GravyXpress:

A Restaurant Management Software

Group Number: #4

(Temporary Picture)

Team Members

Name	Email
Yehuda Cohen	yehuda.cohen@rutgers.edu
Shivani Sethi	shivani.sethi@rutgers.edu
Abdul Rattu	r.abdulsami@gmail.com
Amizan Jaleel	najm555@gmail.com
Nabil Ali	alinabil07@gmail.com
Rohit Lakshmanatirthakatte	rohit.lakshmana@rutgers.edu

Instructor: Prof. Ivan Marsic

Project URL: http://gravyxpress.appspot.com/

Revision History:

Version No.	Date of Revision
1	02/12/2013
2	02/18/2013
3	02/23/2013

Individual Contributions:

Abdul:

- I have completed all user interface mockups using Adobe Photoshop CS6.
- I also finished all of the hand drawn sketches (UI ideas).
- I have also contributed in user stories mainly for Manager, Customer and a restaurant General Worker.

Rohit:

- Managed the project by opening up a new Google document every time a deliverable due date was approaching. Reminded everyone that the due date and time the deliverable was due.
- Wrote the front cover and table of contents.
- Rewrote the customer statement of requirements in the perspective of the customer of the software product taken from Proposal.
- Provided half of the Customer User Story and all of the Waiter User Story.
- Wrote 4 of the fully dressed use cases OrderFood, ServeTable, ChangeMenu, and ChangeDrinks
- Provided all of the User Effort Estimation.
- Added the product ownership list.
- Updated Project Management and References sections.
- Compiled and formatted all deliverables independently, and then compiled them into a single presentable pdf document and submitted it into my Dropbox.

Yehuda:

- Managed the project by announcing on facebook to meet as a group on Google+ Hangout. Kept track of who is doing what for each part.
- Revised some of the customer statement of requirements.
- Contributed majority of Manager, Kitchen Staff worker, Bartender User stories. Did half of the Customer and Chef User stories. Added new User stories for Visitor.
- Thought of the idea of having separate queues kitchen queue and order queue for the kitchen staff interface.
- Thought of the idea of creating GravyXpress as cloud service for the masses rather than solution for individual restaurant.
- Thought of the idea of color coding the User stories to see which can be implemented within a semester and which should not be implemented. Shivani, Abdul, Nabil, and Rohit joined in on Google+ with Yehuda to complete the color coding of all User Stories.
- Added an introduction to the Functional Requirements that talk about which User Stories we are more focused on and in accordance with the Work Backlog.
- Contributed the first quarter of the Work Backlog.
- Did the User Stories diagrams.
- Did the System Sequence diagrams.
- Did the Domain Model Diagram along with a text description of how the model was derived.
- Elaborated on the On-screen Appearance Requirements and User Interface, providing reasoning for choices made.

Nabil:

- Assigned User Story Size Points for almost all User Stories based on difficulty of implementation.
- Defined some of the Stakeholders and Actors and Goals.
- Created the Grantt Chart as a Plan of Work for the for the future.
- Gave some ideas for the Customer User story.
- Elaborated the user story relating to the Kitchen Staff processing an order.

Shivani:

- Defined almost all of the terms in the Glossary.
- Wrote some of the Bartender and Chef User Stories Statements.
- Color coded some of the User Stories along with Yehuda.
- Defined the majority of the Stakeholders and Actors and Goals.
- Wrote the Concept, Association, and Attribute definitions for the Domain Model.

Amizan:

- Stated some of the General Restaurant Worker user stories.
- Did three quarters of the Work Backlog to arrange the user stories statements in order of importance.
- Partly elaborated some of the On-screen requirements and UI.
- Did half of the References section.

Table of Contents:

1. Customer Statement of Requirements
A) Problem Statement:

As an experienced manager of a restaurant, I feel that effective communication is perhaps the quintessential ingredient to any successful operation involving collaboration. The restaurant that I manage, as is the case in many other privately-owned restaurants, is comprised of a great number of interacting teams who must always be in perfect sync with one another to ensure productivity levels are optimal. Slow communication and miscommunication are two barriers that my restaurant cannot put up with in this communication age.

What I want is a software system, that effectively manages communication between the different teams involved in my restaurant. These teams are:
- Restaurant Customers
- Managerial Staff
- Waiting Staff
- Kitchen Staff (the cooks)
- Chefs
- Bartenders

I want this restaurant management software to be as accessible as possible, such that any user using any electronic device with a web browser will be able to access this software, and enable all of the aforementioned teams to interact with each other using this software. As such, I would like this product to be developed as a webapp. The system should enable me to create profiles for each restaurant staff position, so I can easily manage the different teams about their activities throughout the day.

I have taken the time to note down the inefficiencies that I would like to eliminate from my restaurant with an automated system. These identified inefficiencies are:

1. My customers, who want to preorder food, often have to deal with busy phone lines with possibly long waiting times.
2. My customers are usually in a hurry and would like to order before arriving at the restaurant.
3. Sometimes my customers order takeouts but do not arrive to collect them, thereby wasting the restaurant's valuable resources.
4. My customers often do not have the freedom to select their own table.
5. Tracking down a waiter to alter or cancel an order that has not yet been sent to the kitchen often is a hassle for my customers.
6. My customers are often unable to gain the attention of a waiter.
7. Calculating gratuity manually is an unnecessary inconvenience for my customers.
8. Waiting for the cheque can be inconvenient for my customers.
9. On busy days, my customers must wait a long time before a table becomes available and they are seated.
10. For me, keeping track of which tables are reserved and the durations of their reservation requires unnecessary manual monitoring.
11. There are frequent miscommunications regarding orders between my customers, the waiters, and kitchen staff.
12. While some of my waiters are fairly idle, others are often either overwhelmed with work.
13. Waiters waste time and paper rifling through a notepad to access information regarding a table's orders.
14. Waiters must frequently return to the kitchen to determine the status of my customer's order.
15. We usually have to maintain a manual queue of precedence to ensure customers who order food first are served food first, which result in mixups.

16 If ingredients run short or menu items are altered by me or the chef, the rigid paper menus that we have cannot be updated quickly and conveniently.

17 Separating orders intended for the bar from those intended for the kitchen is inconvenient for my waiters as it wastes time.

18 I have trouble keeping up with all activities occurring in the restaurant, sometimes leading to delays of my customer's orders.

I would like these inefficiencies to be addressed with the development of this management software and eliminate most paper-pen transactions. As a user of this software, my goal is to have an effective communication system within the restaurant so mishaps, as described above, will not not occur and can be avoided in the future.

The software system should allow six different users (as mentioned above) to successfully communicate with each other allowing the following abilities for each user:

Customer:
- I want my customers to be able to access my restaurant web app with any electronic device that has access to the internet.
- My customers should be able to view the floor plan and choose an available table, view the menu, add orders to a "shopping cart", view prices, and order/cancel selected orders online all before they enter the restaurant.
- I want some way to allow those customers, who ordered online, to be able to convey that information when they enter the restaurant, such that they will immediately be directed to their chosen table.
- On the online webpage, customers should have the options to either reserve a table or order take-out, and a time limit of when they should be at the restaurant before their reservation is cancelled, in order to save restaurant resources.
- If customers order take-out, I want them to pay online using PayPal. Otherwise, they should pay only at the restaurant.
- If customers simply walk into the restaurant without online reservations, those customers should have the ability to choose their own available table right at the front desk, enter the number of people in the group into the system, and be assigned a single waiter for that table until the customers leave the restaurant.
- Once at the table, my customers should still be able to use all features that are online if they want to order/cancel more food using their own mobile device or a tablet pc set at their table.
- My customers can optionally add side notes to some of their orders if they have preferences in ingredients, and can also signal the waiter if needed.
- Instead of calling their waiter repeatedly to check on their orders, my customers should get to know the status of their food using the software.
- When the time comes to pay the bill, the customers should be able to use a gratuity calculator provided by the software.
- My customers should be able to view the bill on their mobile device or tablet pc and pay either online through PayPal or directly by cash to the front desk.
- In case the customer wants to use the drive-thru service, I want them to be able to do so using the online service or using the tablet pc mounted at the drive-thru window.
- Finally, my customers should be able to leave feedback for the services provided.

Managerial Staff: (Directly from the proposal.)
- I want the ability to create a website specifically for my own restaurant, so I can add features available for my customers and staff.
- I want the ability to create profiles for each of the six restaurant positions complete with proper security (username/password).

- I want full control over the customer online payment feature, such as enabling and disabling it.
- I want features to add a floor plan of my restaurant (complete with tables and chairs), access and handle employee pay stubs, access customer order history and their cheques, view customer feedback, and manage the restaurant menu online.
- I also want to track the status of ingredients in stock and also have the ability to update them manually.
- I want to view the popularity of menu items.
- I want a central announcement board so I can convey information to my employees easily.
- I want to add promotional ads to my website as well as have the ability to send promotions to customers who subscribe for them.
- I want to run statistical reports of the restaurant activities and profits at the end of each working day.

Waiting Staff:
- When a customer "checks in" at the restaurant, I want the software system to automatically assign a waiter to the preferred table.
- I do not want any waiter to be idle or have too much workload, so I want the system to assign waiters to tables depending on the number of customers.
- All waiters will be given special smart phones so they can access their assigned table's orders and order status.
- That being said, each waiter should be given a special access number so that they can only access the tables they are assigned to.
- Each of my waiters should be able to see a customer-calling signal if a customer signals to them.
- An assigned waiter, when signaled, should be allowed to alter the restaurant customers' order, such as adding, deleting, or changing an item in the order.
- Each waiter should be able to access the central dashboard for announcements made by the manager.

Kitchen Staff:
- I want a separate software profile for my kitchen staff, complete with security features such as a special access number.
- I will be having only one touch-screen tablet pc handled by one person in the staff, so I want all orders to appear on that screen.
- Since there will be many types of orders (online orders, take-out orders, walk-in orders, and drive thru orders), I want a way for the system to identify each order and prioritize them according to the length of time it would take to prepare the order.
- I also want the software system to allow initial orders to be updateable by the customer before it becomes a permanent order.
- The kitchen staff should also be able to read any customer preference-notes.
- After orders have been completed, the system should allow the kitchen staff worker to delete that order and then signal the assigned waiter to collect the order.
- Each kitchen staff worker should be able to access the central dashboard for announcements made by the manager.

