PHASE 1
Specification Document

UniGo

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1.1 Problem Summery

Students often struggle when it comes to finding the right university and the right degree to study after they matriculate. This program aims to solve that problem by providing learners with a way to see all the degrees that are available to them in South Africa.

To do this, learners simply need to input either their Grade 11 or Grade 12 results into the program and click a button. The program will then give the learner the list of degrees that they can choose from, and the universities offer those degrees.

To further assist learners, they will have the option to filter out what they are not interested in from the list so that they can more easily make their decision. The user will be given many toggle buttons which they can use to apply the filters. By enabling a toggle, the filter will be applied to the search.

The program will also be able to provide information on most universities in South Africa. Such information includes a description of the university, the faculties they offer, and the degrees with their requirements. University information will be sourced from the various universities' websites. This information will be stored in the program's database and can be updated when needed.

After they conduct their research, learners will be able to 'bookmark' or save the universities or degrees that they find interesting so that they can quickly come back to the information panel if they need to.

1.2 Motivation and Research

1. Universities South Africa

The website 'Universities South Africa' allows users to search for any university in South Africa and access basic information about them. Users can search based on faculty, location, type, etc.

- Similarities:
  - Provides a basic description of the university
  - Contains information on every university in South Africa
  - User can streamline their search by using filters
- Differences:
  - The website does not provide a list of the individual degrees offered by the university, making it difficult for the user come to a decision using this website.
  - The website does not allow the user to search for universities based on their results and does not show the requirements of the degree. This means that the user will not know whether they meet the requirements of the degree using this website
  - The user is not able to save degrees that they are interested in.

2. DST

DST is a website that is intended for international students. It was created by the South African embassy in Japan and is therefore a Japanese website. This website categorizes the different universities in South Africa. Users can access basic information on universities as well as a link to the university's website.

- Similarities:
  - The user can view all the universities in South Africa
  - It provides basic information on the universities.
- Differences:
  - Lacks many functions that this program will have, such as a search function, a faculty/degree list, and the requirements of each degree
  - The above website appears very outdated, while this program aims to appear fresh and professional.
  - Lacks the function to see what degrees a user meets the requirements of
  - The user is not able to save degrees that they are interested in.

3. Wikipedia

Wikipedia holds a surprising amount of information regarding universities. Not only does it show a university's list of degrees and faculties, but also its history, residency, structure, rankings and even the controversy surrounding it.

- Similarities:
  - Gives users bountiful information regarding a specific university.
- Differences:
  - A user must know the name of the university that they want to search for. They are not given a list to choose from.
  - The degree requirements are not shown
  - The website lacks many of the features that this program plans to have, such as the ability to see what degrees the user meets the requirements of.
  - The user can not use filters to streamline their search
  - The information on the website can be edited by ordinary users, rendering the information provided as unreliable.

References:

1. Universities in South Africa. (2019). University of the Western Cape. [online] Available at: https://universities.co.za/places/university-of-the-western-cape/ [Accessed 22 Jul. 2024].
2. Wikipedia. (2021). University of Cape Town. [online] Available at: https://en.wikipedia.org/wiki/University_of_Cape_Town [Accessed 3 Feb. 2025].
3. www.dst.tokyo. (n.d.). 南アフリカへの留学｜南アフリカの大学制度. [online] Available at: http://www.dst.tokyo/study-sa.html [Accessed 22 Jul. 2024].

1.3 Specification of Program Function

View Saved Degrees

Here, the user will be able to view a list of all the degrees that they have bookmarked. Clicking on a degree will allow the user to either go to the degree's screen or remove the degree from the list of saved degrees.

- The user will be able to view a list of their saved degrees
  - Clicking on an entry in the table will enable two buttons
    - The first will take the user to the selected degree's screen.
    - The second will remove the entry from the table.

User Results

The user's marks are used to determine whether they qualify for certain degrees. On this screen, the user can view and alter their marks and select the subjects they did.

- The user will be able input and save their marks for 8 subjects
  - The numbers 0-100 can be used
  - The user will be able to select what subjects they did
  - LO is the only compulsory subject, as there are different types of Mathematics and Home Language could be English or Afrikaans.

Browse universities

This function will allow the user to freely browse all the universities, faculties and degrees with their requirements. A search bar will be provided so that a user can search for a specific university if they wish to. Furthermore, the user will be able to save degrees to their profile with this function.

- The user will be able to view the list of universities in the database
  - The user can also search for a specific university using the search bar
  - The user can click on a university to view more information about it
    - The user can also view the list of faculties offered by the university
    - The user will be able to go back to the previous screen.
  - The user will be able to click a faculty to view more information about it
    - The user can also view the list of degrees offered by the faculty
    - The user will be able to go back to the previous screen.
  - The user will be able to click a degree to view its requirements
    - The user will be able to save the degree to their profile
    - The user will be able to go back to the previous screen.

