Investigation

Computer Science NEA

21HeffernaJN42

Contents

Desk based research 2
Investigation Method 1 6
Investigation Method 2 10
Investigation Method 3 11
Document Collection 12
Processing 13
Limitations 14
Working specification 15
Justifications of the methods to be used. 15
Objectives and success criteria 16
Stakeholders 17

Joshua Heffernan
7865

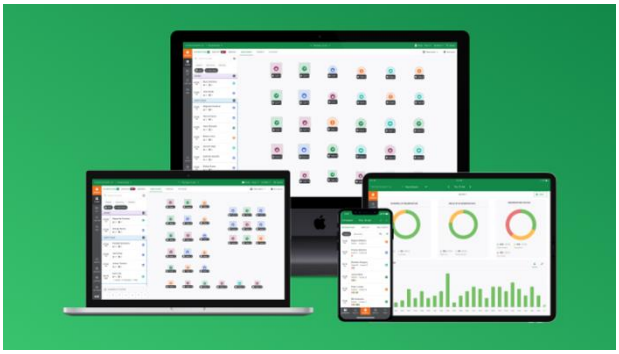
The College of Richard Collyer
Centre: 65131

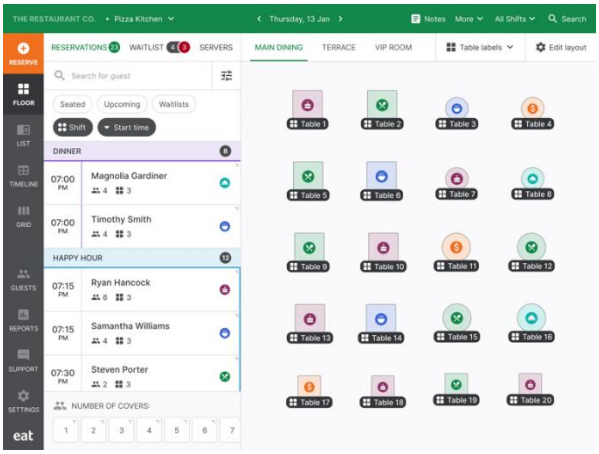
Desk based research

Look at different solutions to your problem, your research can look at similar systems

Look at, at least 3 examples of commercial solutions to your system. Analyse the features you like and don't like and outline what you will and wont be including in your final designs.

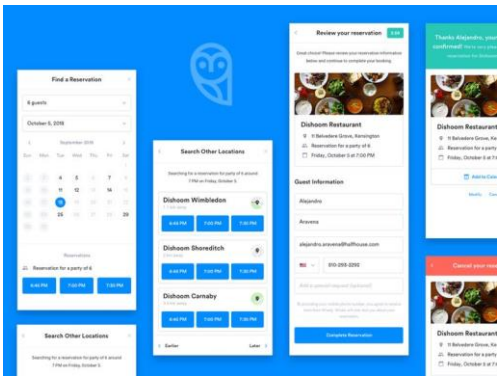
Eat App





Eat app is a restaurant reservation software that enables the user to make reservations to restaurants, from just the comfort of their home. This is done online, which is very useful for customers. In addition to this, the app also includes a software designed for the staff to ensure that all tables are reserved properly, etc.

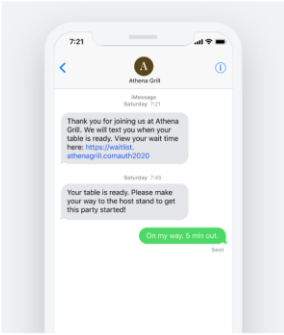
Another factor why Eat App is an excellent system is due to the simplistic design of its GUI. This allows the user to easily navigate throughout the software and know exactly how and where to achieve their goal. This is very important for a system as functionality is crucial as less training will be required if a system is well-built.



Wisely

Similarly to the Eat App, Wisely is a reservation booking software that allows the user to create reservations through the use of the internet.