Chefs:
- The chefs should also have a separate profile with a special access number.
- I want the chefs to have the ability to change/add items on the menu, including the names of items, the prices, and ingredients count.
- They should also be able to remove an item from the menu due to ingredient shortage. This way, the customer will not be able to accidentally order it.
- Each chef should be able to access the central dashboard for announcements made by the manager.

Bartenders:
- My bartenders also should have a separate profile with a special access number.

- Bartenders, just like the chefs, should have the ability to change/add drinks on the menu, including names of drinks, the prices, and ingredients count.
- They should also be able to remove a drink from the menu due to ingredient shortage. This way, the customer will not be able to accidentally order it.
- The software system should separate beverage orders from the food orders as the customer hits the order button.
- Each bartender should be able to access the central dashboard for announcements made by the manager.

B) Glossary of Terms:

1) **Bartenders** - Control the drinks menu and may alter it, along with notifying waiters of drink orders.

2) **Centralized Communication System (CCS)** - A communication system where all the users connect to a central server which stores all the information for the system

3) **Chef** - Manages and directs the kitchen staff and may also alter the restaurant menu.

4) **Clock In/Clock Out** - Each employee must enter the time that they start working (clock in) and the time that they stop working (clock out). This will help to run the payrolls since many employees get paid by the hour.

5) **Restaurant Customer** - Orders food and services from the restaurant and pays for these services either online or in the restaurant. Can eat at restaurant, get take-out, or pick up at a drive-thru.

6) **Dynamic** - Flexible and changeable. Dynamic items are designed to be altered quickly and with ease.

7) **Floor Plan Layout** - Shows all the tables and chairs in the restaurant along with their corresponding table status.

8) **Inefficiency** - Does not produce the desired effect and is not an economical solution. Can make processes slow or inconvenient

9) **Interface** - Visual on computer, tablet, or phone that allows for user interaction with the GravyXpress system. For instance, customers can place orders and pay bills via the interface.

10) **Kitchen Staff** - Can fetch items from the order queue and put them in the kitchen queue. Can also mark items that have been cooked as complete and remove them from the kitchen queue.

11) **Manager** - The manager controls what features the restaurant will offer, such as the online payment/ordering module and bar module. The manager can also control the number of tables in the restaurant, view employee information, view popularity of items, view customer feedback and records of past orders. The manager also has permissions of all players in the restaurant.

12) **Managerial Trend Digest** - Available from the managerial dashboard. The trend digest gives the manager an overview of the statistics of his restaurant. This digest includes statistics such as popular dishes and average customers per day. (The development of this digest depends largely on whether enough time is available to do so.)

13) **Menu** - List of items available in the restaurant. Sides, such as french fries, can also be selected along with the main dishes. The menu is visible online at GravyXpress, and customers can directly place their order online.

14) **Module** - A part of a program that carries out a specific function. It may be used alone or with other modules in the program.

15) **Payment** - Upon completion of the meal or upon receiving take-out, customers can request the cheque, add gratuity using a gratuity calculator, and pay online through PayPal. Payment can also be handled traditionally with credit card or cash by calling a waiter.

16) **Payroll** - The salary of each employ. Different employees are paid different amounts. For instance, chefs make more money than waiters do.

17) **Queue (in terms of kitchen and order queues)** - For instance, when orders are made by restaurant customer, they are sent to an order queue. When the kitchen staff worker is ready to prepare the order, the worker drags the order from the order queue into kitchen queue. The order that is easier to make is prepared first. It is NOT the case that the first order placed is prepared first.

18) **Reservation System** - Customers may reserve a table via GravyXpress. Once they arrive at the restaurant, they will be directed to an automatically assigned table. They will also have the option of selecting another open table from a floor plan schematic.

19) **Semi-customizable** - Can be partly customized by the users to fit their specific needs. For instance, the manager can choose the number of tables that are available in the restaurant, and thus help customize the user interface for the floor layout.

20) **Subdomain** - A domain that is part of a larger domain.

21) **Table Status** - A table can either be free (green color), dirty (yellow color), or occupied (red color). The status of each table along with the waiter assigned to the table is made visible on the floor plan layout of GravyXpress.

22) **User Role** - A user role describes the relationship between users and the system.

23) **Visitor** - A general term referring to any person visiting any page on GravyXpress. Could be a person who browses the internet and stumbles upon GravyXpress or a person looking for career opportunities in a restaurant.

24) **Waiter** - Must attend to their assigned tables. They have access to each of the tables' orders, can see the status of their orders, and can modify orders if restaurant customers prefer the waiter to order for them.

2. User Stories

Key: Green = Very Important (will implement), Yellow = Not Too Important (may or may not implement), Red = Not Important at all (will not implement due to time restraints).

As a Restaurant Customer...

Identifier	User Story	Size (points)
ST-C-1	I want to order food quickly and efficiently through a web page, so that I can order without the help of a waiter.	8
ST-C-2	I want to make a reservation at a restaurant quickly and efficiently over the internet so that I know a table will be waiting for me when I arrive.	5
ST-C-3	I want to select my table from a floorplan of available (changes from green to red) tables, so I am seated at the table that suits me best.	4
ST-C-4	I want to be able to signal a waiter while seated at a table, so that I don't need to wave my hands about flailing for attention.	1
ST-C-5a	I want to be able to view the cheque, so that I can be aware of the amount of money I am spending.	5
ST-C-5b	I want to pay my cheque online securely, so that I can pay remotely or from my own mobile phone without even taking out my wallet.	5
ST-C-6	I want to be able to pay my gratuity without having to manually calculate percentages.	2
ST-C-7	I want to post feedback and provide ratings regarding customer service, food quality and overall experience.	1
ST-C-8	I want to subscribe to updates informing me of specials and other relevant notifications about the restaurant.	3
ST-C-9	I want to have the option of take-out when I order, so I don't need to wait for a table on busy days.	3
ST-C-10	I want to order at a drive-thru, so I don't need to enter the restaurant on busy days.	5
ST-C-11	I want to see an estimated waiting time to select an available seat on busy days (when no seats are available), so that I know when to order take-out or order at a drive-thru.	5
ST-C-12	I want to be able to cancel or change selected orders if they haven't been sent to the kitchen, so I can continue changing my mind until the kitchen has begun preparing.	3
ST-C-13	I want to be able to add side notes to selected orders, so that I can tell the kitchen staff about my ingredient preferences.	2
ST-C-14	I want to receive an order number when I order online, so that I don't need to go through the trouble of registering a user account.	1
ST-C-15	I want to be given a time limit of my reservation, so I can plan my trip to the restaurant accordingly.	1

As a Restaurant Manager...

Identifier	User Story	Size (points)
ST-M-1	I want to create a subdomain within the GravyXpress web application specific to my restaurant, so that my restaurant's services are available over the internet.	9

ST-M-2	I want to be able to alter my restaurant's contact information & hours of operation from my dashboard, so that those who visit my restaurant's subdomain always receive up to date information.	2
ST-M-3	I want to upload an image of a floor plan to my restaurant from my dashboard so that my customers can later select their table directly from the floor plan.	4
ST-M-4	I want to add and remove tables to my restaurant, specifying the number of seats they have, so that customers are only offered tables with enough seats for their party.	3
ST-M-5	I want to create new user accounts for my employees, so that they may perform their relevant duties through GravyXpress.	5
ST-M-6	I want to alter an employee's permissions, so that they only retain access to the services on GravyXpress that concern them.	2
ST-M-7	I want to be able to keep my food inventory up to date, so that I am always in touch with my stock of produce.	4
ST-M-8	I want to be alerted when an ingredient in my inventory is running short, so that I know I need to buy more.	5
ST-M-9	I want to post new job openings, so that potential employees know when jobs are available at my restaurant.	1
ST-M-10	I want a restaurant's menu that I can modify at a moments notice, so that adding/removing items from my menu as well as changing their price info is not a hassle.	5
ST-M-11	I want to enable and disable items from my menu, so that I can perform temporary alterations to my menu.	2
ST-M-12	I want to manage my business financial account information including employee pay stubs and corporate food payments, so I can prepare paychecks.	6
ST-M-13	I want to create and post employee schedule so that my employees know when they are expected to work.	4
ST-M-14	I want to post important information on the public message-board so that employees are well informed.	3
ST-M-15	I want to send promotions to customers via email/text, so customers can take any opportunities of discount.	2
ST-M-16	I want to view the records of my previous business, such as customers' order history so that I can utilize my restaurant's history to improve its future.	4
ST-M-17	I want the application to keep track of the day of the week, so that I can assign specific specials on given days.	3

As a Waiter...

Identifier	User Story	Size (points)
ST-W-1	Once I am logged in, I want to see only information pertaining to the customers I am assigned to, so that I don't serve other waiter's customers inadvertantly.	1
ST-W-2	In my own profile, I want to be able to view which tables (by table number) I am assigned to, so I know exactly which customers to serve.	2
ST-W-3	In the general waiter interface, I want to see any announcements made by the manager, so I am well informed about any news/activities.	3
ST-W-4	I want to be able to see what items my assigned table(s) are ordering, so I can bring the correct orders to the table.	4
ST-W-5	I want to see any customer-help signals, so I can attend to them without delay.	1
ST-W-6	I want to be able to modify a table's orders, so the restaurant customers can tell me	5

	to order for them if they want.	
ST-W-7	I want to be able to simply view my assigned table's check, so I know what they ordered and how much they owe.	3
ST-W-8	After the customers have paid, I want the system to alert me that the customers, at my table, have left (table status gets changed from occupied to dirty), so I know when to clean the table for future customers.	5
ST-W-9	After cleaning the tables, I want to be able to change the status of my tables to ready so the system knows the customer has left.	4
ST-W-10	After a customer has left, I want to see that my table responsibility has been deleted in my profile, so I don't get confused about which table to serve next.	4

As a Kitchen Staff Worker...

