Project Proposal: Restaurant Automation

Food·E·Z (**https://sites.google.com/site/sefoodez/home**)

Group #3

Leader: Omar El Warraky

Julian Esteban

Jonathan Du

Sujay Bandarpalle

Paolo Umali

Kanav Tahilramani

Team Profile:

Individual Qualifications and Strengths:

Within our highly qualified and versatile team, each member has individual qualifications and strengths that he will bring during the course of the project. As an effective speaker and a well organized leader, **Jonathan** will deliver presentations with enthusiasm and effectively develop organizational capabilities and integrations of key objectives for the group. Striving for perfection and analyzing all aspects of a challenge, **Julian** excels in learning new programming skills and finding areas that can be improved with his innovative solutions. With a strong background and passion in programming, **Sujay** excels in developing creative solutions in application design. As an ambitious leader and a dynamic public speaker, **Omar** is judicious in carrying out assignments without direction and demonstrates a strong ability to lead and direct other members. Bringing years of determined programming experience, **Kanav** is advanced proficient in establishing and applying intuitive and efficient models for problem solving. **Paolo** is a smart individual with the ability to quickly pick up necessary technical and programming functions.

Proposed Project Description:

With the restaurant automation application, users can increase the efficiency of daily restaurant operations with a central system to track all aspects of restaurant management, from individual customer transactions to observing profit, costs, and revenue. In addition, users can facilitate daily restaurant operations by quickly seating guests, placing orders to be sent to the chefs, tracking food times, and allowing guests to pay through the application.

Typical Customers:

Our customers are not individual restaurant goers, at the present, our customers are our clients who are restaurants that are using our application to increase the efficiency of their operations. Also be aware that we will have to cater the app to each individual client, since each has a unique menu and pricing scheme etc. Our clients could be anyone from fast food restaurants that serve to tables, also in popular places such as NYC shake-shack, to reduce traffic from the usual hour long lines, they set up a small table outside of the actual ordering window, our app could facilitate a waiter walking through the line taking orders on their machine and giving out order numbers for pick up at the window as well as large chain restaurants and full fledged high-end michelin star restaurants.

Customer Statement of Requirements:

Problem: Down Time Associated with Checking in on the Reservation List and Order Preparation Progress

In the restaurant industry, time is money. The amount of time it takes to serve customers determines the amount of groups served each day, which will determine the revenue generated from sales and tips. In order to cut down on time, we have come up with a few features that will remove the need for waiters to have to manually check in on reservation list at the front entrance as well as the kitchen. In addition, by walking around the restaurant more, a waiter exposes themselves to opportunities to be asked to for service from other customers, which will increase the amount of time between when orders are ready and when they are delivered, which increases the time that the table is occupied by the current party.

In order to solve this we came up with several features. This includes table availability schedule, the order progress queue, and the chef hotline.

Table Availability Schedule:

When customers walk in they are greeted by a tablet, in which they are asked to input their name and party size. This information is then sent back to our database, which utilizes an algorithm that assigns a table to each customer. This algorithm first uses party size to prioritize customers for each table. It does this by checking if any tables are available that can hold the specified party size. If no table is available, then the next largest party is prioritized, and so on.

When the party size prioritization part of the algorithm has ended, the next part consists of prioritizing by time. Here the algorithm checks through the available tables and if several party sizes match the specifications of an available table, then the party who arrived first is given the priority of being seated at the table. The algorithm then proceeds to do this for the rest of the customers waiting to be seated as tables become available/unavailable.

At the end of our algorithm, the tablet at the front of the restaurant displays the name of the customer and shows a diagram of the restaurant with the table they are assigned highlighted. The customer is prompted to confirm that they have received the notification and will proceed to the table. This information is also updated for the waiters so that they know if one of their tables has

recently been taken or if no confirmation has been made by the customer for a while, then to go to the front of the restaurant and manually look for the customer.

Order Progress Queue:

The order progress queue will be a way for the waiters and chefs to have a synchronized electronic list of order progress and availability. It will consist of a database that stores meals. When a waiter places an order for a group, all of the meals will be put on the end of the queue in the database. Both the chef and the waiter can see the queue. The chef will be able to click on an meal, and have the option to select one of three statuses: stopped, in progress, or complete. The queue will also show how long it has been since the meal was started, so the waiter can estimate the time to completion. When the chef sets a meal's status to complete, it will send an alert to the waiter that placed the meal order so they know it is ready for pick-up.

