Candidate Number:
3097

# Discussion:

## 1.1: Identification of client and problem

Physiotherapy clinic:

For my A-Level unit 5 coursework, I have decided to design and develop a computerised system for a local Newry physiotherapy clinic. This will be used as a replacement to their current paper system and will be used in all aspects of their company. This means this program can be used to create appointments and the appointments being shown in the order they are had, hold details of patients and update them with appropriate medical record and hold information of any staff at the company.

The clinic has been running for over ten years and has multiple staff members and clinics and specialises in acupuncture and physiotherapy. It is based in Newry, but it also has a clinic in Slane. I will be developing a program for both of the clinics which can work together with each other.

The major issue with this clinic is the risks of using a paper system, this can result in problems such bad writing, data loss and clutter of information, this is a very dangerous and risky problem and it is vital that they have a solution to these problems as it can result in very significant consequences. To solve this problem the clinic has contacted me to create a database to hold any of their future data and integrate it into their company.

This program will allow users to track finances, book and delete appointments, add and see details of any staff members working at the business, hold medical records of any patients along with any of their details and have a view system so only the appropriate users can see specific information as data protection is vital for such a company. I will also implement suitable solutions, so the data is held safely and add validation so incorrect data is not added into the program.

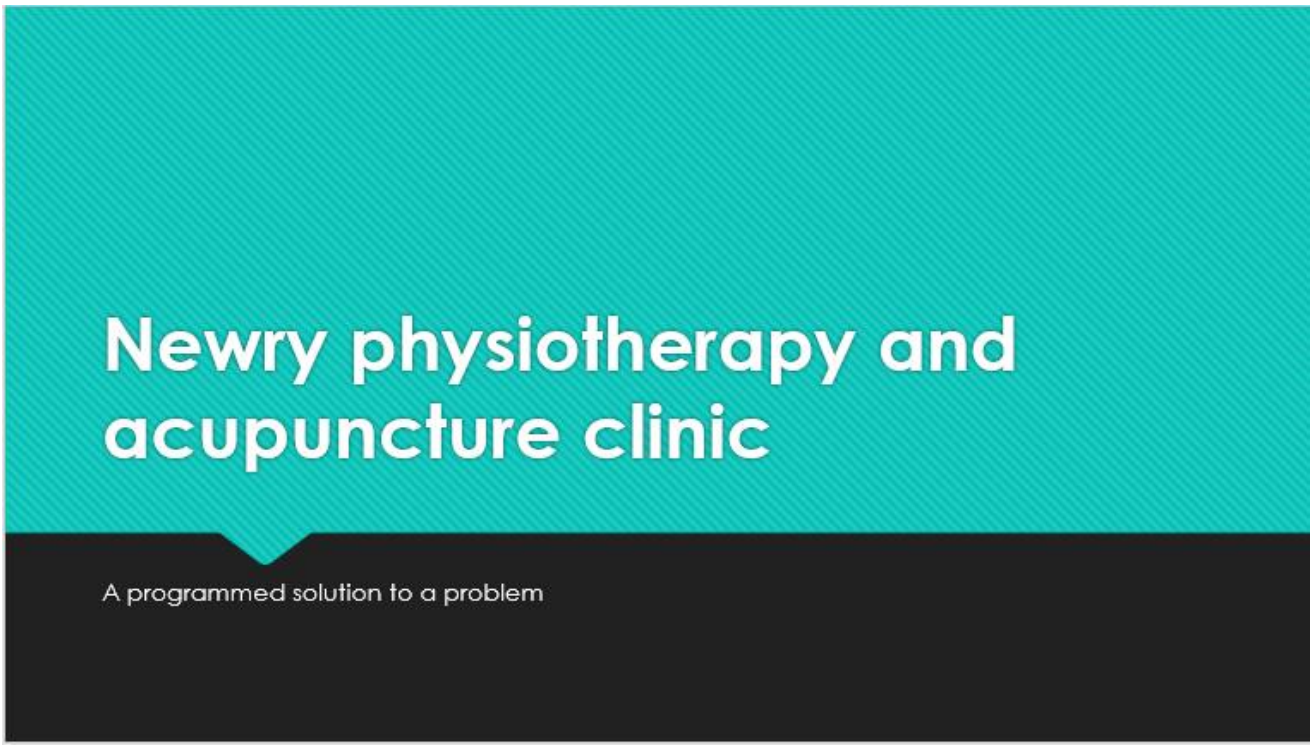
I will also develop a GUI for this program to make it considerably easier to use and require little to no training from any new users. I will have a login page upon the page start-up, so no user has access to the data that they shouldn't have their hands on.