Identifier	User Story	Size (points)
ST-K-1	I want to fetch the orders from the customers, which are stored in the order queue, and add them to the kitchen queue, so that I am always aware of all of the items I am currently cooking.	5
ST-K-2	I want to see which orders are take-out and drive-thru orders, so that I know to package them in disposable containers.	3
ST-K-3	I want to mark an order item as ready and see it removed automatically from the kitchen queue, so that my list of tasks remains uncluttered.	5
ST-K-4	I want to see notes attached by customers to their orders, so that I know to prepare their food in a particular manner.	2
ST-K-5	I want the system to send a signal to the waiter once an order has been marked ready, so that customers receive their food in a timely fashion.	4
ST-K-6	I want to see how many orders await in the order queue waiting to be fetched, so that I know how busy the restaurant is and pace myself accordingly.	2

As a Chef...

Identifier	User Story	Size (points)
ST-Ch-1	I want to be able to modify the supply of ingredients for each menu item, so that a manager knows when to replenish the stock.	4
ST-Ch-2	I want to add new items to the menu, so that I can offer variety to my customers.	5
ST-Ch-3	I want to delete items from the menu, so that unsuccessful meals become unavailable to customers.	2
ST-Ch-4	I want to modify existing items on the menu, changing their name or altering their details if necessary, so that I can always change or improve each item on the menu.	4
ST-Ch-5	I want to disable and enable items on the menu, so that they can be temporarily available or unavailable to customers (as needed).	3

As a Bartender...

Identifier	User Story	Size (points)
ST-B-1	I want to add new drinks to the menu, so that I can offer variety to my customers.	5

ST-B-2	I want to delete drinks from the menu, so that unsuccessful drinks become unavailable to customers.	3
ST-B-3	I want to modify existing drinks on the menu, changing their name or altering their descriptions if necessary, so that I can always change or improve each item on the menu.	5
ST-B-4	I want to disable and enable drink items on the menu, so that they can be temporarily available or unavailable to customers (as needed).	2
ST-B-5	I want to fetch the next drinks to be mixed from the order queue, so that I can make drinks at my own pace.	4
ST-B-6	I want to mark a drink as ready, and remove it from my own queue, so that my list of tasks remains uncluttered.	3
ST-B-8	I want system to send alerts to waiters to fetch ready drinks, so that customers receive their drinks in a timely fashion.	3
ST-B-9	I want to be able to modify the supply of ingredients, so that a manager knows when to replenish the stock.	4

As a General Restaurant Worker...

Identifier	User Story	Size (points)
ST-G-1	I want to be able to login and logout of GravyXpress securely, so I and only I have access to the areas of GravyXpress that concern me.	3
ST-G-2	I want to view my working schedule, so that I know when I need to be available for work and when I have vacation hours.	2
ST-G-3	I want to put a schedule swap request with other employees based on their availability in emergency/non-emergency situations.	4
ST-G-4	I want to upload my tax documents such as W2 & W4 forms so that the manager can view and maintain them for his records.	3
ST-G-5	I want to view my pay stubs as well as enter bank account information, so the manager can directly deposit my paycheck to my bank account. The system will not handle direct deposits. It will only provide information to manager where to deposit.	2
ST-G-6	I want to submit a day off request to my manager, so that I don't have to search for the manager to do so. Also, I can have a counter of the amount of sick and off days I have remaining.	3

As a Visitor...

Identifier	User Story	Size (points)
ST-V-1	I want to view an attractive web page that looks professional and draws me in.	7
ST-V-2	I want to learn about GravyXpress and the service it provides.	1
ST-V-3	I want to be able to see postings of job opportunities at the restaurant, so I can contact the manager to apply for the job.	2

Work Backlog

#	Identifier	User Story	Size
1	ST-M-1	I want to create a subdomain within the GravyXpress web application specific to my restaurant, so that my restaurant's services are available over the internet.	9
2	ST-G-1	I want to be able to login and logout of GravyXpress securely, so I and only I have access to the areas of GravyXpress that concern me.	3
3	ST-M-4	I want to add and remove tables to my restaurant, specifying the number of seats they have, so that customers are only offered tables with enough seats for their party.	3
4	ST-M-5	I want to create new user accounts for my employees, so that they may perform their relevant duties through GravyXpress.	5
5	ST-M-10	I want a restaurant's menu that I can modify at a moment's notice, so that adding/removing items from my menu as well as changing their price info is not a hassle.	5
6	ST-C-1	I want to order food quickly and efficiently through a web page, so that I can order without the help of a waiter.	8
7	ST-K-1	I want to fetch the orders from the customers, which are stored in the order queue, and add them to the kitchen queue, so that I am always aware of all of the items I am currently cooking.	5
8	ST-K-3	I want to mark an order item as ready and see it removed automatically from the kitchen queue, so that my list of tasks remains uncluttered.	5
9	ST-C-5a	I want to be able to view the cheque, so that I can be aware of the amount of money I am spending.	5
10	ST-W-4	I want to be able to see what items my assigned table(s) are ordering, so I can bring the correct orders to the table.	4
11	ST-W-1	Once I am logged in, I want to see only information pertaining to the customers I am assigned to, so that I don't serve other waiter's customers inadvertantly.	1
12	ST-M-11	I want to enable and disable items from my menu, so that I can perform temporary alterations to my menu.	2
13	ST-K-6	I want to see how many orders await in the order queue waiting to be fetched, so that I know how busy the restaurant is and pace myself accordingly.	2
14	ST-C-4	I want to be able to signal a waiter while seated at a table, so that I don't need to wave my hands about flailing for attention.	1
15	ST-C-12	I want to be able to cancel or change selected orders if they haven't been sent to the kitchen, so I can continue changing my mind until the kitchen has begun preparing.	3

16	ST-W-2	In my own profile, I want to be able to view which tables (by table number) I am assigned to, so I know exactly which customers to serve.	2
17	ST-K-5	I want the system to send a signal to the waiter once an order has been marked ready, so that customers receive their food in a timely fashion.	4
18	ST-W-5	I want to see any customer-help signals, so I can attend to them without delay.	1
19	ST-W-7	I want to be able to simply view my assigned table's check, so I know what they ordered and how much they owe.	3
20	ST-M-2	I want to be able to alter my restaurant's contact information & hours of operation from my dashboard, so that those who visit my restaurant's subdomain always receive up to date information.	2
21	ST-M-6	I want to alter an employee's permissions, so that they only retain access to the services on GravyXpress that concern them.	2
22	ST-W-9	After cleaning the tables, I want to be able to change the status of my tables to ready so the system knows the customer has left.	4
23	ST-W-10	After a customer has left, I want to see that my table responsibility has been deleted in my profile, so I don't get confused about which table to serve next.	4
24	ST-V-2	I want to learn about GravyXpress and the service it provides.	1
25	ST-V-1	I want to view an attractive web page that looks professional and draws me in.	7
26	ST-Ch-4	I want to modify existing items on the menu, changing their name or altering their details if necessary, so that I can always change or improve each item on the menu.	4
27	ST-Ch-2	I want to add new items to the menu, so that I can offer variety to my customers.	5
28	ST-Ch-3	I want to delete items from the menu, so that unsuccessful meals become unavailable to customers.	2
29	ST-Ch-5	I want to disable and enable items on the menu, so that they can be temporarily available or unavailable to customers (as needed).	3
30	ST-W-6	I want to be able to modify a table's orders, so the restaurant customers can tell me to order for them if they want.	5
31	ST-M-13	I want to create and post employee schedule so that my employees know when they are expected to work.	4
32	ST-G-2	I want to view my working schedule, so that I know when I need to be available for work and when I have vacation hours.	2
33	ST-C-2	I want to make a reservation at a restaurant quickly and efficiently over the internet so that I know a table will be waiting for me when I arrive.	5
34	ST-C-5b	I want to pay my cheque online securely, so that I can pay remotely or from my own mobile phone without even taking out my wallet.	5

35	ST-C-7	I want to post feedback and provide ratings regarding customer service, food quality and overall experience.	1
36	ST-W-8	After the customers have paid, I want the system to alert me that the customers, at my table, have left (table status gets changed from occupied to dirty), so I know when to clean the table for future customers.	5
37	ST-M-14	I want to post important information on the public message-board so that employees are well informed.	3
38	ST-W-3	In the general waiter interface, I want to see any announcements made by the manager, so I am well informed about any news/activities.	3
39	ST-C-9	I want to have the option of take-out when I order, so I don't need to wait for a table on busy days.	3
40	ST-C-15	I want to be given a time limit of my reservation, so I can plan my trip to the restaurant accordingly.	1
41	ST-C-13	I want to be able to add side notes to selected orders, so that I can tell the kitchen staff about my ingredient preferences.	2
42	ST-K-4	I want to see notes attached by customers to their orders, so that I know to prepare their food in a particular manner.	2
43	ST-M-16	I want to view the records of my previous business, such as customers' order history so that I can utilize my restaurant's history to improve its future.	4
44	ST-M-9	I want to post new job openings, so that potential employees know when jobs are available at my restaurant.	1
45	ST-V-3	I want to be able to see postings of job opportunities at the restaurant, so I can contact the manager to apply for the job.	2
46	ST-K-2	I want to see which orders are take-out and drive-thru orders, so that I know to package them in disposable containers.	3
47	ST-C-6	I want to be able to pay my gratuity without having to manually calculate percentages.	2
48	ST-C-11	I want to see an estimated waiting time to select an available seat on busy days (when no seats are available), so that I know when to order take-out or order at a drive-thru.	5
49	ST-C-14	I want to receive an order number when I order online, so that I don't need to go through the trouble of registering a user account.	1
50	ST-B-5	I want to fetch the next drinks to be mixed from the order queue, so that I can make drinks at my own pace.	4
51	ST-B-6	I want to mark a drink as ready, and remove it from my own queue, so that my list of tasks remains uncluttered.	3
52	ST-B-8	I want system to send alerts to waiters to fetch ready drinks, so that customers receive	3

		their drinks in a timely fashion.	
53	ST-B-1	I want to add new drinks to the menu, so that I can offer variety to my customers.	5
54	ST-B-2	I want to delete drinks from the menu, so that unsuccessful drinks become unavailable to customers.	3
55	ST-B-3	I want to modify existing drinks on the menu, changing their name or altering their descriptions if necessary, so that I can always change or improve each item on the menu.	5
56	ST-B-4	I want to disable and enable drink items on the menu, so that they can be temporarily available or unavailable to customers (as needed).	2

On-Screen Appearance Requirements

Below are the hand drawn sketches for our user stories that are directly related to our user interface. We drew the sketches only for the user stories where we need to give preliminary interface ideas to our customer. Most of the user stories are directly or indirectly related with each other in sense of user interface, hence sketches for those stories are not individual but has been drawn together and being represented in one window.