Our queue will also be able to list orders for take-out, and will designate which meals are to be placed at the take-out window or the waiter pick-up window upon completion. Priority for which meal is to be prepped is assessed by the order in which they are placed, regardless of whether the meal is for take-out or dine-in.

Problem: Wasted time trying to handle customers' transactions

Many restaurant dwellers arrive at a restaurant with an empty stomach, ready to be seated and ready to devour anything in their path. Once seated, customers begin their watches, timing customer service and the time it takes for food to come out. As a restaurant employee, it is our job to ensure high-end customer service and minimize the time taken for food reach the customer. The problem at hand is time: time it takes for servers to take orders, place orders to the chefs, and bring out the food. With so much time wasted, customers will be seated longer and arriving guests will have to wait longer to be seated. To maximize profit and keep customers wanting to come back, we have come up with solutions that will speed up the guest visit.

Create a functional menu to effectively maximize profit and raise customer satisfaction

At restaurants like Applebee's or TGI Fridays, hosts/ess seat guests and hand each guest a menu. Once they have decided, servers take their orders and walk to the kitchen to give chefs the orders. Once orders are completed, servers come to the "ready area" and look for the orders to bring to hungry customers. While this is extremely time consuming, our restaurant automation application

can significantly speed up the entire process and maximize customer satisfaction and restaurant profit.

With our restaurant automation application, we have a functional menu that servers can reference and will be able to place orders that will be sent directly to the chefs without having to walk to the kitchen to hand them orders. Having this functional menu will significantly speed up the time it takes for orders to travel from customer to server to chef. Once orders are completed by chefs, servers will be notified via our restaurant automation application. Having been notified by the chef that orders are completed, servers will not waste time checking up on orders and can designate more time tending to customers; tending to customer needs instead of constantly checking if an order is complete will raise customer satisfaction. All in all, speeding up the process at which customers place orders and receive food will significantly reduce the time customers occupy a table; thus, allowing more guests to be seated and maximizing profit.

Problem: Dissatisfaction and unhappiness with regards to the wait time for paying the bill

Imagine that you and a group of friends are customers at a restaurant and you are all ready to pay the bill. You call over the server, but the server is waiting on another table. Five minutes pass by. The server finally comes and you tell the server that you are ready to pay. Another five minutes pass by where the server has to calculate the total cost of your meal. He hands you the check, but you wanted the bill split amongst you and the rest of your group. Another five minutes pass where the server has to recalculate the bill and split amongst all of you. Finally, you decide to pay with a credit card and another five minutes pass where he has to run to the swipe machine and process the bill. The overall process for paying the bill took twenty minutes. In that twenty minutes, another group of customers could have been seated, placed their orders, and possibly begun eating. Whether its splitting the bill or having multiple frustrating interactions with your server, paying the bill has always been a long and tiring process at restaurants.

With our restaurant automation application, we can significantly speed up the process of paying the bill. Once a server has placed an order, the order automatically gets placed in the corresponding table's bill. Furthermore, the application will keep track of what orders correspond to which guest within each table. Having the order kept in our database, we will eliminate the use of pencil and paper and the possibility of miscalculations on the bill (since our application will conduct all the arithmetic from the bill). If the server requests to split the bill, our application will prompt the server with the question "how many people would you like to split the bill amongst?". All of these features

within the bill payment interface will eliminate the time it takes for servers to calculate the bill and significantly reduce the time needed for customers to pay the bill.

With less time required to handle transactions, more time can be allocated to seating and assisting new guests. Not only will we maximize profit, but speeding up the process of paying means customers will leave the restaurant with a smile and wanting to come back.

Problem of managing Profit/Loss statements efficiently and quickly:

Nowadays finding a complete system that deals with everything is becoming difficult. Managers want to see their profits and losses whenever they need it on a monthly basis to make sure everything is going well. Making a P/L calculator on an application will prove to be an essential use to the Manager as he will easily keep progress of what is occurring in terms of finance for his store wherever he is. Managers have many tedious things they must attend to so putting all finance matters linked directly with customer checks, payrolls and store expenses on the spot will allow the manager to see a budget and control when he needs to take action or make a change on a day to day basis. This also will allow managers to view different profit margins for each store in the future to be able to grasp a general idea of each store's performance.

