A2 UNIT 5

1. Discussion

Ryan Beattie
Candidate Number: 8002
Centre Number: 71741

Business Background – Lee Opticians

Lee Opticians has three branches spread across Warrenpoint, Camlough and Crossmaglen. Their award-winning, modern practices in Warrenpoint and Crossmaglen have recently been refurbished and provide state-of-the-art services and high standards of optical care.

They provide a full range of services including eye examinations, sore eye consultations, contact lens fitting, spectacles, low visual aids, sports eyewear, safety eyewear, sunglasses, and advice.

They have over 60 years of experience and combine this with their state-of-the-art technology and professional optometrists to provide a professional experience for their customers.

Identification of a Problem

I have been asked by Michael Gilsenan, the director of Lee Opticians, to produce a database system for their business. He would like the system to be integrated using the pilot changeover method, with their branch in Camlough being the pilot due to its smaller size. The branch in Camlough is managed by Carol Ward, who has spent 26 years at Lee Opticians. There are only 4 members of staff in the Camlough branch, meaning training staff how to use the system should be straightforward, as those involved in the pilot branch can assist in training members of staff in other branches. Their staff consists of one manager, two optometrists and a receptionist.

Other than eye examinations, Lee Opticians offers their customers contact lenses and eyewear, including designer frames such as Tom Ford, Ray Ban and Ralph Lauren. Each of their products should be included in the database system. Furthermore, they offer their customers their Visual Stress Clinic, Dry Eye Clinic and Dispensing service.

The staff at each of the branches at Lee Opticians are currently using a paper-based system, which clearly presents several issues. Although there are a small number of both staff and customers, their current system is inefficient and difficult to manage. Any data used by the company is stored in filing cabinets, which is time consuming to keep organised. Searching for data can be difficult to carry out and can be carried out much quicker on a digital system. Furthermore, the current system Lee Opticians has in place presents several security flaws with sensitive data being stored about customers. Files can be easily accessed and stolen, which would not be the case with a digital system, where a login feature with access levels can be implemented. There are also no backup or recovery procedures in place, meaning that in the event of an emergency, important data could be permanently destroyed and would need to be re-collected, which could be a time consuming and expensive process for the business. Their current paper-based system also takes up a lot of space, for example, filing cabinets are required to store and organise their data, which not only take up space, but can be expensive as well.

I have decided that the best approach is to completely discard their current paper-based system and transfer the data stored on their current system to a new computer-based system. Data would be made much easier to manage as it is all stored on a single database file and can be added to or appended without difficulty. The data would be much more secure, as a login feature with access

levels can be included, only allowing data to be accessed by those authorised to do so. A backup feature can also be included in a computer-based system, meaning there are recovery procedures in place in the event of an emergency or data loss.

Broad Aims of the System

Login Screen

A login screen will be used to provide security for the system. This login screen will be displayed when the program is launched, and the user must log in using their StaffID and password before they can use the system and access data.

User Access Levels

User access levels will be implemented into the system to provide an additional layer of security. Only those with the correct access level to view certain data will be able to view it. There will be three access levels – level 1, 2, and 3, where level 1 is full access to the system and will be intended for those with management positions.

Customer Table

The customer table will be used to store customer records. The receptionist must input customer details e.g., name, address, contact details, and medical conditions. This will ensure that the management of customer records is organised and easy to perform.

Appointments Table

The appointments table will be used to book appointments for customers. The receptionist must input the appointment details e.g., the CustomerID, the date and time of the appointment. This will ensure that the management of appointments is organised and easy to perform.

Order Table

The order table will be used to manage orders made for products sold by Lee Opticians. The manager or head of administration must input details of the order e.g., the products in the order, quantity, total cost. Invoices can be generated using text files, where the manager or receptionist can print the invoice or convert it to a .PDF file and store it in a file system. This will ensure the management of orders is organised and easy to perform.

Product Table

The product table will be used to manage products sold by Lee Opticians. The manager or receptionist must input details of the products e.g., name and description of the product, price of the product. This ensures the management of products and prices is organised and easy to perform.