In general, the emphasis in our User Interface design relates to enabling customers to interact with GravyXpress using touch devices such as smart phones and tablets. We have shied away from interfaces that require text entry as much as is possible because simple button clicking is easier on touch devices.

We have also tried to balance the amount of information available from each webpage, so that each page is mobile friendly while at the same time users do not need to navigate to other pages frequently. With this methodology in mind, we have produced the sketches below and elaborated each in some detail.

Story ST-C-1 & ST-C-9
Sketch below illustrate our customer user stories 1 & 9 where customer can easily navigate through the menu and place the order without the help of waiter as well as S/he will have choice of "take out" and "dine in".

In order to facilitate ease of use, the menu will be divided into three sections. The first section will enable a customer to select a menu section. The second section will enable a customer to select a menu item within that section. The third will contain the details for that particular menu item.
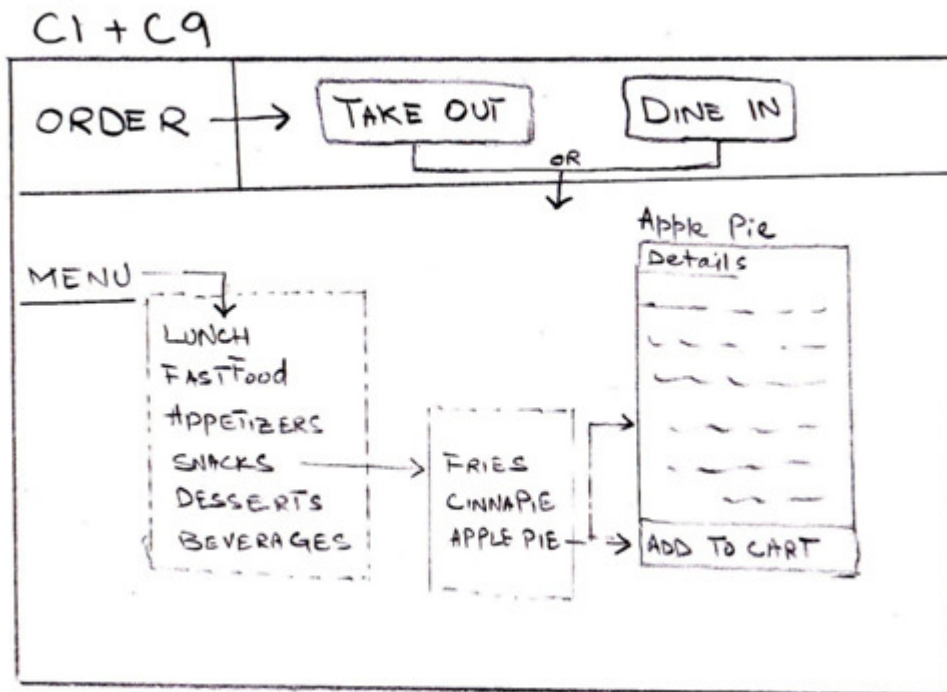
Story ST-C-4 & ST-C-6

Sketch below illustrate our customer user stories 4 & 6 where customer will have option to call waiter and ease of calculating the gratuity.

These stories represent the basic interface a customer at a GravyXpress restaurant will be presented with. Upon selecting "Your Order", the customer will be presented with the option to call a waiter, view the cheque or calculate a tip. This User interface will be simple with large buttons that are easy to see and easy to press.
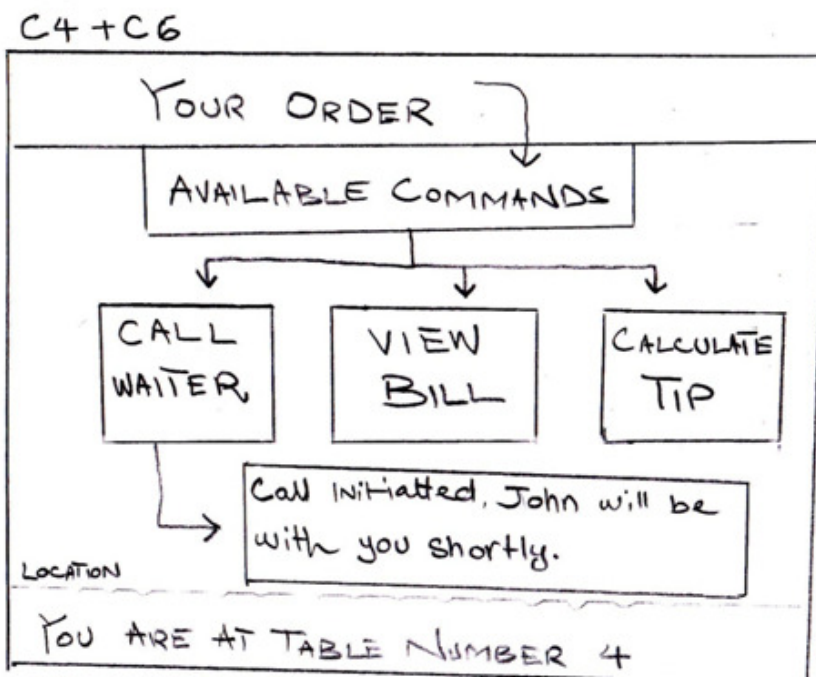
Story ST-C-7
Sketch below illustrate our customer user story 7 where customer can easily provide feedback and ratings to the restaurant.

The "GravyXpress" in the header of this page will be replaced with whatever the restaurant's name is. This page represents our ideal farewell page. The customer will be prompted to enter feedback, but this will occur at the bottom of the page in a non-intrusive fashion.
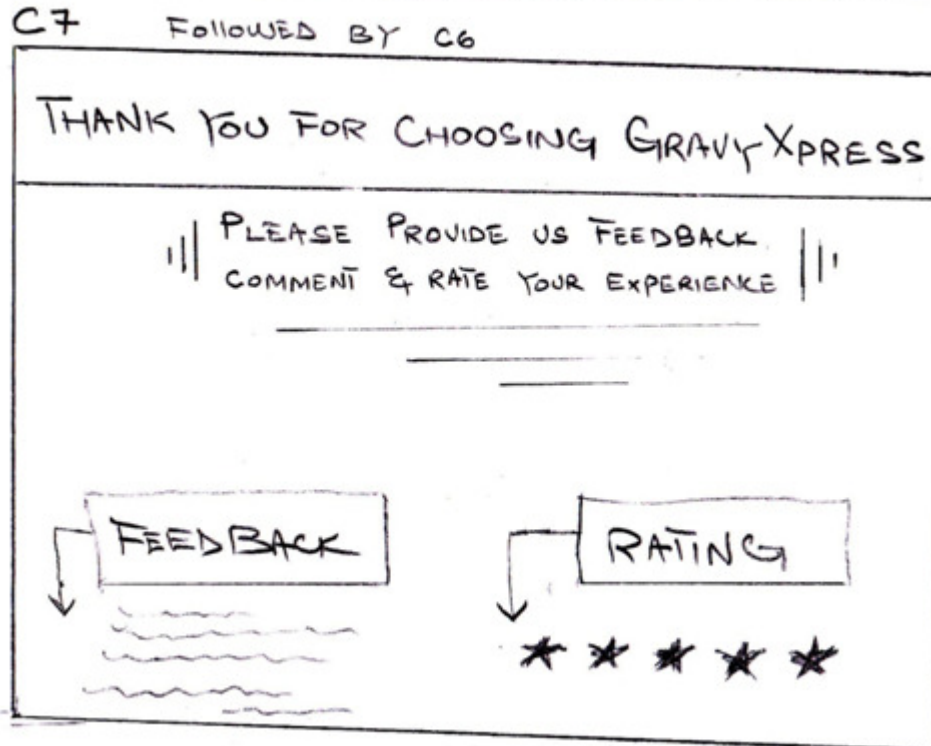
Story ST-C-12, ST-C-13 & ST-C-16
Sketch below illustrate our customer user stories 12, 13 & 16 where customer will have option to view his/her shopping cart, remove item and add notes to the individual items.

This would be the equivalent of a checkout screen for our online ordering system. It gives the customer a chance to review his/her order before it is placed, as well as modify it as necessary. It also includes allows them to add notes to each individual order, which would then be available to the kitchen staff, as was specified in the user stories.

Also important when viewing this is the idea that the shopping cart will be tied to a cheque, constantly keeping the customer aware of what he is spending.

C12 + C13 + C16

```
SHOPPING CART

 1 x BREAD STICKS   [D] [N]     $ _ _
 1 x Goat BIRYANI   [D] [N]     $ _ _
 2 x DIET COKES     [D] [N]     $ _ _


 ORDER TOTAL                    $ _ _
 Tax                            $ _ _
 TIP                            $ _ _
D = Delete item    N = Add Notes
```

Story ST-C-14 & ST-C-15

Sketch below illustrate our customer user stories 14 & 15 where customer will get the confirmation number after placing the order as well as estimate ready time.

After checkout, when the customer finalizes the order, this would be the last screen they would see in the transaction. It is important for each customer to both confirm their order and plan their time of arrival according to the estimation.

C14 + C15

```
        CONFIRMATION

THANK YOU FOR PLACING ORDER
WITH GRAVY XPRESS. YOUR ORDER# is 400254.


YOUR ESTIMATE READY TIMW WILL BE

       45 MINUTES.
```

Story ST-C-3 & ST-C-11
Sketch below illustrate our customer user stories 3 & 11 where customer will have flexibility to choose his/her choice of table as well as S/he can also change his/her mind to "take out".

Please note that while we like the idea of creating a floor map immensely, it will in all likelihood be one of the last features we implement. This is because of two reasons. The first of these is that we don't believe it is at the core of the communication system that GravyXpress is designed to implement. The second is that creating a cloud interface to enable a manager to map his own floor plan to the system's list of tables is a project in and of itself.