To begin the creation of this program, I have made a presentation about the company and their issues. I will share this presentation to anyone involved at the company to get constructive criticism to my current program solution. This will be collected at the end of each part of the presentation.

I will be using python to develop this program, this is for a handful of reasons, firstly it is a fairly easy language to program and has access to a large away of modules, more specifically SQLite and tkinter which are the main ones I will be using. Python, although easy to program has fairly bad UI design compared to other languages such as HTML and is relatively slow to run as it

mainly used for data security and artificial intelligence instead of a GUI database. I also do not have much experience in other alternative languages and I am most comfortable with using Python. If I used a language such as HTML with JavaScript I could've created a web-based program. Due to the limited time that I have on this project I will not be able to have a full solution to every issue.

## 1.2: Presentation to stakeholders



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## Background

- The business has been running for over a decade and has regular patients.
- The clinic is in two locations, one in Newry, Co. Down and the other in Slane, Co. Meath.
- The clinic offers physiotherapy to any physical problems a client may have in addition to acupuncture.

## Identification of Stakeholders

- The owner
- Nurses
- IT administrator
- Receptionists
- Physiotherapist

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## Broad Aims – All staff

- The program should be quick and fast in addition to using an aesthetically pleasing GUI
- Have the database be connected with the program so individual data can easily be implemented, adjusted or removed
- Ensure that there is suitable security for those who shouldn't have access to the program to access it
- Use views to prevent anyone from accessing or adjusting data that they shouldn't
- Data should be stored with SQL
- You should be able to create, edit, delete, search and cancel records
- Each of the tables should be able to be accessed by tabs
- Everything should be in the same window
- The database will be stored in third normal form

## Feedback

- Do you have any additional pointers that you feel were either misrepresented or underrepresented. If so, what?
- Do you think any of the pointers listed should be ignored when the final solution is given? If so, what?

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## Broad Aims – The owner

- The program should be quick and fast in addition to using an aesthetically pleasing GUI
- Have the database be connected with the program so individual data can easily be implemented, adjusted or removed
- Ensure that there is suitable security for those who shouldn't have access to the program to access it
- Use views to prevent anyone from accessing or adjusting data that they shouldn't
- Data should be stored in a database that is easy and intuitive to use
- All finances and client and staff information should be easy to access

## Feedback

- Do you have any additional pointers that you feel were either misrepresented or underrepresented. If so, what?
- Do you think any of the pointers listed should be ignored when the final solution is given? If so, what?

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## Broad Aims - Nurses

- The program should be quick and fast in addition to using an aesthetically pleasing GUI
- Have the database be connected with the program so individual data can easily be implemented, adjusted or removed
- Ensure that there is suitable security for those who shouldn't have access to the program to access it
- Use views to prevent anyone from accessing or adjusting data that they shouldn't
- Data should be stored in a database that is easy and intuitive to use
- All client and appointment information should be easy to access
- Make it easy to create, and cancel appointments
- See the medical records of clients and adjust them as suitable

## Feedback

- Do you have any additional pointers that you feel were either misrepresented or underrepresented. If so, what?
- Do you think any of the pointers listed should be ignored when the final solution is given? If so, what?

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## Broad Aims – IT Administration

- Have the database be connected with the program so individual data can easily be implemented, adjusted or removed
- Ensure that there is suitable security for those who shouldn't have access to the program to access it
- Use views to prevent anyone from accessing or adjusting data that they shouldn't
- Data should be stored in a database that is easy and intuitive to use
- Make maintenance of the program easy
- Be able to see information of any staff members and change rights

## Feedback

- Do you have any additional pointers that you feel were either misrepresented or underrepresented. If so, what?
- Do you think any of the pointers listed should be ignored when the final solution is given? If so, what?

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## Broad Aims – Receptionists

- The program should be quick and fast in addition to using an aesthetically pleasing GUI
- Have the database be connected with the program so individual data can easily be implemented, adjusted or removed
- All client information should be easy to access and it should be easy to see which client/staff member has a certain appointment
- Make it easy to create, and cancel appointments

## Feedback

- Do you have any additional pointers that you feel were either misrepresented or underrepresented. If so, what?
- Do you think any of the pointers listed should be ignored when the final solution is given? If so, what?

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## Broad Aims - Physiotherapists

- The program should be quick and fast in addition to using an aesthetically pleasing GUI
- Have the database be connected with the program so individual data can easily be implemented, adjusted or removed
- Ensure that there is suitable security for those who shouldn't have access to the program to access it
- Use views to prevent anyone from accessing or adjusting data that they shouldn't
- Data should be stored in a database that is easy and intuitive to use
- All client and appointment information should be easy to access
- Make it easy to create, and cancel appointments
- See the medical records of clients and adjust them as suitable

## Feedback

- Do you have any additional pointers that you feel were either misrepresented or underrepresented. If so, what?
- Do you think any of the pointers listed should be ignored when the final solution is given? If so, what?