However, uniquely, Wisely has a feature called the waitlist. Essentially, this allows to user to join the waitlist for a fully booked restaurant. As a result of this, if a reservation is cancelled, the first in the waitlist can take that reservation. I believe that this would be good to implement into my system as an extension, as I believe that it not crucial for the systems functionality, but only an add-on.



Additionally, there is also a feature in Wisely that sends the user a text message as confirmation for the reservation. I would like to implement this into my system, but instead of sending a text message, I would like an email confirmation to be sent instead.

Joshua Heffernan
7865

The College of Richard Collyer
Centre: 65131

OpenTable

OpenTable is both an online reservation system but also a restaurant management platform. If both the reservation system and management platform have been set up, the two will simultaneously link together through the cloud to synchronise your management experience.

The management platform offers a feature to view all of the upcoming reservations, showing the time, number of people and name of the customer. This is especially useful as its simplistic design allows the user to fully understand what is on the screen. I would like to implement this into my system.

In addition to this, the reservation process is easy, as every step is sequential. This means that the booking process follows the same steps every time, which makes it easier for the user. A feature of this process is that it displays the number of tables available for a certain time, which I think is excellent as it prevents overbooking.

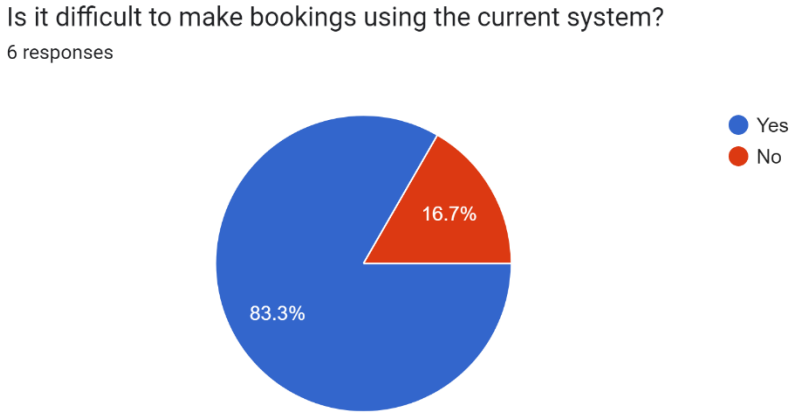
Overall, I would like to add the following features to my system:

- **Eat App**
  - **Simplistic GUI**
    Due to the user-friendly interface, staff will be able to seamlessly flow through the program. This is very important as it not only save a lot of time for the staff, but it will save them a stressful experience. In addition to this, a user-friendly UI allows the staff to easily train newer members and avoid the hassles of a complicated system.
  - **Table Layout**
    Another feature from Eat App that I would like to add is the display of the table layout. This is excellent as it will provide the staff with a graphical interpretation of the system that they can compare with in real life. This is much better than a text-based system as the staff can visualise what they are doing.