If we do get around to implementing it, we want to provide a clean interface that enables a customer to select a seat with ease, with the tap of a touch screen.
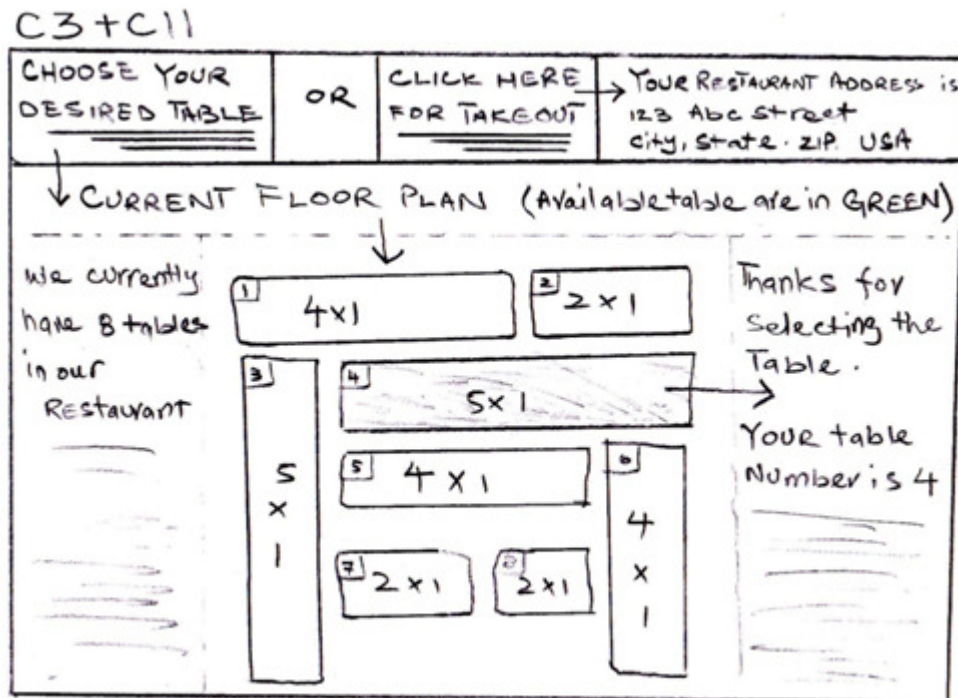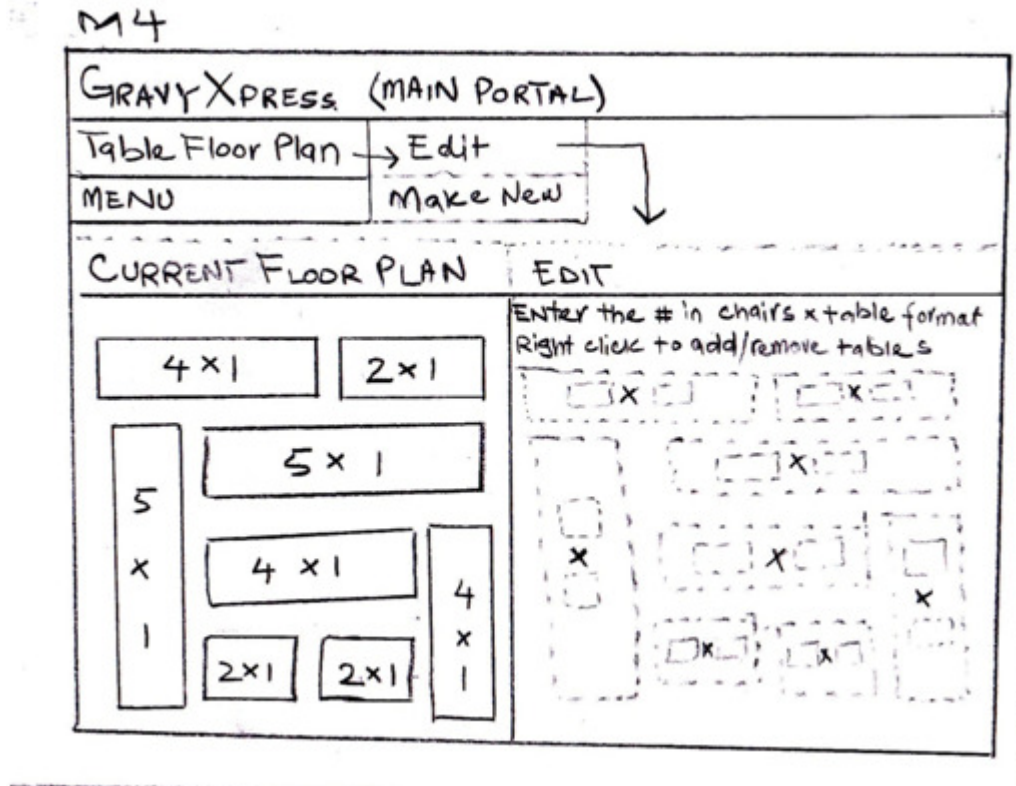

Story ST-M-4
Sketch below illustrate our manager user story 4 where manager can edit/update the floor plan efficiently.
In the below diagram, when "Make New" is selected a manager will be presented with a dialogue to upload an image. Clicking different locations on the image will map those portions of the image to the tables in the system. This simple system is modeled around facebook's image tagging system. This is preferable to a jQuery drag and drop HTML format that dynamically alters the Document Object Model because it enables restaurant owners to upload floorplans which are abnormal such as restaurants with multiple floors with ease.

Story ST-M-10 & ST-M-11

Sketch below illustrate our manager user stories 10 & 11 where manager can edit the menu items, enable/disable them, removing of items as well as changing the price of the items.

It is necessary to give the manager full control over the selection of items on the menu. Each item is categorized by its type, and the manager can alter the properties and price for each one. The manager can also add or remove items, enable and disable them.
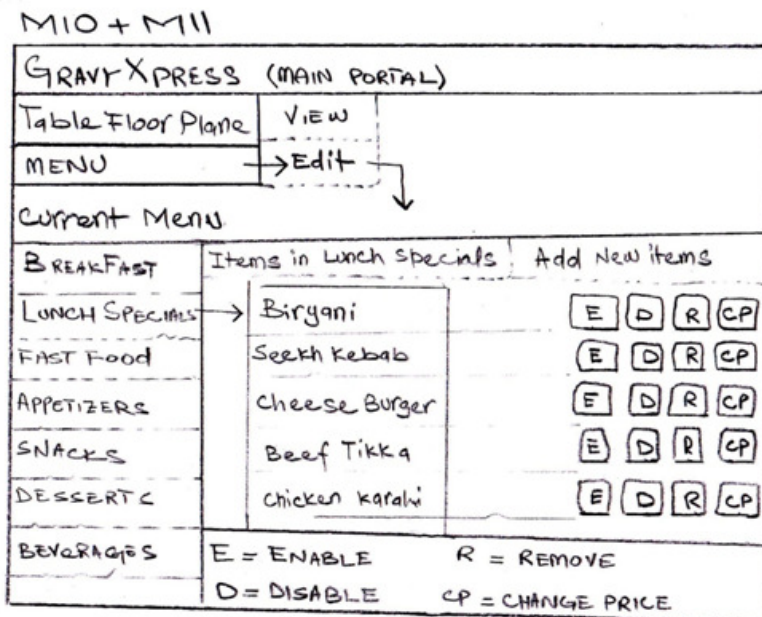
3. Functional Requirements Specification

Please be aware that the user stories tables as defined above consist of every user story we would like to make a part of GravyXpress. For now, we will elaborate only on those user stories highlighted in green to begin with. This order of precedence is apparent in the work backlog where we have arranged User Stories as we believe they should be implemented. We believe the greeen stories represent the core of what GravyXpress adds to the table. The uniqueness of GravyXpress is not to automate restaurant management, or to provide a hub for customers to review restaurants. Such projects have been created before, and well at that.

Rather, the innovation of GravyXpress lies in its ability to provide restaurant managers all over the world an easy cloud web service to serve as a real time distributed communication system in their restaurants. It is the instant notifications between the Kitchen staff, waiters, and customers that together make GravyXpress the great service that it is.

In this light, we will not elaborate the user stories related to anything other than the focal core of GravyXpress. In the true style of Agile Development, such documentation can be produced as we are able to integrate these user stories into an already functional cloud based restaurant communication system.

A. Stakeholders:
One of the main categories of stakeholders in this system will be end users, such as restaurant managers, waiters, chefs, kitchen staff, bartenders and visitors. They are mainly interested in the routine system functions. The restaurant customer is another type of stakeholder. Customers will interact with the system just as much as the end users, but for a different purpose - to utilize the facilities provided by the restaurant. Last but not least, the developers, software architects, system analysts and project manager are stakeholders who will design and implement the system.

B. Actors and Goals:
1. Restaurant Customer:
   a) Role - Interacts with GravyXpress to order food directly, online, at a drive-thru, or by take-out.
   b) Type - Initiating actor.
   c) Goal - To order and pay for food and services quickly and efficiently.

2. Managerial Staff:
   a) Role - Uses GravyXpress to manage all activities of restaurant as described in the user story.
   b) Type - Initiating actor.
   c) Goal - To customize the system for their specific restaurant, overlook the operations of the restaurant, keep track of their employees' information (e.g. pay), and change features of the restaurant such as the floor layout and menus.

3. Waiting Staff:
   a) Role - Serves the restaurant customers and is notified of their orders through GravyXpress.
   b) Type - Participating (supporting) actor.

c) Goal - To maintain servicing of different tables for customers by bringing food to customers, cleaning tables and updating table status on the floor plan interface.

4. Kitchen Staff:
   a) Role - Cooks the customer's food by viewing orders on the system.
   b) Type - Participating (supporting) actor.
   c) Goal - To quickly and efficiently prepare the food ordered by customers and view the order & kitchen queues.

5. Chefs:
   a) Role - Manages the kitchen staff, modifies the restaurant menu, and maintains ingredients.
   b) Type - Initiating actor.
   c) Goal - To modify and/or delete and add items from the menu. To notify manager of inventory.

6. Bartenders:
   a) Role - Serves drinks to customers by viewing drink orders.
   b) Type - Participating (supporting) actor.
   c) Goal - To control the bar menu and inventory for the bar. To make drinks from the order queue and notify the waiter when the drinks are ready to be served.

7. General Restaurant Worker:
   a) Role - Keeps the restaurant working and maintains his or her own accounts on the system.
   b) Type - Initiating or participating depending on what position worker holds in the restaurant.
   c) Goal - To complete the required training, keep track of work schedule/holidays and acquire pay stubs/tax documents.