Problem of Menu addition and Availability:

Having a part of this application to allow the manager to simply add and remove products off the menu will be very convenient. Managers won't need to buy new menus or update customer menus (takeaway), as for everything will be online and ready to go. We'd like the manager to have the ability to add an item or remove it with ease as well as keep track of the items availability in the kitchen and view how many orders are put on a particular item. Being able to access this from any place including his home or car allows the manager a lot of ease to carry out other tedious manners he needs to attend. Such as meetings or looking at other stores and so on. It also allows in the future managers to contact different stores in the chain and see the differences of Menu formats.

Employee Portal

Managers find trouble seeing employees checking in and out and watching their work schedules and seeing when and where they log in. Checking activity on spot wherever the manager is. Thus we need an Employee Portal.

The employee portal works as a universal scheduling manager and tool for workers at the restaurant. It will be accessible in two ways. Employees can login to the application on a tablet and view a calendar which shows all available shifts as well as those which they are signed up for. A similar interface will be available through a website as an online web portal.
This functionality enables several options for the staff. It allows them to sign up for future shifts, open a previously taken shift for coverage, and let go of a shift with a provided reason. This is used as opposed to manually taking note of all such information; it automates the documentation and shift management in the backend with minimal input required from employees.

In addition, there is possibility for expansion in that that employees can use either the tablet application or the website to clock their hours. The purpose behind this feature is to assist in automating the weekly paycheck distribution as it stores details pertinent to those calculations, i.e hours worked, sick leave, etc. This information can be used by managers to minimize the amount of time spent on related tasks per pay cycle.

The scheduler works to keep an organized log of work hours as opposed to keeping track of the shifts by hand, and the purpose behind the clock in/out is to reduce routine tasks and automate menial work that is required frequently. Lastly, the whole portal has added convenience of being accessible in two ways.

Functional Features:

With the restaurant automation application, users are granted access to the following features:
- Managers interface - are given special privileges (can edit menu, change layout, hire/fire, track inventory)
- Busboys interface (can see dirty tables that require cleaning)
- Chef interface - (tracks progression of orders)
- Waiter/ Waitress interface
- Tip calculator
- Special login paths (waiter, take-out customer, manager, etc)
- Place Reservations
- Employee schedule (view, swap shifts, cancel shifts)

Plan of Work and Product Ownership

Within our group of 6 members, we have split into 3 pairs to maximize productivity. The pairs are as follow: Jonathan and Paolo, Julian and Sujay, and Omar and Kanav. Each pair will have specific tasks during the next few weeks that they will contribute. The main objective for the next few weeks will be to create the basis of the restaurant automation application before we branch off into sub-features using Windows.

Jonathan and Paolo: Our plan to accomplish in the next few weeks is to create a layout of the restaurant with tables. Within the layout, we want to add different functionalities which include:
• Create a functional menu for waiters/waitresses to use
• Create interface for customers' bill (http://pay.opentable.com/)
• Average Tip calculator for Managers to Gauge Waiter Service/Attractiveness
• Display of common tip denominations in the billing screen in order for a waiter to gauge the satisfaction of each party

Julian and Sujay: Our plan to fulfill is to create a login screen that will have different functionalities for different users.
• Speak to the Chef
• Table Availability and Wait Time
• Chef mode = The chef will be able to see the database listing the meals in the order of which they were placed. Upon clicking the meal, it will open up and show the individual items of the meal, along with three buttons that are Stopped, In Progress, and Complete. Shows time since start, estimated time to completion (can go negative which indicates a slower than usual prep time, and a likelihood of the meal finishing). The selection of these buttons will update the meal database queue for the waiter/waitress as well, so that they can see which meals are ready for pickup.

Omar and Kanav:
• Our plan to accomplish in the next few weeks is to design and create a menu that allows waiters/waitresses to place orders that can be directed to chefs.
• Online employee portal which handles scheduling tasks (add, remove w/ reason, swap, etc)
• Profit/Loss tracking with database

February Dates	1 -> 3	4 -> 6	7 -> 9	10 -> 12	13 -> 16	17 -> 20	21 -> 25	25 -> 28
Customer Statement of REQ	▓	▓						
System REQ		▓	▓					
Functional REQ SPECS				▓	▓			
UI Specs					▓			
Domain of Analysis						▓	▓	

The following plan will be equally split between members working out their individual features in each section of the report.