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COURSE : COMP 3603 Human-Computer interaction

ASSIGNMENT 1

PART A

1. **Restaurant Automation** – An application which will be used to fully automate daily operations and customer experience of a restaurant.
2. **Biometric ATM** – the incorporation of biometrics into the security protocols of an ATM hence reducing the problem of skimming.
3. **Digital Wallet** – A mobile application intended to fully replace the need for a wallet, including digital money, credit cards, crypto currencies, business cards and more.

PART B

Restaurant Automation

I choose restaurant automation over its contending ideas, firstly, because it was the most practical idea. It targets a problem that everyone who has ever eaten at a restaurant can relate to. The automation solution to the problem is relatively simple and effective. The Biometric ATM solution on the other hand can motivate perpetrators to commit more violent crimes to obtain the biometric access. As for the digital wallet, while it is simple and practical, it may not receive a high level of acceptance as it requires clients to put extreme trust in the applications security. Additionally, while the digital wallet gives security, it can never replace the practically of a physical wallet.

Lastly, I favour the Restaurant automation application since I am familiar with the technologies currently used in restaurants and which can be used to increase efficiency compared to that used in ATMs and banking. The technology used in restaurants has been unchanged for years and as such I would like to embark on this project to develop innovative ways of making restaurants more efficient with technology.

Yogin Suthar. (2003.) Restaurant automation system retrieved from https://patents.google.com/patent/US20040158494A1/en

The above link is a patent for a server client software with the same goals as proposed earlier. The software bares striking similarity to my intended software but is a bit more complex and extensive.

Noone, B. M., & Coulter, R. C. (2012). Applying modern robotics technologies to demand prediction and production management in the quick-service restaurant sector. Cornell Hospitality Quarterly retrieved from http://journals.sagepub.com/doi/abs/10.1177/1938965511434112

The above link shows research done on restaurant automation, it is less similar to my intended design as it employs the use of robotics in delivering the food to the customer, however still uses software to automate restaurant processes.

The goal of this project is to design a restaurant automation application which will automate some everyday restaurant tasks and services. It tackles the problems of poor customer service and long wait times at restaurants. The app intends to make the restaurant experience more efficient and enjoyable for both the customer and employees of the restaurant. The app also intends to reduce the need for a large floor staff and hence saves the restaurant owner money. The app will automate reservations, seating, ordering and even paying using simple user-friendly interfaces.

SCENARIO 1

A customer enters a restaurant but must then wait to be seated. After being seated, the customer must wait for a waiter to bring them menus and the waiter must wait for their order. After the order is placed the customer must wait for the food to be made and the waitress to bring it to their table. By the time the food gets to the customer, he has waited upward of 45 minutes. The restaurant automation app would have automated the seating and ordering aspects hence significantly reducing customer wait time.

SCENARIO 2

A restaurant manager, in the middle of the restaurant's peak hours discovers that he is out of a particular ingredient and hence cannot meet customer demands. A restaurant which uses my application will not have to worry about such a problem as the app will keep track of stock and notify the manager at various intervals. The amount restocked will be loaded into the app and it will compute the amount used based on dishes ordered by customers.

SCENARIO 3

A restaurant owner cannot afford to hire an accountant and is too busy to sort through his workers salaries on his own. The restaurant owner purchases my app which has an accounting system linked to the bank which wires the money directly to the employees' accounts.

PART C

First, a user must download and install the application on their mobile device and create an account. Then, using the client-side application, the customer can select the restaurant they wish to dine at. After checking reviews and available dishes (menu) of the restaurant on the app, the customer can make a reservation by selecting a desired table and a QR code is generated which is associated with the reservation details and customer account. This code is used to identify the customer when they arrive at the restaurant, confirm their seat and for confirming payment. Reservations can be made a maximum of one week in advance and customers have a grace period of 30 minutes after the reservation time to claim their seats. Both times are adjustable on the restaurant's side of the application. After the grace period has expired, the seats will be marked as available on the system. In order to leave after eating, the customer will have to get their code scanned by an employee at the door with a device owned by the restaurant, with the restaurant side of the application installed. The restaurant will have servers available upon request for those who prefer the human interaction, are not computer literate or do not possess a mobile device with the app.

Once the customer has confirmed their seat at the restaurant by getting their QR code scanned by an employee at the door, the app on the customer's device will give the option to begin ordering. A detailed menu will be displayed with relevant information for customers with dietary restrictions (for example: diabetics, vegans, food allergies). Customers will not be allowed to amend their orders after the chef has started preparing the meal. After a customer leaves, a staff member will clear the table and update the restaurant's information on the application via their staff account. The customer may write their own review, make recommendations on certain dishes and rate dishes on the app. Since each customer will have their own account, writing a review or rating an item is only allowed if the user ordered said item.

Management- The restaurant version of the application will also automate certain management tasks. The application must be downloaded and installed to any devices used by the restaurant. The restaurant has a restaurant manager account. The restaurant manager can create a new restaurant for listing on the app and use this account to approve other members as employees of his or her restaurant. Employees can use the app with their employee account to receive and manage reservations from customers, receive orders from confirmed customers, confirm payment before customers exit the premises and update the restaurants information displayed to customers. Employee accounts are also broken down into several categories including chef or cook and waiter or waitress accounts. If the restaurant's policy allows, employees can use their own devices for accessing the app which prevents the restaurant from having to purchase new devices.