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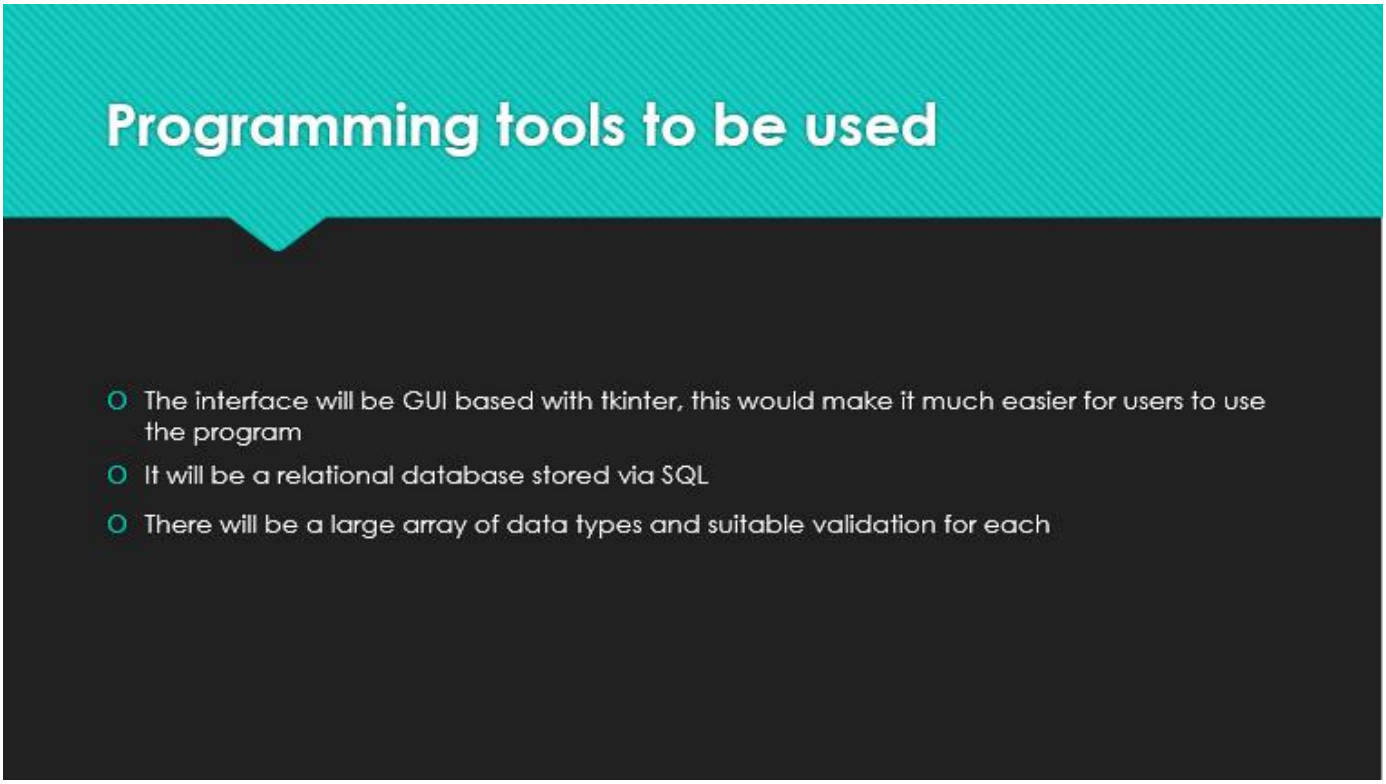
## Limitations of the project

- It will take time to move data from the paper system to the new one
- It will take time for people to learn how to use the program
- It will take a large amount of time to develop

## Limitations of the possible solution

- It wouldn't be connected by a network and would only be offline
- The database wouldn't be automatically backed up
- All transactions would have to be manually inputted, for example staff wages
- Any staff member could be selected for the appointment as it would just show a list of staff members, this could mean someone like IT could be selected for the appointment




## 1.3: Response from presentation

After giving out the response leaflet to any of the people involved in the company after showing my presentation, I managed to compile all the criticisms with my projects and requests that they have. They all agree that data security and views are vital however there is some disagreements between them on some points such as the use of a GUI. You can see a full version of all discussion below.

