Task Brief

The software development company you work for has secured a new contract to develop a digital marketing solution for remote workers in the retail industry.

K1J LTD currently provides employees with:

- Access to a sales system
- Access to customer data
- Advises customers about different products

The client would like to develop a digital solution that will:

- Provide employees with remote access from anywhere
- Provide tracking of customer interactions
- Provide management with information for decision making processes.

The client has carried out research with existing customers, to identify features that could be incorporated into the digital solution and meet the customers needs, these are:

- Dashboard-based analytics
- Email tracking and integration with Outlook and Gmail.
- Instant messaging between employees and customers to up date orders and tracking
- Files and content sharing

My Proposal

Introduction

K1J LTD wants to create a digital solution that users such as customers and employees can access remotely from anywhere in the world that will allow employees to message customers about products and services. They also want the digital solution to provide tracking of customers interactions/messages. This digital solution will be both for customers and employees to use but they will be able to access different things for example the employees will be able to message multiple customers as they have a list of them and employees will also be able to look at their dashboard of analytics.

I will be proposing, designing and then programming a prototype digital solution to try meet the clients needs, meet some of the requirements that they want to have in the system such as a instant messaging system, and i will try to make two separate programs sharing the same database to try prove the "concept" of having the system be accessible with remote access from everywhere but obviously i won't be able to actually do this because of the time constraints and because i am using python with guizero. This prototype will have a back end and a front end, the back end database will all be planned out and designed and the front end which the user will use will be made using guizero.

System requirements

Minimum specifications for the Digital Solution:

- Processor 1 GHz
- RAM 1 GB
- HDD Space: 16 GB
- Display 800x600

Functional requirements:

- Customers can sign in
- Customers can create account if they don't have one
- Customers can look at products
- Customers can look at their messages with an employee
- Customers can message employers their decisions, if they want the product etc,
- Customers can look at their orders and see status of order for example tracking
- Employees can sign in
- Employees can look at a list of their customers
- Employees can message customers if they want products
- Employees can see status of orders, if they are being delivered or waiting for reply
- Employees can see analytics of sales and products

Non-functional requirements:

- Digital solution is easy to use for employees and customers
- Performance and response time fast
- Security in the system protecting customers and employees data
- Files and content sharing features
- Dark mode/light mode for readability
- Include accessibility features for wider amount of users

Legal requirements:

- GDPA and The Data Protection are both legal requirements, to make sure i am keeping all the data protected i am going to add a login/signup system so that the data is only accessible to those with the login
- Legally making sure digital use is accessible to all people
- Copyright for all images used, and a source link of where I got it
- Terms and conditions, cookies and privacy policy for new customers

Accessibility features:

- Colour contrast
- Being mindful of colour blindness and the partially sighted users
- Dark mode and a light mode
- Text to speech narrator
- Larger text and different readable font
- Images for people who can't read

The Business Context

How hardware and software are using in the retail industry

Software is used within the retail industry to sell more products to a larger target market online. Software allows people to sell products online to customers all over the world. This means it is easier to sell things and especially to businesses that buy certain products in bulk. Hardware is mainly used in retail when we are talking about check outs in stores, this is because they typically have hardware and software applications on the computers that are used so that customers can purchase the things they want.