8. Visitors:
   a) Role - Accidentally stumbles upon GravyXpress while browsing the web. Or he or she is a potential applicant searching for career opportunities at a restaurant.
   b) Type - Participating (offstage) actor.
   c) Goal - To see how attractive the webpage is and how GravyXpress works. Or to find a job at a restaurant.

C. Use Cases:
   i) Casual Description - Since the development team produced user stories instead of stating system requirements, the user stories will serve as casual description of the use cases.

ii) User Stories Diagrams -
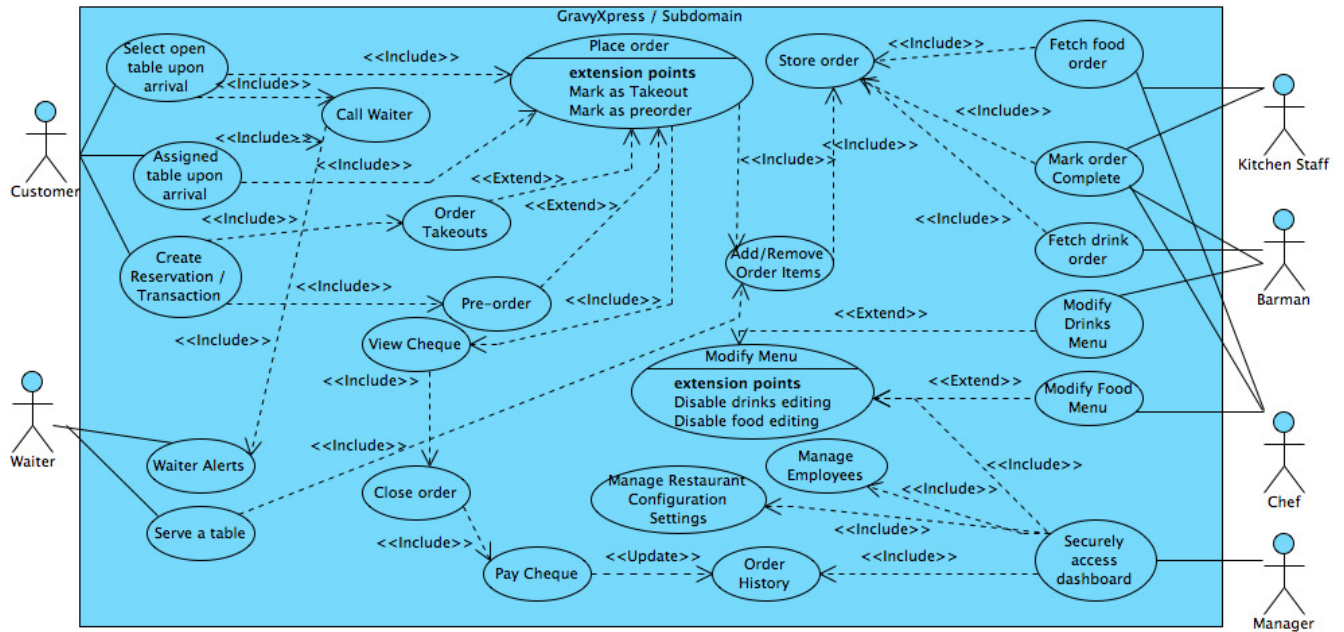
iii) **Fully-Dressed Description -**

Customer:

Use Case UC-1:	OrderFood (walk-in customer)
Related User Stories:	ST-C-1, ST-C-4, ST-C-12 to ST-C-13, ST-C-16 to ST-C-17
Initiating Actor:	Restaurant Customer
Actor's Goal:	To view the menu, select preferred items, and order the items
Participating Actors:	Screen display, tablet or mobile device, user interface, waiter (optional)
Preconditions:	Screen displays main GUI with options to view menu and order.
Postconditions:	Come back to main menu or show status of food.

Flow of Events for Main Success Scenario:

→ 1. Restaurant customer sees the table number on Main Menu and selects "View Menu" option.

← 2. System displays menu categories (drinks, appetizers, specials, lunch, dinner, etc.)

→ 3. Restaurant customer selects a category.

← 4. System displays all items in that category, price of the item, attach note option, and the "Add to Cart" option.

→ 5. Restaurant customer selects the "Add to Cart" option to the item.
← 6. System counts the number of items and calculates the total cost, both at the corner of the screen.
← 7. System automatically sends the orders from the cart to the Kitchen's Order Queue.
← 8. System displays the status of order (whether it's "In Order Queue" or "In Kitchen Queue") and has the options to "Add More Items" or "Remove Items".

← 9. When system displays "Food is Ready and Arriving", system goes back to main menu after 1 minutes.

Flow of Events for Extensions Alternate Scenarios:

→ 1a. Restaurant customer selects the "Call Waiter" option for help in using GravyXpress.
←   System displays pop-up message "Calling Waiter" until waiter arrives to help customer. Message closes after 1 minute and system goes back to window previously visited.

→ 3a. Restaurant customer selects the "Return to Main Menu" option to go back.

←   System goes back to Main Menu.

→ 5a. Restaurant customer selects the "Attach Notes" option to write quick notes about the item.

←   System displays a small textbox next to the item.

→   Restaurant customer selects the submit button to attach the note to the item.

←   System displays "Note Attached" and returns to the menu where the restaurant customer left off.

→ 7a. Restaurant customer selects the "View Order" option to review list of items ordered.

←   System shows all items selected by customer including the "Cancel" option for each item.

→ 7b. Restaurant customer selects "Cancel" option to remove selected items.

←   System removes selected items.

→ 8a. Restaurant customer selects the "Remove Items" option when status reads "Order Queue".

←   System displays the list of items ordered by restaurant customer with options to cancel selected items.

→   Restaurant customer selects the "Add More Items" option in the status window.
←   System goes to the menu categories page
→   Customer repeats the process of adding items to cart.

←   System sends new orders to the Order Queue in the kitchen.

→ 8b. Restaurant customer selects the "Remove Items" option when status reads "Kitchen Queue".

←   System displays error message "Order is already being prepared. Cannot cancel order!" and goes back to order status page.

Manager:

Use Case UC-2:	CreateWebpage
Related User Stories:	ST-M -1, ST-M-2, ST-M-5, ST-M-13
Initiating Actor:	Managerial Staff
Actor's Goals:	To create a subdomain within the GravyXpress web application specific to my restaurant, post my restaurant name and hours of operation, and set up accounts for my employees.
Participating Actors:	Screen Display, tablet or mobile device, user interface, dashboard, Manager
Preconditions:	Screen displays main GUI with options to add a subdomain within GravyXpress, alter restaurant basic information, and create/maintain employee profiles.
Postconditions:	Come back to main dashboard GUI so that Manager can alter and run restaurant.

Flow of Events for Main Success Scenario:

→ 1. Manager goes on GravyXpress web application and selects "Create my restaurant".

← 2. System asks for name of restaurant, manager name, hours of operation, and address.

→ 3. Manager provides system with restaurant name, manager name, hours of operation and address.

→ 4. System displays the restaurant name, manager name, hours of operation, and address on the home page of the user interface for the restaurant. System provides manager with a dashboard interface.

→ 5. Manager asks the system to create a new user account for an employee by selecting "Add employee" on dashboard interface.

← 6. System asks Manager to specify type of employee, pay roll for employee, and work schedule for employee.

→ 7. Manager enters the information for his specific employee into the system.

← 8. System goes back to the dashboard interface.

Flow of Events for Extensions Alternate Scenarios:
Have same flow of events as above up to number 8, but continue with the following steps (Note: the main difference is that multiple employees instead of just one employee can be added).
← 9. Manager asks the system to create a new user account for an employee by selecting "Add employee" on dashboard interface.
← 10. System asks Manager to specify type of employee, pay roll for employee, and work schedule for employee
→ 11. Manager enters the information for his specific employee into the system.
← 12. System goes back to the dashboard interface.

Waiter:

Use Case UC-3:	ServeTable
Related User Stories:	ST-W-1 to ST-W-2, ST-W-4 to ST-W-10
Initiating Actor:	Waiter
Actor's Goal:	To maintain servicing of different tables for customers by bringing food to customers.
Participating Actors:	Customers, Kitchen Queue
Preconditions:	Waiter's interface shows status of food for his/her assigned tables.
Postconditions:	The food status becomes "Ready" to deliver to restaurant customer.

Flow of Events for Main Success Scenario:

→ 1. Waiter logs into his/her account and selects the "Assigned Tables" option.
← 2. System displays the table numbers that the waiter is to serve, the status of the table's orders (Ordering, In Order Queue, In Kitchen Queue, Order Ready, Served), and the table's cheque.

→ 3. Waiter selects one of the table numbers he/she is assigned.

← 4. System displays the order details of the table, including table number, the price of each item, and order status.

← 5. Kitchen queue reports "Order Ready" for a given table number. The entire table row is highlighted in green.

→ 6. Waiter selects the "Acknowledged" button after serving the food to table.

← 7. System changes the status of table to "Served" and removes the highlighting.

← 8. System alerts waiter that table wants to pay by cash. Displays "Payment by Cash" for that table and highlights the row yellow.

→ 9. Waiter selects the "Acknowledged" button after collecting cash and giving receipt to table.

← 10. System alerts waiter that table needs to be cleaned. Displays "Cleaning Required".

→ 11. Waiter selects the "Acknowledged" button after cleaning the table.

← 12. System deletes the table from the list of tables to serve.

Flow of Events for Extensions Alternate Scenarios:

← At any time, the system alerts waiter to assist table by highlighting row red and displaying "Assistance Required" message.

→ Waiter selects the "Acknowledged" button after assisting the table.

← System clears the "Assistance Required" message and removes highlighting.

←2a. The system changes or deletes table order details when order is in "In Order Queue" status and when table wants to add/delete their order.