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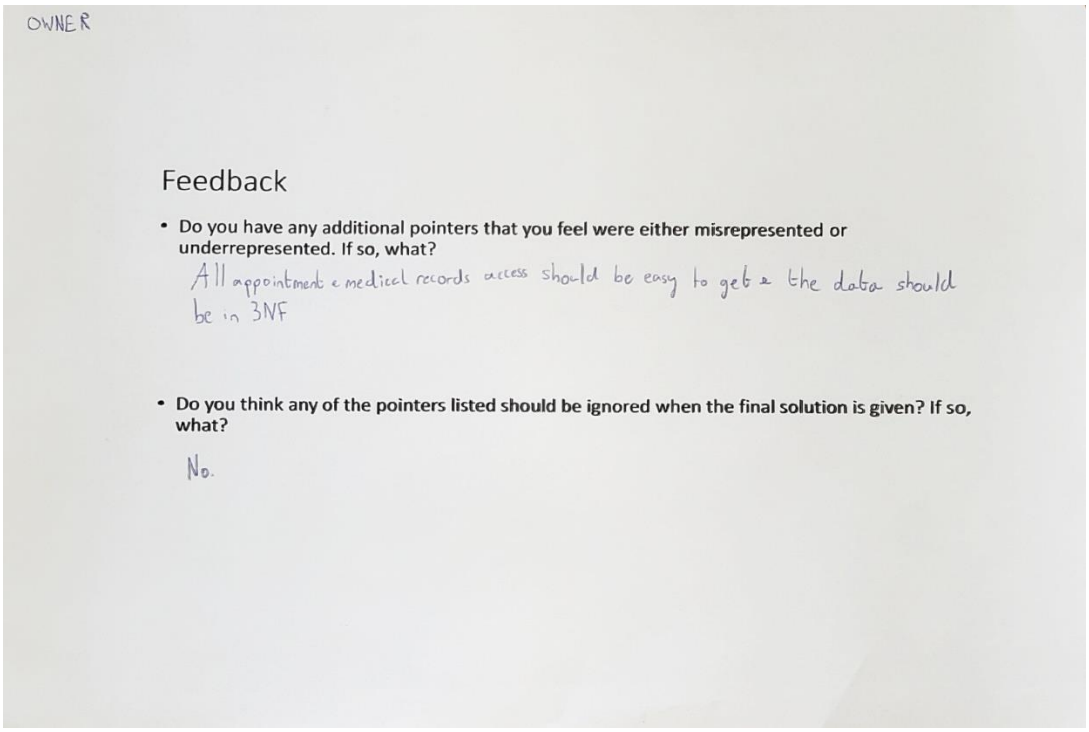
## Owner


OWNER

Feedback

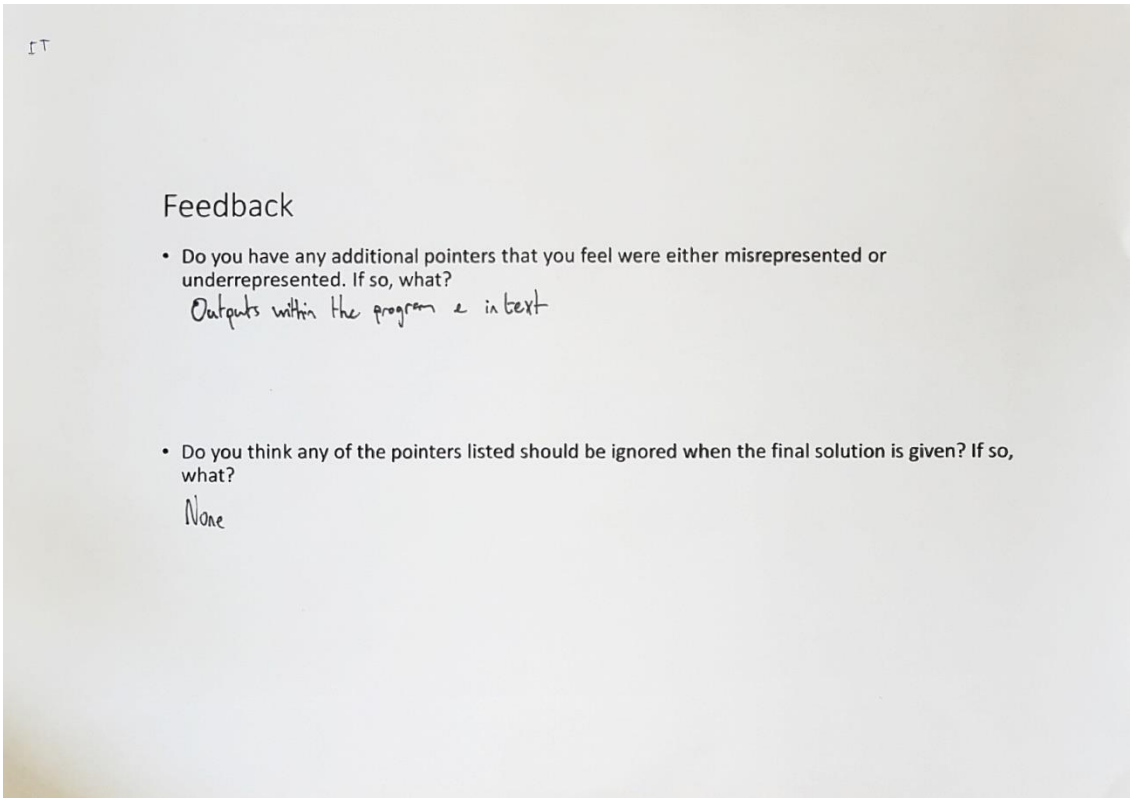
- Do you have any additional pointers that you feel were either misrepresented or underrepresented. If so, what?