Software is developing rapidly and there are more applications everyday that allow you to buy anything and everything on your computer or phone, making it completely accessible all over the world. For example, if I wanted to buy a specific product from America, I could do so using software such as amazon. Amazon is a perfect example of when software meets the retail industry as it allows for customers to find products and it sends it to them.
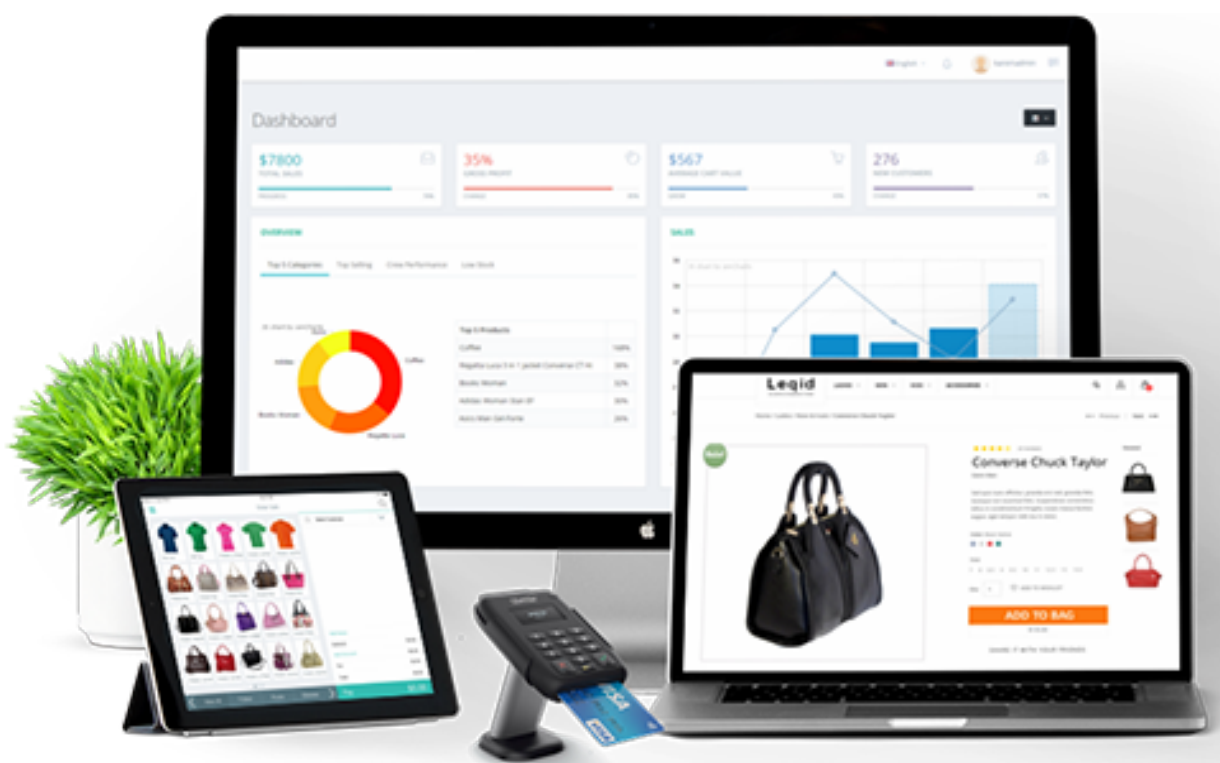
Newly emerging technology in the retail industry

"Try before you buy" is the new slogan as with the newest in emerging technology it makes it possible for you to use Augmented Reality to see what things look like in the real world. This allows customers to look at what they would be buying in the real world for example picking out an outfit. The idea is that you would be able to see what the product would look like using AR. IKEA has implemented this feature in their software and allows you to view furniture in your own house to see how it might look and if you want to buy it.

Another emerging technology that is being developed and improved upon everyday is autonomous delivery, which means in the future we may not need humans to deliver your products to you; it could all be done using a robot. Using drones some companies have been autonomously delivering products.

Why is retail software beneficial?

Retail software is beneficial because it means you can automate store tasks such as inventory management, pricing regulation, and billing. Making all these things possible through software would mean that customers get the best service possible and they can do it all just on their own on their phone or computer.

Real-time inventory management as if a customer has purchased a hoodie from an app then the software allows for this to be removed from the inventory as it has now been purchased and is reserved for the customer and allows customers to see if certain items are out of stock in real time rather than taking a trip to the store just for the item you're looking for to be out of stock.

How different digital solutions can meet different needs

Different digital solutions can meet different needs as you could have a digital solution which has the main goal of delivering the product to the customers, a digital solution that puts you in contact with the customers who want to buy the product but these both are used and needed but they meet different needs of the customer. A company like amazon provides multiple solutions to meet the needs of every customer. Some digital solutions however may only allow you to find the product you want and then use a different solution for payment etc.