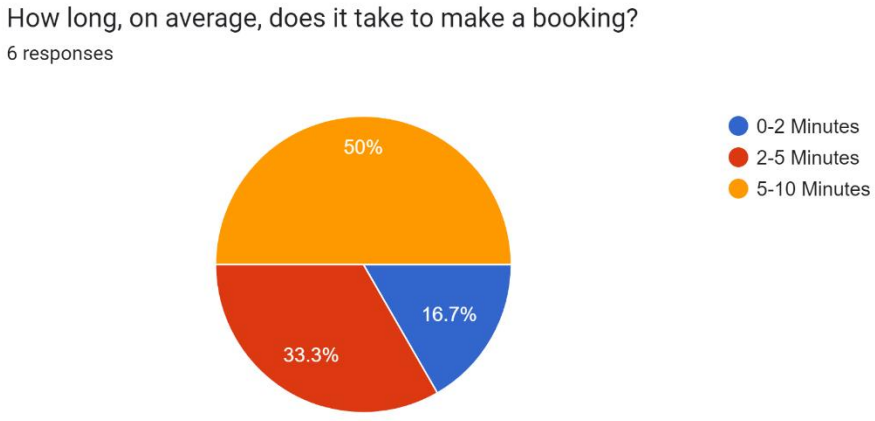
- **Wisely**
  - **Customer Confirmation**
    A feature in Wisely is that once a reservation has been made, a confirmation message will be sent to the customer via SMS. This is particularly good as not only does this remind the customer that they have a reservation, but it also ensures to the staff that they have inputted the correct contact details. I would like to include this into my system, but instead of a SMS message, it will be an email.
  - **Waitlist**
    As an extension, I would like to include the feature in Wisely called the waitlist. This essentially allows customers to join a waitlist for a certain time slot and if a cancellation were to occur, the top of the waitlist would get that spot.
- **Open Table**
  - **Calendar**
    A feature in Open Table is that it displays all the reservations for the day through the use of a calendar. You simply select a date, and the main details of the reservation will appear (e.g., Name, Time, Number of People). This will be very helpful to my system as the staff can easily view what reservations they have coming and prepare before-hand.
  - **Booking Process**
    Another feature in Open Table is the very accessible booking process. In this process, all the essential information is guaranteed to be inputted as it cannot proceed through the process without it. In addition to this, it is very easy to use as the user can switch between booking screens through a click of a button.

Investigation Method 1

In this questionnaire, I am investigating staff currently working at The Gatwick Bar & Grill. This questionnaire was sent to a total of 6 members, ranging from waiters/waitresses, food runners, to hosts and hostesses. I have included questions regarding the features on the current system in order to gain insight into what the current staff dislike and what they would like to have. Overall, this will help the development of the system to help cater to the needs of the staff.

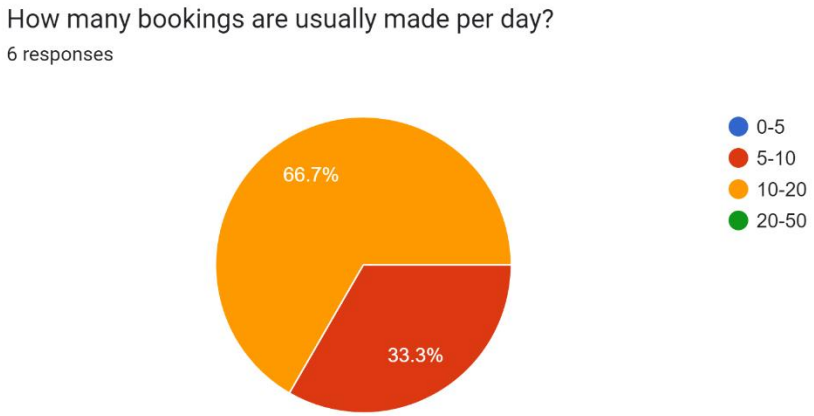


The response to this question demonstrates the difficulty the staff are facing with the current paper-based system, with 83.3% agreeing that the system is difficult to use. This could overall mean that a change in the system in use is due.