  All appointment & medical records access should be easy to get & the data should be in 3NF

- Do you think any of the pointers listed should be ignored when the final solution is given? If so, what?

  No.

## IT


IT

Feedback

- Do you have any additional pointers that you feel were either misrepresented or underrepresented. If so, what?

  Outputs within the program & in text

- Do you think any of the pointers listed should be ignored when the final solution is given? If so, what?

  None

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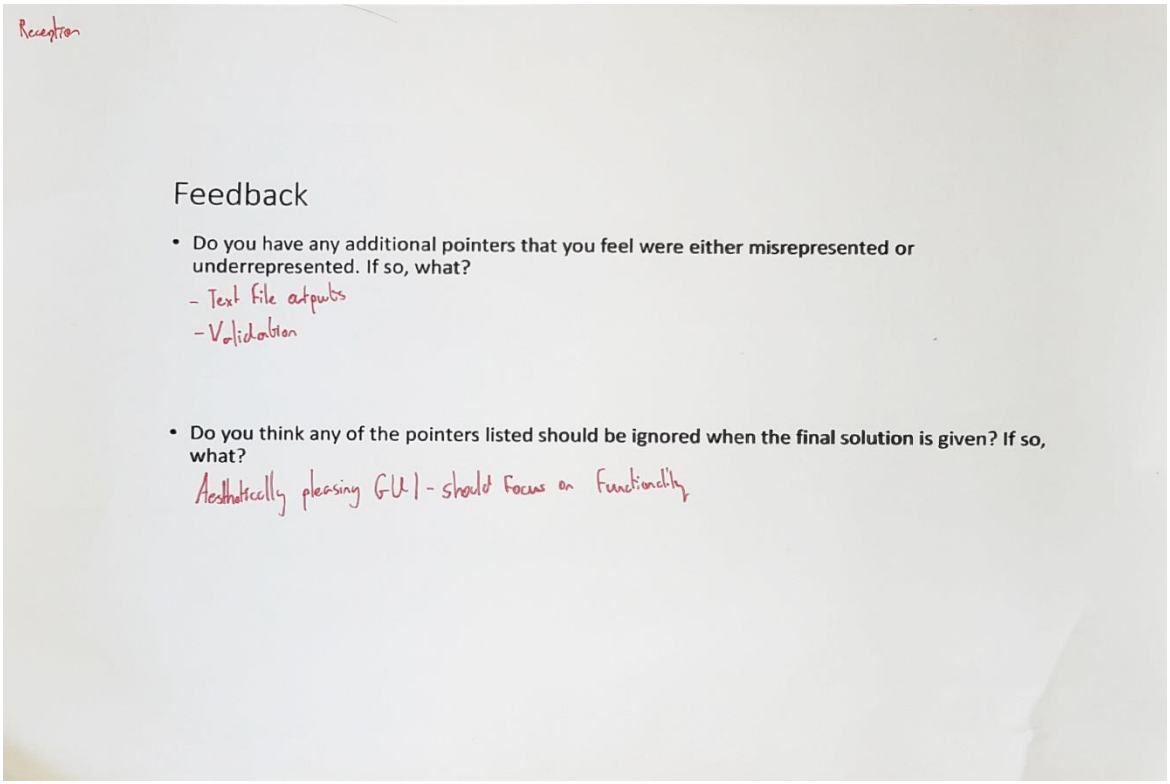
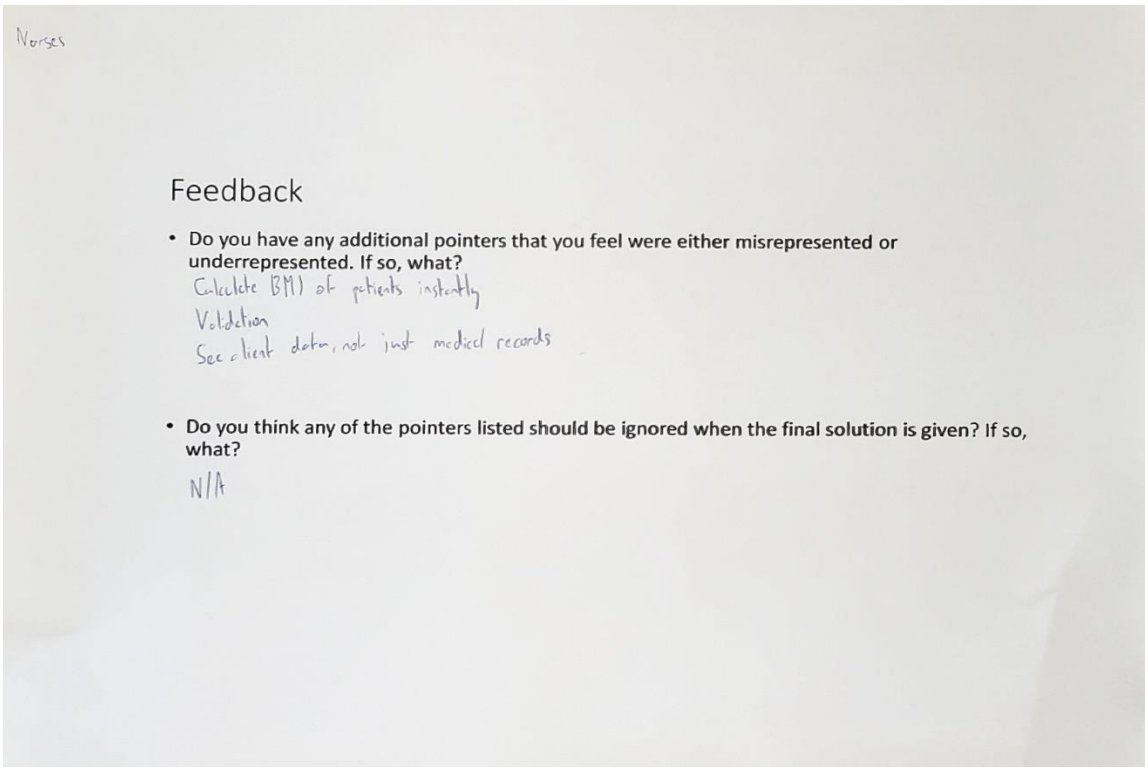
## Receptionists