Some customer needs are different as they change all the time for example as a customer i may want a product, then i need a system or solution to find exactly what i want, and then when i have found what i want to order my needs change as i now i want it delivered or available to pick up, so having a solution that meets as many needs of the customer as possible will be the best. So when I start designing my solution I will try to meet as many needs of the customer as possible.

The retail industry guidelines and regulations

As the retail industry is big because of the range of products from things like clothing, shoes, food, furniture and much more the industry has many regulations and guidelines they have to follow. An example of this is that they have to keep computerized records of individual customers' personal information and use things like CCTV. Following the law in general not selling 18+ products to people without id to prove their age. This is no different for a software retail application as they still will have to follow all the guidelines apart from things that are obviously not able to do like CCTV as that would be something only in-stores.

Development of technology in retail industry

Retail is all mainly moving to software based applications because we are becoming more up to date and also because of pandemics across the world stopping people from even leaving their houses but making it still accessible for them to purchase products. The only stores in retail that aren't really moving to a software based application to sell their products are smaller companies.

Existing customers and potential customers

The existing customers with the prototype i am hoping to make should find it easier to access and buy products from this digital solution and employees will be able to ask customers if they want products and have email tracking to show the whole sale process, This doesn't mean that there will be less potential customers either, if anything it means there is more chance of getting potential customers as they could just sign up to the system and look at products whenever they want.

User Acceptance Criteria

The users, employees or customers, tick list criteria for successful usable solution.

- The customer can log in successfully ☐
- The employee can log in successfully ☐
- The new customer can create an account successfully ☐
- The customer can look at products ☐
- The employee can look at products ☐
- The employee can look at dashboard of analytics ☐
- The employee can interact with customers trying to sell products ☐
- The customer can interact with employees with messaging ☐
- The customer or employee can see if a message is unread or read ☐

Decomposition of Risks

Identification of different risks

The risks that I will have to consider and try to mitigate are unnecessary code or inefficient code as this can mean I have some code that doesn't need to be implemented and can be removed to make the solution faster to the user and therefore easier for the user. Another risk that i will have to consider is validation of people signing up to the system as they will need to have a certain amount of characters in their username or password things like that.

The risks that I think will be good to implement could be encrypting passwords for the database as then if the database gets breached and seen by someone who shouldn't be looking at it, this won't matter as it will just be random text encrypted. The security of the system is where most of my risks will have to be mitigated but this means it is hard to crack. Risks in my testing for example testing extremes to see if i can get an error to fix.

Mitigation of risks

The mitigation of most security risks will be using validation and error handling techniques to make sure that if the user has entered something that doesn't validate it will give an error message that is informative and explains how the user should choose to create their username for example "the username needs to be between 3-18 characters long".

The other way to mitigate getting rid of useless code that is slowing the system down as it is not doing anything but is still having to go through the compiler is by using an inbuilt feature in visual studio "pylint" this shows you any code you are not using and any variables that aren't being used at all. Mitigating these risks means the code is less buggy and works better for the user. This means that I can help with the requirements to make the system easy or easier to use.

A way I am going to make sure the validations work is by stress testing my solution and seeing what happens, fixing any problems that arise and making sure that it will then provide detailed error messages that explain what was wrong and how it should be done.