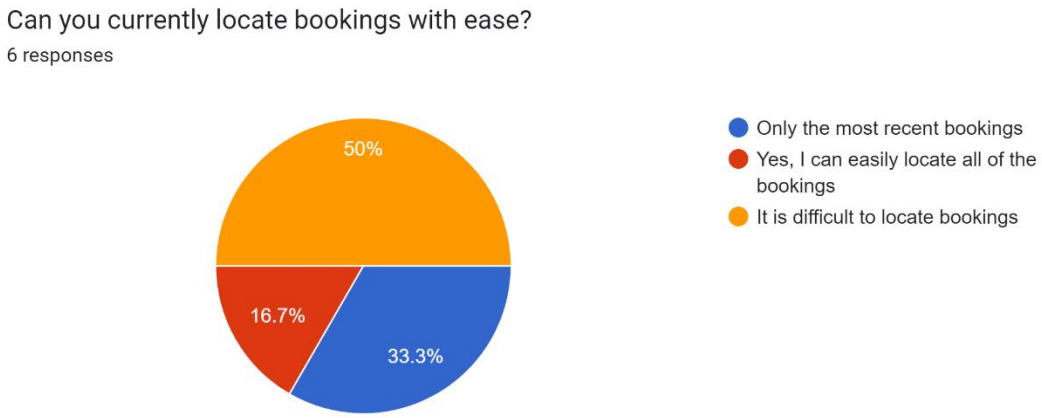


In addition to the previous question, this confirms the struggle the staff are having to experience. This emphasises that the current system is inefficient as the majority of answers voted that booking takes 5-10 minutes. Essentially, this is very bad for the business as once those

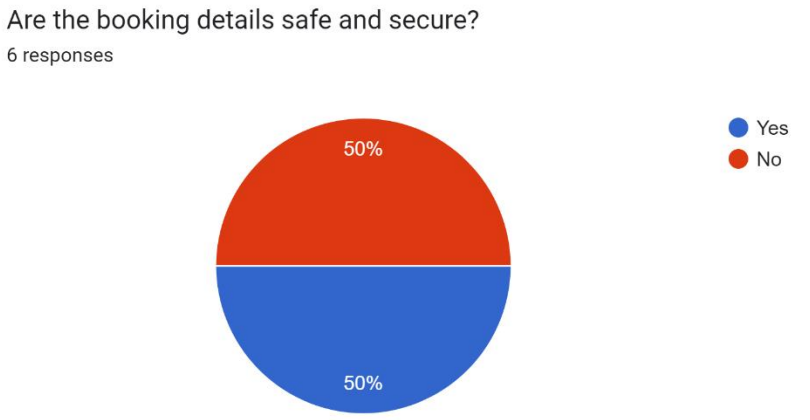
calls start reigning in during peak times, the staff will be overloaded with things to do and have no time to complete them.



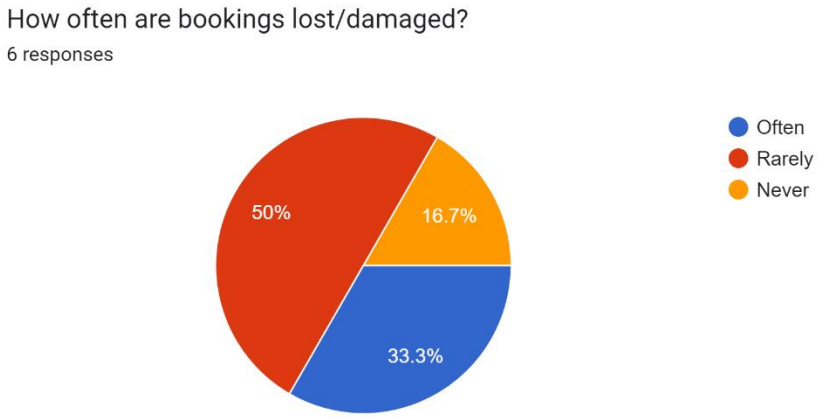
The response to this question shows that The Gatwick Bar & Grill experience a high demand of bookings per day which means that the booking process is clearly essential. Additionally, since the staff have stated that if takes 5-10 minutes to make a booking, this amount of volume may cause the staff to inefficiently use their shift making reservations. As a result of this, it is important to make changes to the current system.



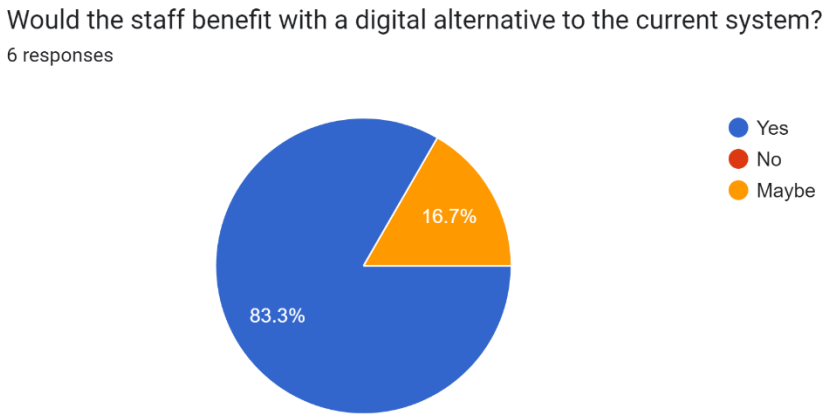
Furthermore, the response to this question demonstrates that the staff are also having difficulty locating the bookings. This could be because all of the reservations are stored in a folder which makes it difficult to search for a specific sheet of paper. This can be very problematic as they are experiencing a high demand of bookings, which only increases the disorganisation.