Reception

Feedback

- Do you have any additional pointers that you feel were either misrepresented or underrepresented. If so, what?
  - Text file outputs
  - Validation
- Do you think any of the pointers listed should be ignored when the final solution is given? If so, what?
  Aesthetically pleasing GUI - should focus on Functionality

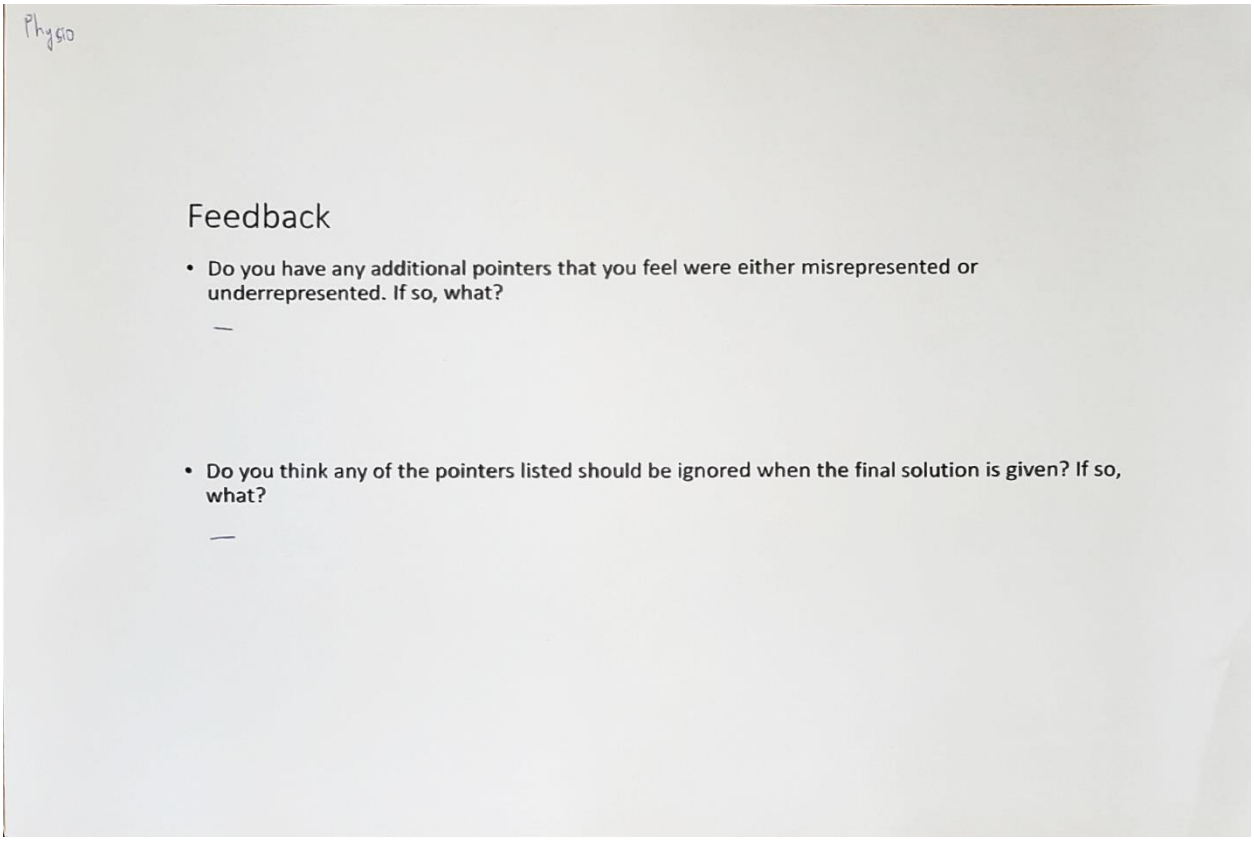
## Nurses


Nurses

Feedback

- Do you have any additional pointers that you feel were either misrepresented or underrepresented. If so, what?
  Calculate BMI of patients instantly
  Validation
  See client data, not just medical records
- Do you think any of the pointers listed should be ignored when the final solution is given? If so, what?
  N/A

### Physiotherapists




## 1.4: Response to feedbacks

### Owner

The owner of the company asked me to let the program allow the user to easily get all the medical records and appointments in addition to structuring the database in third normalised form. I believe these are suitable recommendations from the company and I will attempt to take this advice in my final program and implement these into my broad aims. The owner also requested than none of the pointers should be omitted in the final program.

### IT

The IT at the clinic requested that I implement text and outputs into my program, I will accept these requirements and attempt to implement them in my final program as it is important for the database to have a variety of outputs to allow the user to access and manipulate the data in a magnitude of ways. IT also requested that none of the aims in the PowerPoint should be omitted from the programmed solution.

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## Receptionists

The receptionists at the clinic requested that I implement suitable validation and text file outputs in the program. I will accept both of these, text file outputs are important as it allows you to much more easily share and copy data in comparison to a SQLite database. In addition to this, I will implement suitable validation in my program as no validation could result in severe errors in the program and also possibility result in incorrect data which may be dangerous if the data stored is something like medical