Supplier Table

The supplier table will be used to store information about the suppliers supplying their products to Lee Opticians. The manager or receptionist must input the basic details of the supplier including their name, their postcode, and their contact details. This ensures supplier details are easy to find if an order needs to be changed or cancelled, or if there is a mistake with an order e.g., defects in products.

Staff Table

The staff table will be used to manage records of the staff members working with Lee Opticians. The manager will input details of the member of staff e.g., their name, their branch, contact details, access level for the system. This ensures the management of staff records and access levels is organised and easy to perform.

Prescription Table

The prescription table will be used to store prescriptions provided to customers by optometrists. The optometrist will input details of the prescription. This ensures the management of prescriptions is organised and easy to perform.

Branch Table

The branch table will be used to store details about each of the different branches. The user will be able to search for branches using the town name or an ID. This is useful if the user ever requires the contact details of the branch.

Problems Arising from the Proposed Solution

There are several problems arising from my proposed solution. Firstly, I consider my programming skills to be intermediate at best, therefore, a lot of research and time must be spent for the coding and development of the system to meet the requirements.

I have considered using Python for my proposed solution as it an easy language to use and understand, however, Python does not offer strong support for graphical user interfaces (GUIs), which would be required to ensure the system is user friendly and easy to navigate. Consequently, a lot of thought must be put into how to implement a GUI into the system. PyQt5 and Tkinter are both possible solutions, therefore I should research the pros and cons of each solution. I already have intermediate knowledge and experience using Python; therefore, I feel it is the best language to use as I will be able to complete the system in a reasonable amount of time, as I won't need to spend as much time getting familiar with the language and learning how to use it for the proposed solution.

I have also considered using the SQLite3 module with Python to manage the database and create the tables required. Although SQLite3 does not require a separate server process and eliminates the need for expensive hardware, it comes with limitations, as SQLite is a lightweight version of SQL, therefore its suitability for this system is dependent on the requirements set out by Lee Opticians. My knowledge and experience surrounding SQL is minimal, therefore I feel that using a lightweight version such as SQLite3 is a suitable solution to creating and managing a database for the system, as it won't require as much research or cause as many difficulties as a more advanced SQL solution such as MySQL, MariaDB, etc.

Another problem arising from the proposed solution is the time restrictions set by Lee Opticians themselves. I have been given 3 months to develop the system, which may create a lot of pressure to complete the system to meet their requirements. It is also limiting in terms of the features I can implement into the new system; I may not complete the system to the standard it potentially could be.

Presentation to Stakeholders

I created the following presentation to present to the stakeholders of Lee Opticians to discuss their new system for managing data. The presentation consists of background information about the company, stakeholder requirements, possible limitations, and questions to receive feedback from stakeholders.

Lee Opticians

Discussion about a new system for managing data.

Company Background

Three branches spread across Warrenpoint, Camlough and Crossmaglen.

Full range of services including eye examinations, sore eye consultations, contact lens fitting, spectacles, low visual aids, sports eyewear, safety eyewear, sunglasses, and advice.

Over 60 years of experience combined with state-of-the-art technology and professional optometrists to provide a professional experience for customers.

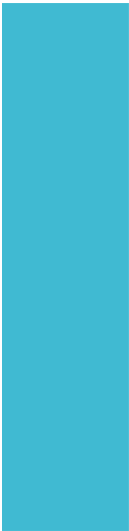15 employees within the business including three managers; one for each branch.
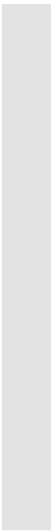
Stakeholders Involved

- Managers
- Employees, including Receptionists, Optometrists, a Dispensing Optician and the Head of Administration
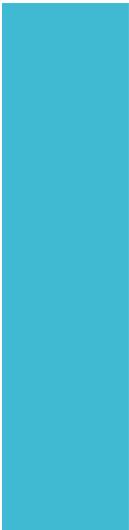- Customers
- Suppliers

Manager Requirements

- A user-friendly graphical user interface to input and manage data in the system.
- A function to add, edit, view and remove data about employees within the business.
- A function to create payslips for employees.
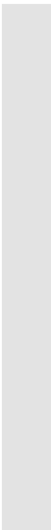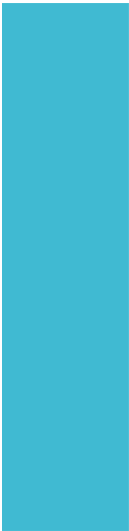- A function to view and print invoices from suppliers.