The response to this question is very difficult to analyse due to the 50/50 split. This shows that the bookings' security is a problem for some, but not all of the staff. However, it should still raise a concern that the security of sensitive information is not 100% guaranteed. This should be a priority as it would be bad for another customer to gain the sensitive information of another customer.



Also, this response shows that the damage/loss of documents are inevitable, which is unavoidable when using a paper-based system. Additionally, this could be a huge problem as one lost/destroyed booking may lead to the customer having a horrible experience, which should be avoided at all costs.



Finally, this final question fully confirms that the staff would like to have a digitalised version of the current system. This will be very beneficial to the restaurant, as not only will the efficiency of booking increase, but also the safety of documents.

In conclusion, the research above has let me come out with the following priorities when designing the system:

- **Efficiency** – As the staff are currently complaining about the 5-10 minute booking process, the efficiency of the new system will be crucial for success. This can be completed through the correct design of the UI's. For example, the UI should be very easy to use, and the steps of the booking process should be very clear. In addition to this, the booking process should only require the user to input the information that is necessary.
- **Security** – In addition to the time complaints of the booking process, the security of the reservations has also been a problem. In order to fix this problem, all of the reservations will be stored in a secure database. Also, in order to access this information, the user will have to input a passcode to use the system. This is particularly good as unauthorised users will not be able to use the system and access the reservation details.

Investigation Method 2

This could be your interview, questionnaire or observation record. Make sure you introduce who you are researching and which method it is.

Interview

In this interview, I will be interviewing the Owner/Manager of The Gatwick Bar & Grill. He has had an array of experience climbing his way, from being a waiter to a manager, to finally owning his own restaurant. This means that he will have the knowledge of running a successful, efficient system. During this interview, I will try and gain insight on the current system and improvements that could take place.

What do you think are your staff's opinions on the current system?

Although facing some challenges, our staff manage with the facilities given, and perform their tasks adequately. Our staff have also made some suggestions to help improve the system, such as having a backup in case reservations get lost.

How do the staff make bookings for the customers?

Once the staff get a hold of the customer, whether it be via phone call or in person, they take the reservation details and write them onto a sheet of paper. These details include the reservation date and time and contact details. The sheet of paper is then stored in a folder located inside the restaurant. This method is usually fine during quieter hours, but I have noticed that during peak hours it becomes more of a hassle.

What are the main drawbacks of the current system?

The main drawbacks are the security of the documents. This is important because if the documents were to be lost/damaged, there would be back-up due to everything being paper based. Another drawback is that the system lacks structure and organisation as the staff can store details on paper however they want.

How would staff cancel a booking?

If a customer were to inform staff that they would like to cancel a booking, the staff would then locate the sheet of paper stored in the folder, call the customer to inform them of the cancellation, then throw the paper away.

How would staff alter a booking?

Once a customer tells staff that they would change their reservation details, the staff would then find the sheet of paper and change the details written on the sheet.

In conclusion, the research above has let me come out with the following priorities when designing the system:

- **Adaptability –** As the current system is lacking a formal method of altering reservations, I believe the new system should have a feature to do this. This could be completed through a series of inputs and SQL queries. In addition to this, I would like to add a feature that can remove reservations once a cancellation has occurred.
- **Security –** In addition to the security stated in the previous investigation method, I would like to include confirmation to ensure that the staff are making the correct decision and not making a mistake. This will overall help the secure information stay correct over time.