Decomposition of my proposed solution
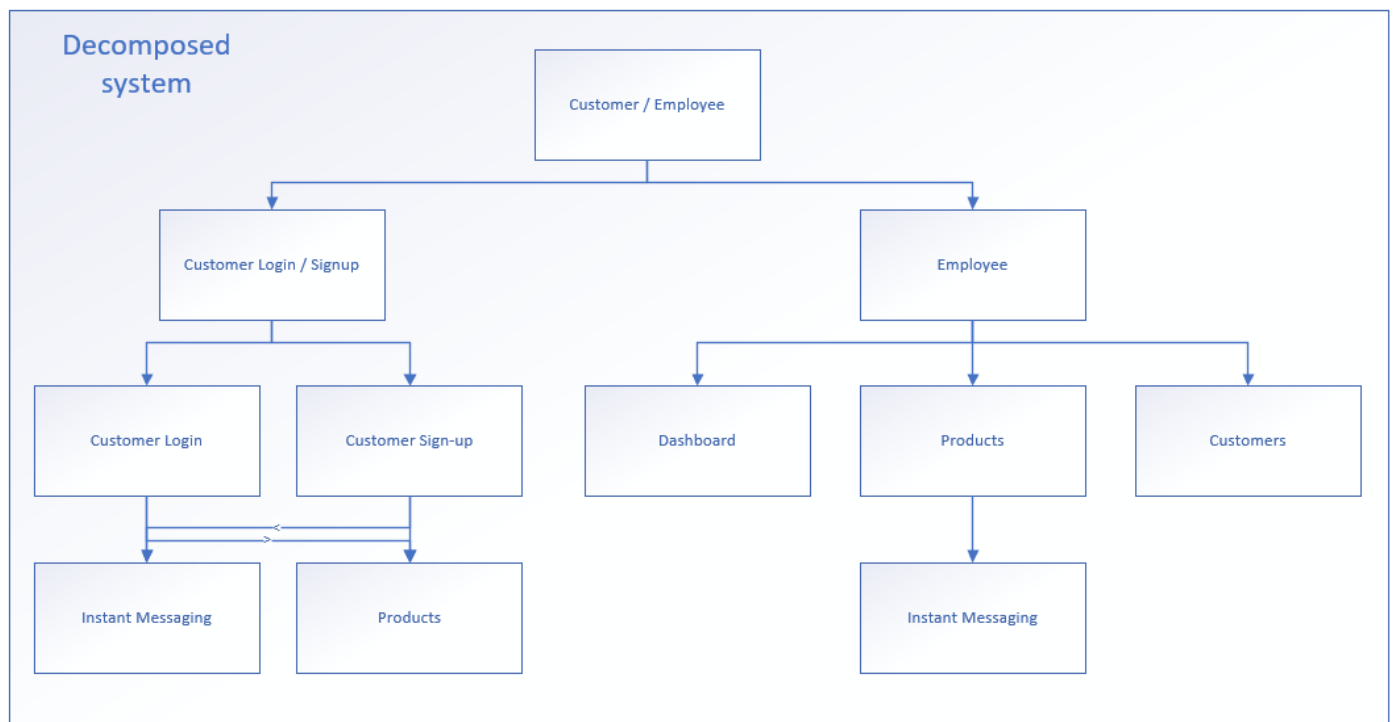
This shows how I have thought about breaking the pages and navigation through the system down. I have made it so at the start of the system the user will choose to if they are employee or customer and etc, they both have instant messaging in order to message each other and both can see products so that they are sharing files, employees have access to a dashboard with analytics and can also see their customers and choose who they want to message.

Decomposing my solution down to windows that the user will be able to navigate through, having different things accessible to different users as the customers shouldn't and wouldn't be able to access the dashboard of analytics or message other customers. They are separate users and therefore have access to different features of the project, but also share some aspects such as viewing the products.

FURPS

Functionality

Making sure the system functions as I want and does what I want it to do. The functionality of this proposed prototype should be messaging seamlessly between customers and employees and also making sure that customers and employees can see products and that the employees can access dashboard analytics to see what's trending, what's selling fast, amount of sales etc.

Usability

Usability is how well the user can interact with the system and how well they can use it. If you have good usability in your system then more users may want to use the system as they wont have problems with it but if your system isn't very user friendly then it could put users off and make them not want to use it because they can't easily. The way I am going to try to allow for my system to have good usability is I want to make the navigation between pages have good response time.

Reliability

Having a reliable system that doesn't break or bug out means that more people will want to use it. One way to make the system easy to use is by adding security features as it means that users feel that their data is protected. If your system doesn't have good security and it gets breached and customer data gets breached it means that people don't rely on your system and therefore don't want to use it.