Receptionist Requirements

- A user-friendly graphical user interface to input and manage data in the system.
- A function to add, edit, view and remove data about customers of the business.
- A function to add, edit, view and remove appointments made by customers.
- A function to add, edit, view and remove orders made for frames, lenses, etc.
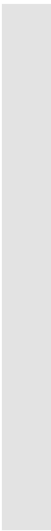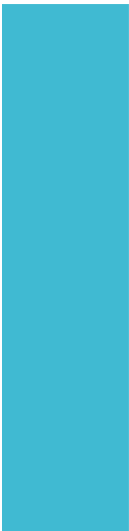- A function to view and print invoices from suppliers.

Optometrist Requirements

- A user-friendly graphical user interface to input and manage data in the system.
- A function to add, edit, view and remove data about customers of the business.
- A function to add, edit, view and remove appointments made by customers.
- A function to print prescriptions from customer appointments.
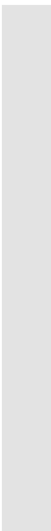
Customer Requirements

- Signing up as a customer is simple and convenient.
- Customer data is kept secure and follows the legislation surrounding data protection.
- Booking appointments is simple and convenient.
- Getting prescriptions is simple and convenient.

Supplier Requirements

- Orders are received and fulfilled without complications at the fault of Lee Opticians.

Potential Limitations Of The New System

- Managers and employees will require training on how to use the system effectively.
- Managers and employees will be responsible for managing the data within the system e.g., adding, editing and deleting records.
- It will take time to copy the data from their current system to the new system. Mistakes may also be made during the data entry process.
- Python's Tkinter module is not the best option available for creating graphical user interfaces, therefore the system is likely to have imperfections.
- The company will be responsible for ensuring the data on the system is kept secure using the login and access level features.
- The company will be responsible for ensuring the data on the system is backed up regularly to prevent loss of data during an emergency.

Feedback

- What features do you see as being most important for the improvement of your system?
- Are there any features mentioned in this discussion that you would deem as being unnecessary for your new system?

1.3 Fully considered feedback from others and, where appropriate, has used this feedback to refine understanding of the problem and proposed solution.

Feedback Following the Presentation

Manager

MANAGER

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Presentation Feedback

What features do you see as being most important for the improvement of your system?

I believe the security of the current system should be improved drastically. This is important as the current system offers poor to no protection over the sensitive data we store about our customers.

Are there any features mentioned in this discussion that you would deem as being unnecessary for your new system?

Although it would be very useful, if you were running out of time, I feel it would not make a massive difference if you were unable to complete the feature to create payslips.

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Presentation Feedback

What features do you see as being most important for the improvement of your system?

I believe improving on the process for searching for customer records would make a massive change to the current system and would save myself and many others a considerable amount of time.

Are there any features mentioned in this discussion that you would deem as being unnecessary for your new system?

I do not feel any of the features mentioned are unnecessary and they would all make a significant improvement to the current system.

Optometrist

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Presentation Feedback

What features do you see as being most important for the improvement of your system?

Our current System requires a ridiculous amount of paper, and not to mention the amount of space taken up with filing cabinets. I feel reducing the amount of paper and storage space required could vastly improve the System

Are there any features mentioned in this discussion that you would deem as being unnecessary for your new system?

I don't see how a feature to create payslips would be a significant advancement from our current system, therefore it wouldn't be a big deal if it were left out.

Customer

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Presentation Feedback

What features do you see as being most important for the improvement of your system?

An online booking System for appointments, would be a very useful feature for customers. It would save a lot of time and provide convenience.

or to sign up

Are there any features mentioned in this discussion that you would deem as being unnecessary for your new system?

Supplier

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Presentation Feedback

What features do you see as being most important for the improvement of your system?