Kitchen Staff Worker:

Use Case UC-4:	ManageOrder(Kitchen Staff)
Related User Stories:	ST-K-1, ST-K-2, ST-K-3, ST-K-4, ST-K-5, ST-K-6
Initiating Actor:	Kitchen Staff
Actor's Goal:	To fetch orders and add them to kitchen queue, view any special requests via notes, remove completed orders from kitchen queue
Participating Actors:	Screen display, user interface, waiter, chef
Preconditions:	Screen displays main GUI with options to view orders, add/remove to/from kitchen queue, and notes.
Postconditions:	Come back to main menu GUI
Flow of Events for Main Success Scenario:	
→ 1. Kitchen staffer approaches console to fetch and view orders	
← 2. System displays kitchen queue and pending orders requiring fetching	
→ 3. Kitchen staffer clicks order completed button upon completion of order	
← 4. System removes order from kitchen queue and notifies customer "Food is Ready and Arriving".	
← 5. System goes back to display kitchen queue	
Flow of Events for Extensions Alternate Scenarios:	
→ 1a. Customer cancels an order	
← System refreshes pending orders for fetching	

Chefs:

Use Case UC-5:	ChangeMenu
Related User Stories:	ST-Ch-1 to ST-Ch-4, ST-M-7, ST-M-10
Initiating Actors:	Chefs, Managerial Staff

Actor's Goal:	To add or remove items from the restaurant menu.
Participating Actors:	None.
Preconditions:	User has the "Create Restaurant Menu" screen open.
Postconditions:	Restaurant menu is updated and user can see new changes to the menu.

Flow of Events for Main Success Scenario:

→ 1. Chef or manager selects the "Create Restaurant Menu" option once logged in.

← 2. System displays existing menu categories (appetizers, lunch, specials, etc) (if any) and gives the option to "Delete" next to each category. At the beginning of list is the "Add New Category" option.

→ 3. Categories do exist. Chef or manager selects category to add a new item.

← 4. System displays names of all items in that category including price, inventory count, and gives options to "Delete Item" and "Change Item" for each item. At beginning of list, system gives option to "Add New Item".

→ 5. Chef or manager selects the "Add New Item" option.

← 6. System displays pop-up window with some textboxes to give "Name:", "Price:", and "Inventory Count:" of the new item.

→ 7. Chef or manager enters information and hits the "Add Item" when finished.

← 8. System adds the item into the category list in alphabetical order.

→ 9. Chef or manager presses "Main Menu" when finished.

← 10. System returns to main user interface.

Flow of Events for Extensions Alternate Scenarios:

→ 2a. Chef or manager selects the "Delete" option to delete a category.

←   System displays pop-up "Are you sure you want to delete category: X", where X is a category name. System give options "Yes" and "No".

→   Chef or manager selects "Yes".

←   System deletes the category and returns to category list.

→ 4a. Chef or manager selects "Delete Item" next to the item he/she wants to delete.

←   System displays pop-up "Are you sure you want to delete item: X", where X is an item name. System give options "Yes" and "No".

→   Chef or manager selects "Yes".

←   System deletes the item and returns to items list.

→ 4b. Chef or manager selects "Change Item" next to the item he/she wants to change.

←   System displays pop-up window with some textboxes to change "Name:", "Price:", and "Inventory Count:" of the existing item.

→   Chef or manager enters information and hits the "Update Item" when finished.

←   System updates the item and returns to the items list.

Bartenders:

Use Case UC-6:	**ChangeDrinks**
Related User Stories:	ST-B-1 to ST-B-3, ST-B-9, ST-M-7, ST-M-10
Initiating Actor:	Bartender, Managerial Staff
Actor's Goal:	To add or remove items from the "Drinks" category in the restaurant menu.
Participating Actors:	None.
Preconditions:	User has the "Drinks" category open.
Postconditions:	"Drinks" category is updated and user can see those changes.

Flow of Events for Main Success Scenario:

→ 1. Bartender or manager selects the "Drinks" category once logged in.

← 2. System displays subcategories of drinks (sodas, juices, caffeine, etc.) (if any) with options to "Change Name" and "Delete" a subcategory next to each. At the beginning of list is the "Add New Subcategory" option.

→ 3. Subcategories do exist. Bartender or manager selects subcategory to add a new item.

← 4. System displays names of all items in that subcategory including price, inventory count, and gives options to "Delete Item" and "Change Item" for each item. At beginning of list, system gives option to "Add New Item".

← 5. Bartender or manager selects the "Add New Item" option.

→ 6. System displays pop-up window with some textboxes to give "Name:", "Price:", and "Inventory Count:" of the new item.

→ 7. Bartender or manager enters information and hits the "Add Item" when finished.

← 8. System adds the item into the subcategory list in alphabetical order.

→ 9. Bartender or manager presses "Main Menu" when finished.

← 10. System returns to main user interface.

Flow of Events for Extensions Alternate Scenarios:

→ 2a. Bartender or manager selects the "Delete" option to delete a subcategory.

←   System displays pop-up "Are you sure you want to delete subcategory: X", where X is a subcategory name. System give options "Yes" and "No".

→   Bartender or manager selects "Yes".

←   System deletes the subcategory and returns to subcategory list.

→ 4a. Bartender or manager selects "Delete Item" next to the item he/she wants to delete.

←   System displays pop-up "Are you sure you want to delete item: X", where X is an item name. System give options "Yes" and "No".

→   Bartender or manager selects "Yes".

←   System deletes the item and returns to items list.

→ 4b. Bartender or manager selects "Change Item" next to the item he/she wants to change.

←   System displays pop-up window with some textboxes to change "Name:", "Price:", and "Inventory Count:" of the existing item.

→   Bartender or manager enters information and hits the "Update Item" when finished.

←   System updates the item and returns to the items list.