Performance

The performance of the system is what makes it be used by more people, as if it has good performance and is easy, fast to use it means more people will want to use it. The best way for me to make my solution better with performance is to try using pylint to get rid of any code wasting time and improve overall performance. Performance of the instant messaging feature I want to add should be fast and easy for the user. I will try to make the performance fast and reliable.

Supportability

Trying to support the user with small things makes it easier for them to use the system. An example of where I can provide better performance and support is if they enter the username too short, giving them an informative error message to support them and make sure that they know what to do to make it work. The supportability also includes making sure that the system can be maintained and easier to fix if there is a problem. Supporting the developer that might come after me and be looking at my code, a way I can support them in understanding the solution would be providing comments and suitable descriptive variable names.

Key performance indicators

What are KPIs

Key performance indicators are the indicators of signs and trends that show what can make the performance of a business better and improve. This includes goals for the growth of a company over a period of time. For example if a company was selling lots of products a KPI for the company would be how many products sold in the last month and the goal KPI would be if last month we sold 10 iphones next month the goal is to sell 14 iphones. This is just an example but in larger companies KPIs are used alot to indicate how the company is performing and how it could be improved.

My KPI goals for solution

- Customers can create account if they don't have one in under 4 minutes
- 50% more customers by next month
- Customers or employees can log in within 3 minutes
- Sell 10 products by next week
- Message 4 customers about products by end of week
- Customers can talk to employees and get replies fast in under 10 minutes
- Employees can look at dashboard analytics in under 4 minutes

My proposed digital solution

My design for solution

My idea for the digital solution was to have the user choose if they want to login as a customer or employee, then once they have logged in with the right details or created an account my idea was to have products for sale be on the homepage as soon as you log in then have navigation to other windows so that employees can look at the "Dashboard", "Customers" and "Instant Messaging" and so that customers can also access "Instant Messaging".

I was going to also have the products be gaming consoles such as PS3, 4, 5 and xboxs, nintendo switches and maybe more tech. This is something that I will have to research more on to get to know how it will be best to sell these to customers but I have an idea in mind for the products page so far.

Meeting the requirements for the solution

I will be basing my solution around the requirements and needs of the client as it is being made for them, this means I am adding the feature of instant messaging as it is what they want the system to do. However, for some of the non-functional requirements I am still going to add features for the solution to be accessible for more people by adding a dark and light mode for users with eyesight problems. Another requirement is that they want there to be management information for employees. I thought the best way to do this would be to make a dashboard with all the information of sales and customers. This means that the employee could see what trends are happening and what's selling out the most, for example if 10 people have bought PS5 but only 2 have bought PS3 in the last month then this would tell the employee that they might want to suggest PS5s for sale as they are being sold more.
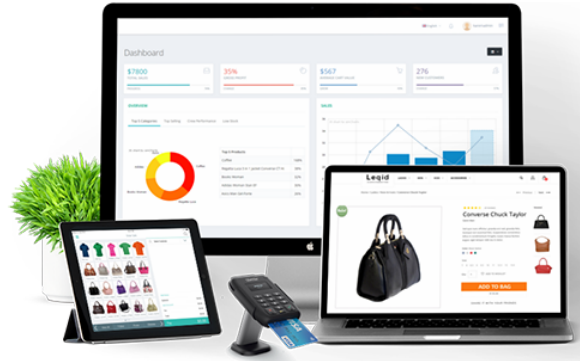
Allowing for growth of customers

With the customer's login I will add a signup for customers that are new which means they will be able to buy products and employees will also be able to message new customers about products too. Allowing for growth of customers is good because more customers means more business and more sales. Giving good customer service also means customers may recommend your system to someone else giving you an expansion in growth of customers.

Copyright of Images

Website	Image
https://mobidev.biz/blog/7-technology-trends-to-change-retail-industry	

https://hikeup.com/retail-software/	
https://www.aihr.com/blog/human-resources-key-performance-indicators-hr-kpis/	