records. The receptionists also requested that I omit the GUI and instead create the program as a CLI, I will deny this request, although a CLI would be better at prioritising functionality I still feel that I will be able to meet both the functional requirements and the GUI ones and as a result will deny this request, a GUI also allows the less technology literate to much more easily understand the program and not require any teaching which may result in additional expenses of the program.

## Nurses

The nurses requested three things, they asked for validation, the ability to calculate a client's BMI, and that I store client records in my database, not just medical records. I will accept all three of these requirements. Validation is important as it prevents incorrect data from entering and possibly breaking the program, I will also add an output of a client's BMI, this is important as this allows the nurses to easily calculate the BMI instead of doing it manually, which has a significantly higher chance of errors. Finally, I will have stored both medical records and client records. Both are vital for the program, the client records are highly important for all staff at the clinic, and the medical records are important for the nurses and physiotherapists and thus I will be implementing both features in my final program. The nurses requested for no pointers to be ignored.

## Physiotherapists

The physiotherapists at the clinic requested for no pointers to be added or removed to the solution and thus I will be using the default PowerPoint as the broad aims for the physiotherapists.

## Conclusion

Overall I will take on the all of the requests from the staff members at the clinic except for omitting the GUI. I feel like the staff at the clinic requested for suitable aims and I will attempt to implement all of them in my final program and within my broad aims in addition to the requirements of the PowerPoints that I have created earlier.

## 1.5: Broad aims

### Login page – Accept

I will add a login page with usernames and password so only people who have permission are allowed access to the program. The login details will be stored within the staff table. I can also set specific logins to certain views.