Find Degree

Degrees that the user meets the requirements of will be displayed here. To check whether a student meets the requirements, the program will use an algorithm. This algorithm first compares the degree's required school subjects with the user's. If the student has completed all the required subjects, then the algorithm will check if the student meets the minimum point score. This is done by using the student's marks and performing a calculation.

The user can then apply filters to remove options they are not interested in from the results and to help them find the right degree. Degrees that the user wishes to investigate further at a later stage can be saved to their profile from here as well.

- The user will be given the list of degrees that are available to them based on their academic marks
    - The user will be able to apply filters to narrow down the results (Filter by university, faculty, location, etc.)
    - The user will be able to click on a degree to view more information about it.
        - The user will be able to save the degree to their profile
        - The user will be able to go to the degree's faculty's screen.

1.4 Specifications of Interface including User Interface

The program will look simplistic and professional. The screens will have a Wikipedia-like aesthetic, whereas the information is displayed on the screen with **buttons on the left** for navigation.

Important text and buttons will be coloured **different shades of blue** to create a **fresh and professional** theme. The background will be a **soft blue** colour.

The program will use a **Microsoft JhengHei UI** font. Headings will have a font size of **16px**, subheadings **10px**, and normal text **7px**.

Wikipedia: https://en.wikipedia.org/wiki/University_of_Cape_Town

<u>The user-interface will have the following:</u>

- Main Screen
  - Using buttons, the user can select whether they would like to…
    - View/Edit their results
    - Browse universities
    - Find a degree
    - View saved degrees
    - Exit the program.

The first four **buttons** will take up most of the space on the screen. It will look sort of like a child's drawing of a window, where the buttons are the glass, and the frame is the program's background. The 'exit program' button will be in the top right-hand corner.

- A Results screen
  - Using **text fields**, the user will be able to input…

        - All their results
    - The program will…
        - Display the user's results
        - Store the user's results

There will be a heading at the top. 7 **text fields** will run along the centre of the screen with a **label** next to each. Each text field will house one of the student's marks. There will also be **radio buttons**, coloured a traditional white and showing a blue dot when selected. These radio buttons are there for the user to select their subjects. **Text** with the name of the subject will be next to each radio button.

Finally, a **button** in the centre of the bottom of the screen to save, as well as a smaller button in the top left-hand corner to go back.

- A Browse Universities screen
    - The user will be able to input…
        - A search in the search bar for a specific university.
    - The program will…
        - If the search bar is blank, show the user all the universities
        - If the search bar is not empty, show the user universities with a similar name to what they typed.
        - Take the user to the university's information screen

The **search bar** will be located at the top of the screen below the **heading**. Below the search bar, taking up most of the screen will be a **clickable table** displaying universities. At the bottom will be a **button** which will take the user to the screen pertaining to the selected university. This button will be **greyed out** if the user hasn't selected from the table. Finally, a button in the top-left hand corner to take the user back.

- A Find a Degree Screen
    - The user will be able to input…
        - Filters that will omit certain degrees from the results
    - The program will…
        - If there are any filters, show all the degrees that they have met the requirements of which apply to the filters.
        - If there are not any filters, show all the degrees that the user has met the requirements of.
        - Take the user to the degree's information screen.

Like the 'Browse Universities' screen, but with a few additions. There will be a **small button** with a filter icon next to the search bar. Clicking this button will reveal a **small panel** layered over the table. Inside this panel is a **checklist** with all the filters. The checklist will look almost identical to radio buttons, but with a square button rather than a circle.

- A View Saved Degrees Screen
    - The user will be able to delete degrees they no longer wish to save.
    - The program will display all the degree which the user has saved.

Shows the user a **selectable table** with all the degrees they have saved. This table will be below the **header** at the top. Two **buttons** will be at the bottom of the screen. These buttons are **greyed out** if nothing is selected on the table. The first **button** will delete the degree from the table. The second **button** will take the user to the degree's page. There is a button in the top left-hand corner with an arrow icon to take the user back.

- A University Screen
  - The program will…
    - Display information regarding the university.
    - Show the list of faculties offered by the university.
    - Take the user to the selected faculty screen

- A Faculty Screen
  - The program will…
    - Display information regarding the faculty
    - Show the list of degrees offered by the faculty
    - Take the user to the selected degree screen

- A Degree Screen
  - The program will…
    - Display a short description of the degree
    - Display the degrees requirements
    - Save the degree to the user's profile

(For the three screens above.)
At the top will be the **heading**. Below the heading will be **subheadings** such as location, national ranking, university the faculty/degree belongs to, etc. Underneath that, in the top-right hand corner will be two **images**. The first one will be an image showing what the item looks like in reality (For universities, it will be a picture of the universities' buildings). Below that image will be the image of the item's logo. On the left side of the screen will be a small, **selectable table** with all the faculties/degrees offered by the item. Below that table will be a **small button** that will take the user to the faculty's/degree's screen. If the item is a degree, there will be a **button** next to the heading with a bookmark icon. This button will allow the user to save the degree. There will also be buttons to report misinformation or go back.