Investigation Method 3

This could be your interview, questionnaire, or observation record. Make sure you introduce who you are researching and which method it is.

Observation

During this observation, I will be observing the staff at the Gatwick Bar & Grill. I will be mainly focusing on the waiters/waitresses. In particular, I will be observing how they utilise the current system. These observations will take place during both peak times and quiet times to get aa full grasp of the situation.

During peak times, my initial findings have discovered that there is a big problem with the storage of documents. This is because since the staff are all in a rush, they carelessly place the reservation sheet into the folder, without considering the reservation date, etc. This can cause a huge problem as searching for the documents will become even more difficult due to the lack of organisation.

However, during the quieter times, it was the opposite. Once the reservation details were written on the sheet of paper, they were tidily placed into the folder, with the reservations of the same day. Overall, this means that the lack of organisation present during peak times, is not by the choice of the staff, but they are forced to do that due to the inefficiency of the system. As a result of this, I believe that the restaurant will benefit from a fully digital system, that automatically stores and sorts the data.

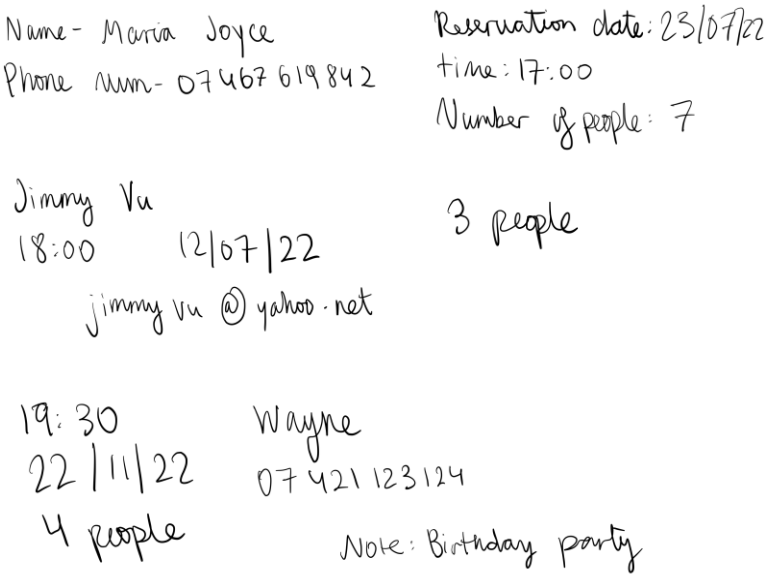
In conclusion, the research above has let me come out with the following priorities when designing the system:

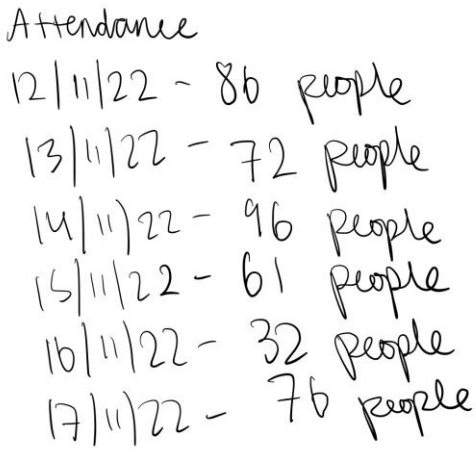
- **Organisation** – As the lack of organisation was present during busy times, I would like to add a feature in the system to automatically organise the data. This can be done through a sorting feature, with a numerous number of filters. In addition to this, the system will

allow the user to display all of the reservations for a certain day with a click of a button, instead of having to search through unorganised folder.

Document Collection

Scan in any documents you have collected. These should be showing the inputs, outputs or any processing.





The documents shown above include the sheets of paper that the reservation details are stored on. The lack of structure is clearly present as each note looks different and contains different fields to the others. For example, one note contains the customer's name, phone number and reservation details, while another contains the email address instead of a phone number. This needs to be corrected as it could evolve into a bigger problem into the future.