A FEATURE WHERE ORDERS INPUT INTO THIS ~~UES~~ NEW SYSTEM COULD BE
AUTOMATICALLY SENT TO US WOULD BE A FANTASTIC IDEA. IT WOULD BE
CONVENIENT AND ENSURE THAT THE DETAILS INPUT TO THE SYSTEM MATCH
THE DETAILS OF THE ORDER MADE.

Are there any features mentioned in this discussion that you would deem as being unnecessary for your new system?

Feedback Analysis

The feedback collected from the stakeholders is included in the table below, along with my response to their suggestions or comments:

Question	Stakeholder	Proposal	Response
What features do you see as being most important for the improvement of your system?	Manager	I believe the security of the current system should be improved on drastically. This is important as the current system offers poor to no protection over the sensitive data we store about our customers.	Security measures will absolutely be implemented into the new system. A login screen could be created to ensure only staff members can access the system. Furthermore, access levels could be used to restrict staff members appropriately.
	Receptionist	I believe improving on the process for searching for customer records would make a massive change to the current system and would save myself and many others a considerable amount of time.	A feature to enable users to search for individual records could definitely be added to the new system.
	Optometrist	Our current system requires a ridiculous amount of paper, and not to mention the amount of space taken up with filing cabinets. I feel reducing the amount of paper and storage space required, could vastly improve the system.	The new system will be a digitised system; therefore, this problem will be eliminated completely. Paper will only be required to print any outputs if necessary.
	Customer	An online booking system for appointments or to sign-up would be a very useful feature for customers. It would save a lot of time and provide convenience.	Although I agree with this idea, I don't believe that I could implement a feature like this in the time limit set out by Lee Opticians, therefore this feature will not be added soon.

	Supplier	A feature where orders input into this new system could be automatically sent to us would be a fantastic idea. It would be convenient and ensure that the details input to the system match the details of the order made.	Similarly, to the idea mentioned by the customer, I do agree with this idea and I think it would be convenient. However, time restrictions are very limiting in what I can do with the new system. Perhaps this could be investigated in the future.
Are there any features mentioned in this discussion that you would deem as being unnecessary for your new system?	Manager	Although it would be very useful, if you were running out of time, I feel it would not make a massive difference if you were unable to complete the feature to create payslips.	I will take that into consideration when developing the system, especially if I am short for time.
	Receptionist	I do not feel any of the features mentioned are unnecessary and they would all make a significant improvement to the current system.	Thank you for your feedback.
	Optometrist	I don't see how a feature to create payslips would be a significant advancement from our current system, therefore it wouldn't be a big deal if it were left out.	Thank you, I will take that into consideration when developing the system.
	Customer	No feedback provided.	
	Supplier	No feedback provided.	

Evaluation of Discussion

Following the presentation given to the stakeholders and the feedback received, I feel comfortable proceeding to the investigation stage of the development of the system.

The manager was generally happy with the broad aims of the system; however, he expressed his concern over the security issues surrounding the storage of sensitive customer data in the current system. I have reassured to him that these issues will be resolved with the new system, using login screens and access levels for individual staff members.

Other issues expressed to me by the optometrist and the receptionist were the difficulty in searching for records and the amount of paper and storage space required. Searching for records takes a lot of time when using filing cabinets and is inefficient. A digitised system should improve the efficiency of searching for records, as it is quicker, and more than one staff member can view a record at one time. Furthermore, a digitised system eliminates the need for paper and filing cabinets, increasing the amount of storage space available and reducing costs associated with paper and storage.

In the presentation, I mentioned adding a feature to allow managers to create payslips for staff members, however, it was said to me by the manager and the optometrist following the presentation that it is not a necessary feature and could be removed if time could not permit it. I will take this into consideration when developing the system, and this bit of leeway should allow me to focus in more on the essential features, such as security, searching for records, outputs, etc.

In conclusion, the discussion with the stakeholders of the company was a great way of understanding the broad aims of the proposed solution, alongside the potential problems that may arise during the development. Feedback from each of the stakeholders enabled me to prioritise the features of the new system in terms of requirements, which should enable me to complete the system to the desired standard of management and the other stakeholders within the time limit provided.