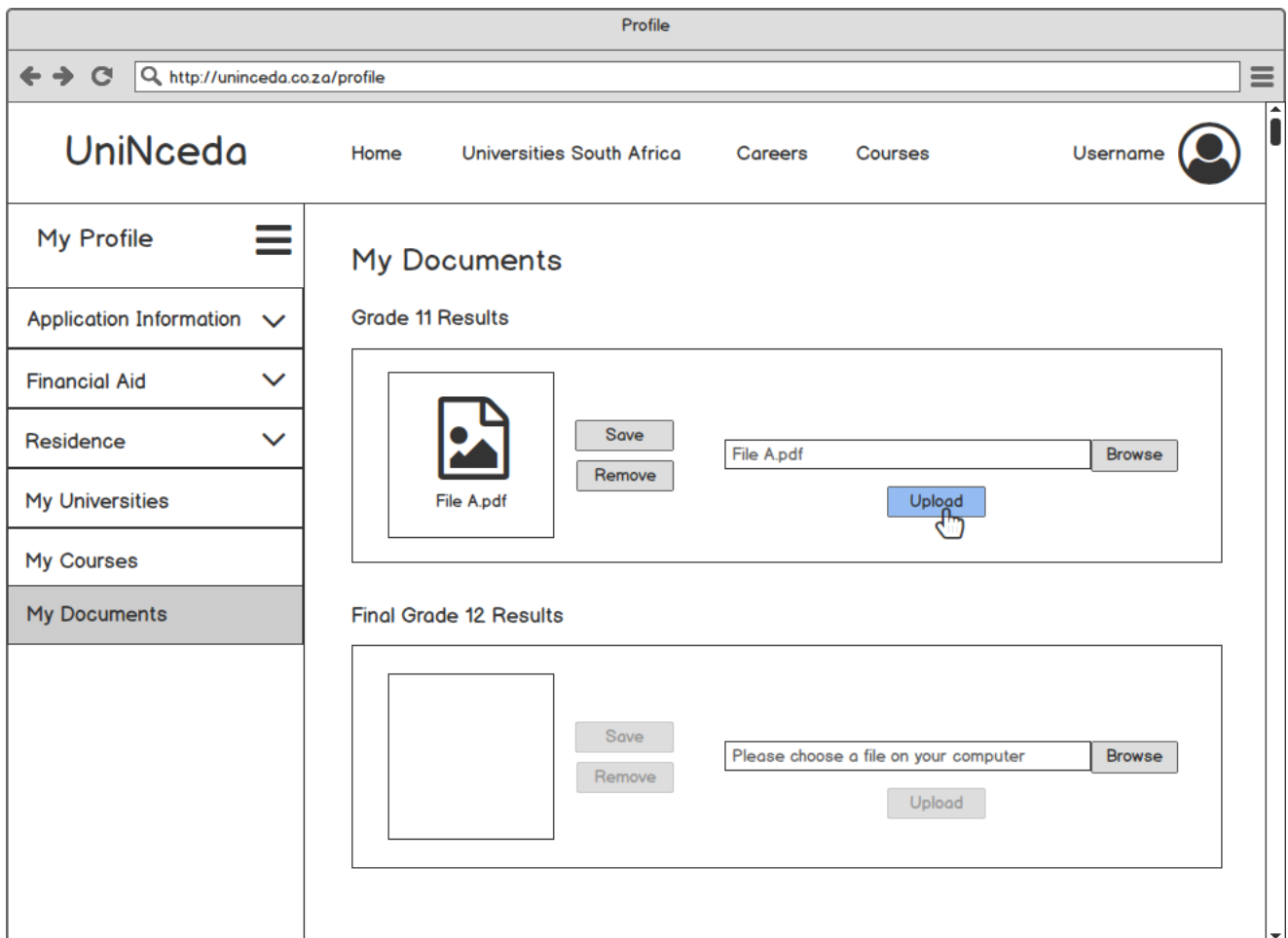
7.8.7 Uploading a document



Step 1 – When the user clicks the 'Browse' button, a window with a list of files pops up. In this window the user can select the file that he/she wants to upload.



Step 2 – When the user clicks the 'OK' button on the windows, the file is loaded into the browser cache and the name of the file is displayed on the label.



Step 3 – When the user clicks the 'Upload' button, the file is uploaded and stored into a database. The name and the picture of file is then displayed on the container to the left.