Additionally, there is also a note taken from the manager listing the attendance from 12/11/22 – 17/11/22. This note highlights the difficulty the manager faces as they must individually count every reservation for the day to get the daily attendance.

Processing

Fully analyse any processing carried out by the current system. This could be any calculations, sorting and searching.

As the system is fully paper based. Little to no processing is done as once the details are stored, they are placed into a folder of paper. The details written onto the sheet of paper include the Reservation date, reservation time, name of customer, and customer email or phone number.

Sorting

Once the staff have free time, they try and organise all of the bookings in order of date and booking times. This is done to make finding reservations easier as the upcoming customers will all be in a similar location. Overall, as the number of reservations is increasing daily, organisation will be more crucial than ever.

Searching

When searching for a reservation, if the folder has been recently organised, the staff will look for the section with the corresponding date of the booking and try and locate the document within that segment. However, if the folder hasn't been organised, the staff member will have to look through all of the documents individually, which may take a very long time.

Calculations

If the manager would like to know how many people have booked for a certain night, they would have to collect all the sheets of reservations for that certain day, then add up all the people assigned to each reservation. Not only is this method very time consuming, but it can also be prone to miscalculations, which may cause the restaurant to end up overbooking.

Limitations

Fully consider the limitations of the current system. What is wrong with it? You don't have to fix all the problems, but you do need to identify them.

- Lack of Validation
  - The current system used by The Gatwick Bar & Grill has many flaws. One of these flaws is the lack of data validation. This means that the data written onto the sheet of paper has no validation. As a result of this, the current system could be prone to invalid data being written down.

- System Security
  - Another flaw in the current system is the lack of security present in the storage system. This is very crucial as since all the data is stored in the same place, if one sheet of paper is damaged, its most likely that most of them got damaged. In addition to this, due to everything being on paper, the system lacks the security of having a backup, which can be problematic as there is no way to retrieve the data once lost.

- Inefficient
  - In addition to this, another flaw is the inefficient search times. This is because each reservation is found by searching through a large folder of documents, whereas a digital system will only require a quick click of a button. The inefficient search times are not only a problem for the staff, but also the customers.

- Environmental Damage
  - Another flaw, which may cause some political issues, is the large amounts of paper being used in order to store these reservations. Not only is this causing the company to buy excessive amounts of paper, but it also takes a toll on the environment.

Joshua Heffernan
7865
The College of Richard Collyer
Centre: 65131

Working specification

This should be a single paragraph outlining what you intend to do. This can be quite general with your overall objectives.

Throughout this project, my general objectives are to produce an efficient and robust reservation system that will replace the current system at The Gatwick Bar & Grill. I plan to store all of the data onto a database so that staff can easily search and locate the desired reservation. This will save a lot of time for both the staff and customers. Overall, this will make the searching experience better as the sorting possibilities are endless in a digital database. In addition to this, I plan on adding data validation onto the reservation details. As a result of this, invalid data will be avoided entirely, and the data inputted will be checked thoroughly.

Justifications of the methods to be used.

What language are you planning on using and why?

For this project, I plan on using the Python language. I am using Python, not only because it is the language, I am most comfortable with, but it allows great use of Object-Oriented Programming, as it follows in both the procedural and Object-Oriented paradigm.

What libraries will you be using and why?

I will be using the PyQt5 Library in this project. This library will help me fully utilize the features of PyQt such as using widgets properly, receiving signals from buttons, etc. and so much more.

In addition to this, I will also be using the date time library/module. This will help me use variables linked to time more efficiently. This is very crucial for my project as time is important in regard to reservations.

I also plan on using the Regular Expressions library. In my previous project, this module/library has worked wonders as it has helped me in validation. This module basically compares a string to an expression to determine if they are of the same format.

What SQL platform are you planning on using and why?