1.5 Specifications of Permanent Data Storage

To store data, this program will be using a database management system called Microsoft Access to store information in tables. All information regarding universities will be stored in the database. Users will not be able to manipulate this data. The user's marks and saved degrees will be stored in two text files located within the program itself. The user will be able to manipulate all the data within these text files.

- Marks (text file):
  - Fields
    - Whether English or Afrikaans is their Home Language, and their mark
    - What they chose as their First Additional Language, and their mark.
    - Whether they chose Core, Literacy or Technical Mathematics, and their mark.
    - What their 1st Option was, and their mark.
    - What their 2nd Option was, and their mark.
    - What their 3rd Option was, and their mark.
    - Mark in Life Orientation.
  - When is data changed?
    - Whenever the user makes a change to their marks.
  - When is data accessed?
    - When searching for degrees that the user meets the requirements of.
  - Example:
    - eng83#afr74#cor84#bio63#phy91#geo79#lor81

- Saved Degrees (text file)
  - Fields
    - The ID of the degree in the database
  - When is data changed?:
    - When a user adds a degree to their saved degrees.
    - When a user removes a degree from their saved degrees.
  - When is data accessed?
    - When the user goes to their 'saved courses' screen, a list is given.
  - Example:
    - 3
    - 8
    - 19
    - …

- University (database)
  - Fields
    - Name
    - Description
    - Location
    - National Rank
    - Established
    - Students
    - AcceptanceRate
  - When is data changed?
    - If a university closes its doors.
    - When a new university surfaces.
    - If there is misinformation
  - When is the data accessed?

        - Fetches the name when a user searches for a university based on name or location.
        - The name is fetched when degrees are searched for based on university.
        - Fetches all data when the user goes to a university's dedicated screen.
    - Example:

Name	Description	Location	Rank	Established	Students	Rate
University of Cape Town	The University of Cape Town is a prestigious university located in the heart of…	Rondebosch, Cape Town	1	1 October 1829	28233	0.0485

- Faculty (database)
    - Fields
        - Name
        - Description
        - University the faculty belongs to
    - When is data changed?
        - If a university closes its doors.
        - If the name of the faculty changes
        - If the faculty is abolished.
        - If there is misinformation
    - When is the data accessed?
        - The name is fetched when degrees are searched for based on faculty.
        - Fetches all data when the user goes to the Faculty's dedicated screen.
    - Example:

Name	Description	University
Faculty of Science	UCT's Faculty of Science focusing on nurturing the young talents of the future…	University of Cape Town

- Degree (database)
    - Fields
        - ID
        - Name
        - University the degree belongs to
        - Faculty the degree belongs to
        - Description
    - When is data changed?
        - If a university closes its doors.
        - If the name of the degree changes
        - If the faculty is abolished.
        - If the degree is removed.
        - If there is misinformation
    - When is the data accessed?
        - The name is fetched when degrees are searched for based on name.
        - Fetches all data when the user goes to the degree's dedicated screen.
        - The ID when matching a requirement with a degree
    - Example:

ID	Name	University	Faculty	Description
1	Bachelor of Science in Computer Science	University of Cape Town	Faculty of Science	The Bachelor of Science in Computer Science aims to provide the best possible resources for students to…

- Requirement (database)
  - Fields
    - The ID of the degree that the requirement belongs to
    - Whether Home Language is required, and the mark needed.
    - Whether First Additional Language is required, and the mark needed.
    - Whether mathematics is required, what type, and the mark needed.
    - Whether a 1st specific subject is required, what subject, and the mark needed.
    - Whether a 2nd specific subject is required, what subject, and the mark needed.
    - Whether a 3rd specific subject is required, what subject, and the mark needed.
    - A minimum of 50% is always required for LO.
  - When is data changed?
    - If a university closes its doors.
    - If the faculty is abolished.
    - If the degree is removed.
    - If the requirements for the degree change
    - If there is misinformation
  - When is the data accessed?
    - When searching for a degree based on whether the user meets the requirements.
    - Fetches all data when the user goes to the degree's dedicated screen.
    - The ID when matching a requirement with a degree
  - Example:

Requirement

DegreeID	HL	FAL	MATH	OPT1	OPT2	OPT3	LO
1	any50	not00	cor70	Ift70	not00	not00	yes50