### Views – Accept

Views will be implemented into the program to prevent users accessing information they shouldn't. Due to the sensitivity of the data, views are vital in following data protection laws. I will do this by creating rankings in the staff SQL table allowing only certain ranks to alter certain tables.

### Automatic backups – Deny

I will be denying this as due to the limited time given on this program I cannot push resources towards automatically backing the database up. Given more time on this program I would do this.

### Clients table – Accept

I will be adding a client's table to my program. This is an important set of data that should be able to be accessed by all staff members at the clinic and is important for seeing information such as the client's name, address or telephone number.

### Medical records table – Accept

I will be implementing a table that stores medical records. This is important for the nurses and physiotherapists at the program and I will limit access to this table to only those that need it. The medical records are important for knowing information such as the client's mass, height or blood type.

### Finances table – Accept

I will create a finances table in my program, this is vital for the owner and the receptionists at the program as it allows them to automatically see all payments in and out of the clinic. I will store data such as the difference in each transaction and the date and time of that transaction.

### Appointments table – Accept

I will also create a list of all the appointments at the clinic. This is especially useful for the receptionists, nurses and physiotherapists. I will use this to store the times of all appointments in addition to the client or staff member that is taking that appointment.

### Staff table – Accept

Finally, I will implement a table that allows the owner and IT to access all of the staff details, this important to store any contact details or other important information of the staff working at the company in addition to their login details and positions to implement suitable access levels into the program to increase the security of the database which I feel is highly important. This table allows me to connect it to the appointments one.

### Data should be laid out in a clear and easy to use fashion – Accept

This should be extremely easy due to using SQL to program my database which has a wide array of support for reading its data. I will use SQL to make these tables clear. I will also use appropriate tkinter modules to view the data.

### Use a relational database – Accept

Due to SQL, this should be relatively easy to implement as it allows easy connecting of two tables via primary or foreign keys. Flat file database will be significantly less efficient and harder to navigate.

### Calculate the BMI of a client – Accept

I will use a BMI calculator for a client in my program to allow staff to see the BMI of someone. This should be relatively easy as I can use SQL to view the height and mass of a specific client and use their height and mass to get their BMI

### Output into a table within the program – Accept

I will output all the data of each table into the program, allowing staff to see all the records of each table. I will do this by retrieving data from SQL and pulling it into the program. I will also lay this data out neatly.

### Output into a text file – Accept

I will create outputs of the same data into text files, this will allow the staff to easily copy and paste the data out of the program. I will once again retrieve the data from SQL and paste this into the text file.

### Add records – Accept

I will allow staff to add records within the program, this data will then be put into the SQL database and allow the user to view this data within the treeview.

### Delete records – Accept

I will allow staff to also delete the records, this will delete the record of a specific primary key and will also delete all occurrences of that key in any tables it is linked to. This will be important for following procedures such as the GPDR.

### Edit records – Accept

Similarly, I will allow them to edit records, they can simply select the PK of the record that they want to edit, and the program will change the specified cells the staff wants to change.

### Search records – Accept

I will allow staff to search for a record of a specific keyword in any of the columns listed. This will also be output into a text file. I will do this with SELECT in SQL.

### Validation – Accept

I will be adding a wide range of validation throughout my program. This is important as invalid data could be detrimental to the functionality of the program. I will do a wide range of if statement checks as well as try except checks.

### 3NF – Accept

Finally, the program will be in 3rd normalised form. This will significantly reduce data redundancy and improve data integrity. It will link all the data by relationships and make the overall data much faster and quicker. This will also make the program much more effective when I have a large amount of data. I will turn my database into third normalised form by researching the requirements for it and adjusting my table as such.

## 1.6: Possible limitations

### Will people less technology literate be able to use the program? – Accept

This is important as everyone who works at the company should be able to easily understand how it works. As a result, I aim to make the GUI intuitive and easy to use for the staff members. I will also create a simple guide in the readme.txt on how to use the program.

### Will the program be connected to a sever? - Deny

I will not be connecting my program to a server. This is due to the limited time I've been given on making this program and I feel focusing on the other features of the program should be more important. I think it should be more important if I focus on the functionality behind the program before I attempt to add anything too complicated to the program.

### Will login credentials be encrypted? – Deny

I am denying this as encrypting login credentials, instead I will be keeping the passwords in plain text in the SQL database. This is due to the limit time given to developing the program. Encrypting login details will take time to do and may also slow down the program.

### Will there be a help desk chat for? – Deny

Creating a help desk will require the clinic to get more staff members to reply to any of the problems that staff members at the clinic will have. It will also require me to connect the program to the Internet which would take a lot of time. Overall this step would be too expensive and time consuming.