In this project, I plan on using the SQL driver in order to extract data from my database into my program. This will be essential for my project as it is reliant on the retrieval of data from the database. In particular, this driver will allow me to run queries from my python program and store the results in variables, etc.

Objectives and success criteria

Outline a list of objectives you have for your system; these will be further broken down in the design but should be take into consideration all your research and be more detailed than in the discussion.

As I thoroughly investigated the booking experience at the Gatwick Bar & Grill, I constantly saw the flaws of the current system. With these objectives and criteria, I plan on solving all of the problems present in the current system and bring forward a new and efficient digital system. Not only will this benefit the staff, but also the customers as there will be less waiting times, etc.

Criteria and Objectives:

- Allow the staff to log onto the system
  - **Success Criteria –** When the user enters the correct passcode, the system will grant the user access to the system.

- Introduce user access levels to different staff members
  - **Success Criteria –** Based on which account the user has logged into, the system will be able to perform certain actions, such as removing reservations, etc.

- Allow to search for a booking
  - **Success Criteria –** When the correct search terms have been inputted, the details of the reservation will be outputted in a table

- Allow to search for the bookings on a certain day
  - **Success Criteria –** When a date is selected, the details of the reservations booked on that day will be outputted

- Allow staff members to alter and delete bookings
  - **Success Criteria –** When a reservation is selected, the user can select an option to either alter or delete a booking. If the user selected alter, they can select the details they would like to replace and enter the new values.

- Navigate throughout the system through the use of buttons
  - **Success Criteria –** Add a taskbar at the top of the screen to easily navigate between pages. This will allow for efficient use of the system.

- The data validation is consistent throughout the system
  - **Success Criteria –** Throughout all the input fields, the system will make sure the data inputted in sensible and follows the rules set on the system.

- Encrypt sensitive data (such as passwords, phone numbers, etc.)

- **Success Criteria –** When storing data in the database, the system will encrypt data using a certain key. This key could be the ReservationID or the CustomerID

Stakeholders

As a large amount of the community will be affected by the new system, it is important to take their needs and wants into account.

Examples of these wants and needs for each section of the community include:

- **Kitchen Staff:**
  - Clearly labelled items – Once the waiter/waitress has ordered the food for the customers, this order will be sent to the kitchen for preparation. It is crucial that the chefs are able to read and interpret what each order is to avoid any mistakes.
  - Quick and efficient sending times – In order to avoid long waiting times for the customer, it is important that the system is able to handle high loads of orders and send them at an acceptable rate.
- **Waiter/Waitresses:**
  - Efficient UI system – As the system will be constantly in use, is it very important that the system is accessible and efficient. In order to complete this task, the UI must be user-friendly with all the buttons clearly labelled. In addition to this, the system must flow seamlessly between pages in order to avoid unwanted waiting times due to searching and thinking what to do next.
  - Adaptable – In addition to an efficient UI, an adaptable system is needed also. This is because, if a staff member were to select the incorrect item, they should be able to easily remove that item and select the correct item.
  - Ease of access – Alongside adaptability, the system's data should have an ease of access. This is crucial as staff members should easily be able to view all of the reservation details without any hassle. This is done through the use of clearly labelled output areas, in which all the details are clearly outputted.
- **Managers:**
  - Different Access Levels – In order to maintain authority in the restaurant, it is important to have different access levels in the system. This is because it will allow only certain user to be able to do certain things. For example, if a staff member were to try and change another member's password, it should decline as only the manager should be able to do this.
- **Customers:**
  - Efficient booking system – In order to avoid keeping the customer waiting when creating a reservation, an efficient booking system in needed. This can be done by creating a fluid booking process, where the staff member just has to input the details needed.
  - Clear data access – In order to avoid unwanted waiting times when seating a customer, the retrieval of reservation details should be easy and clear. This can be done through the use of a search bar and the use of easily highlighting what day the reservation is on.
  - Privacy – As the customers details are stored on the system, it is essential for the system to have security and privacy for these details. This is crucial for the system as the last thing the customer would want are their personal details being released to the public.