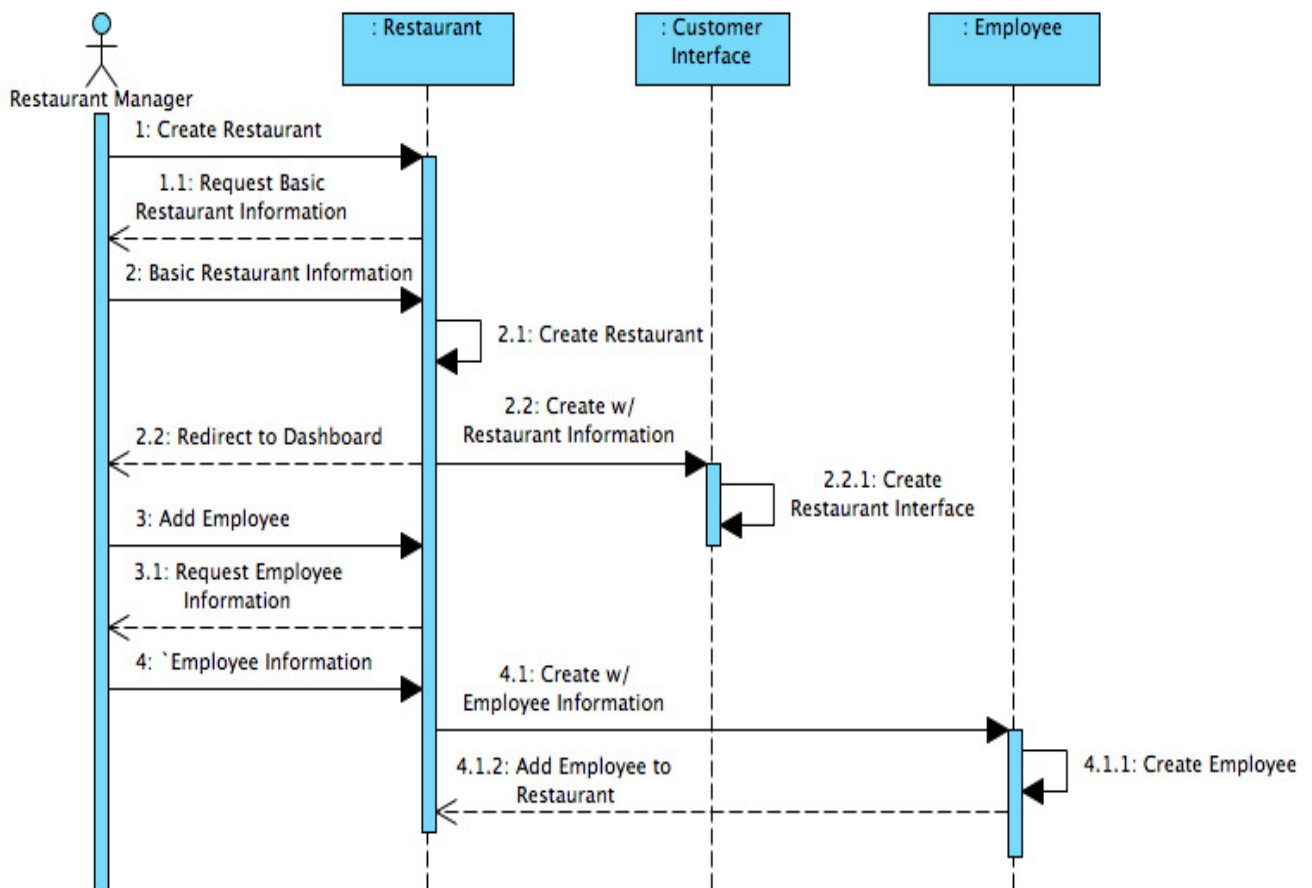**D. System Sequence Diagrams -**
   Place Order as a Restaurant Customer:
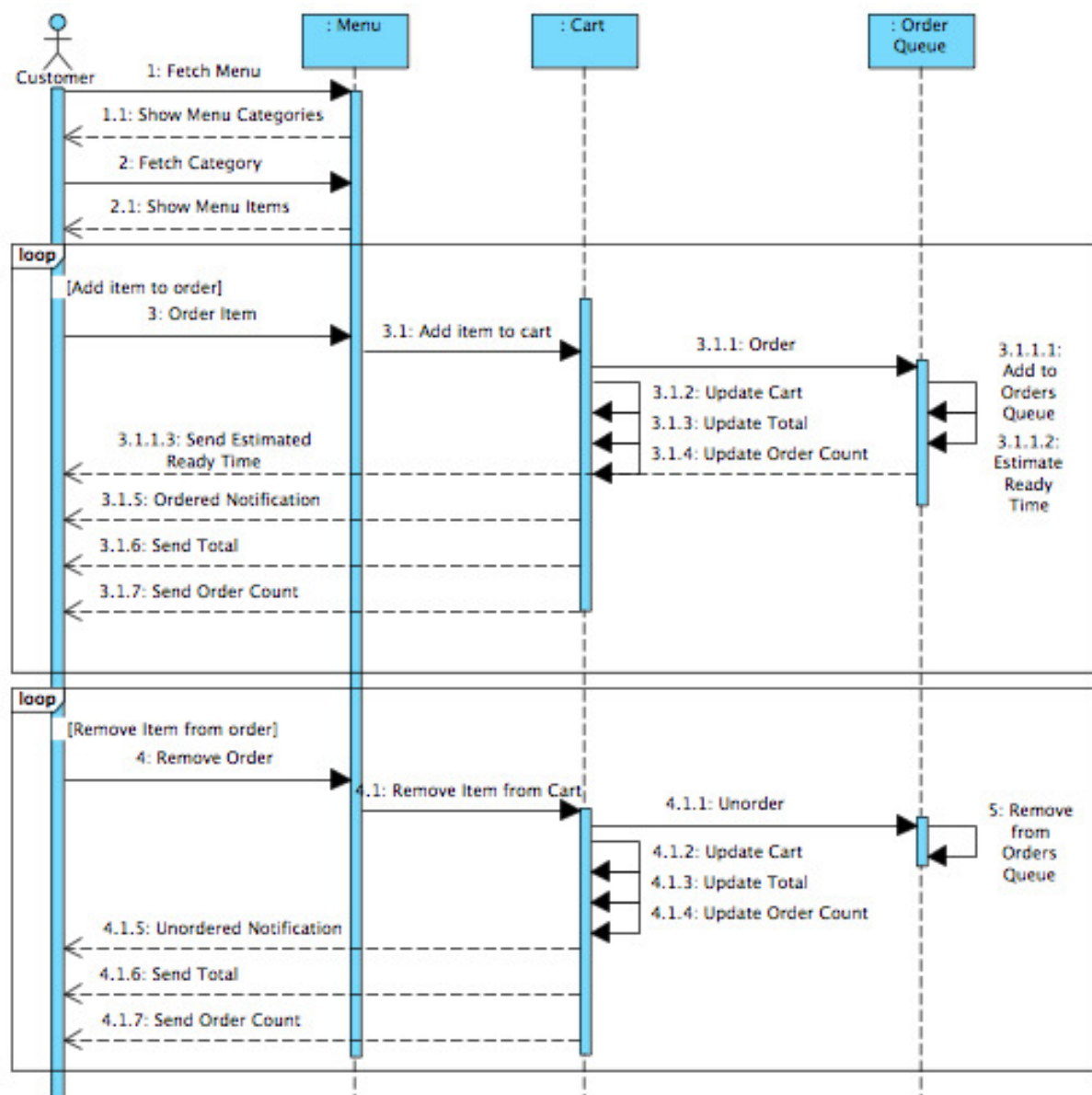
Create a Restaurant and Add an Employee as a Manager:
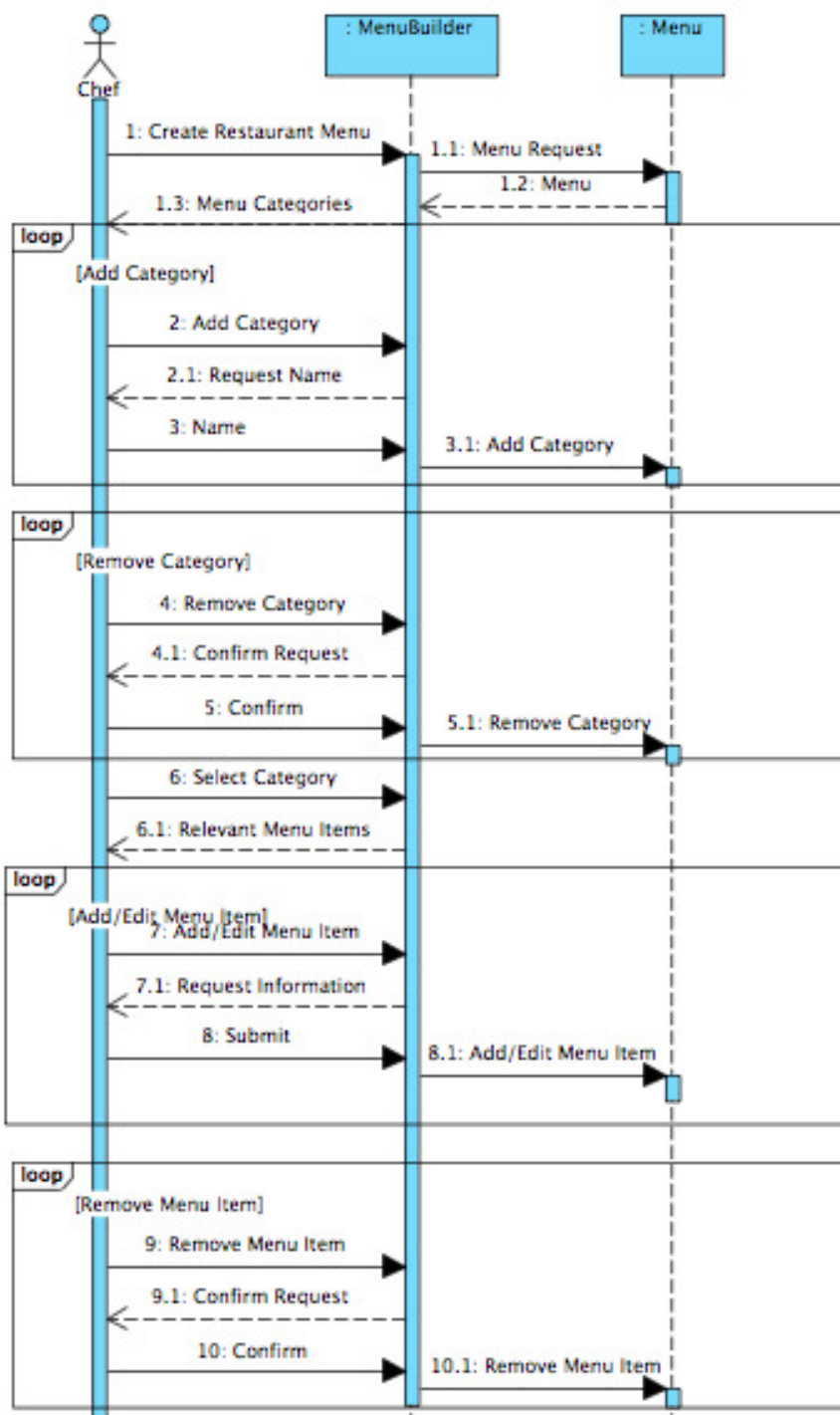
Serve Table as Waiter:
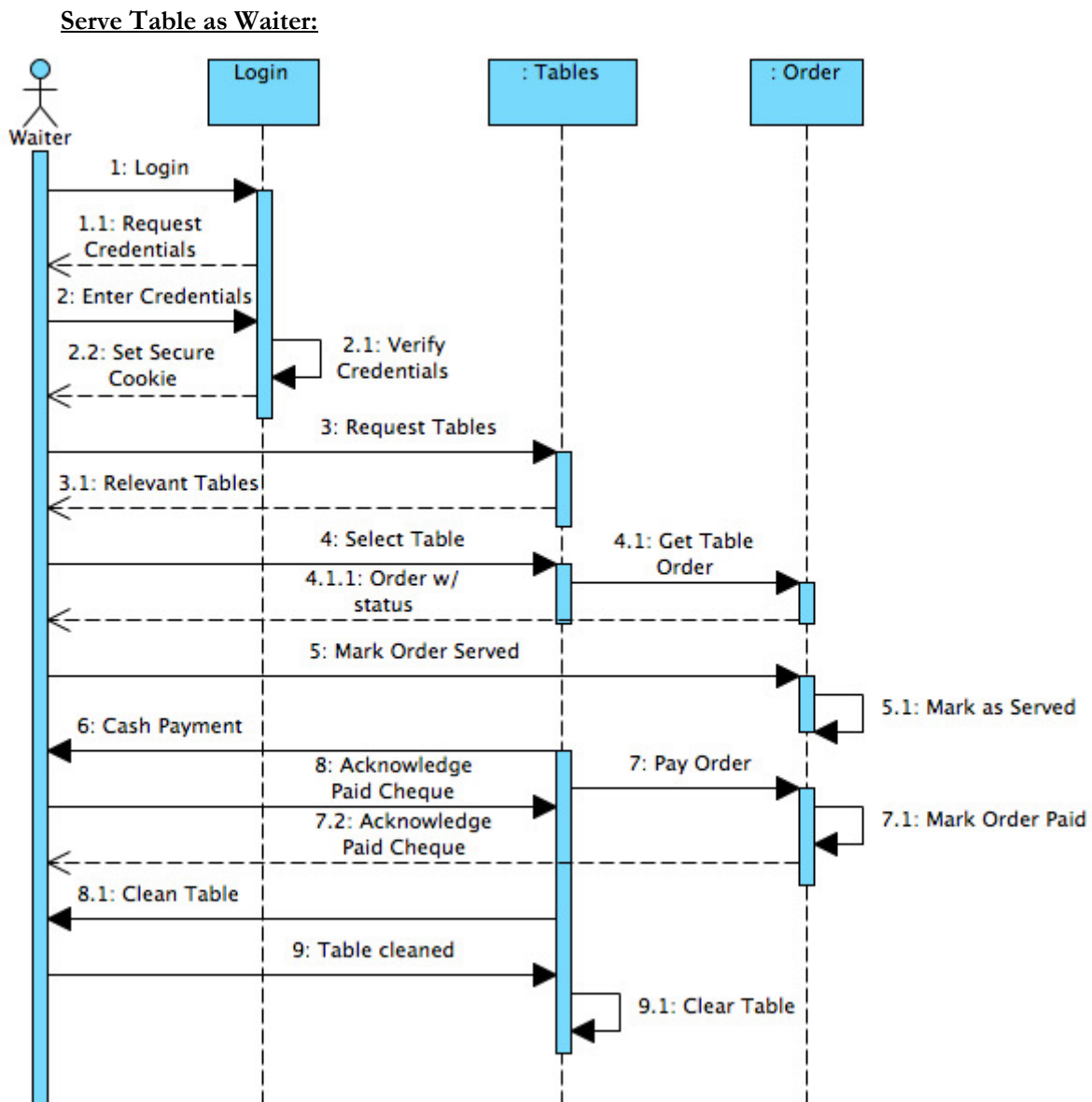
Prepare Order as a Kitchen Staff Worker:
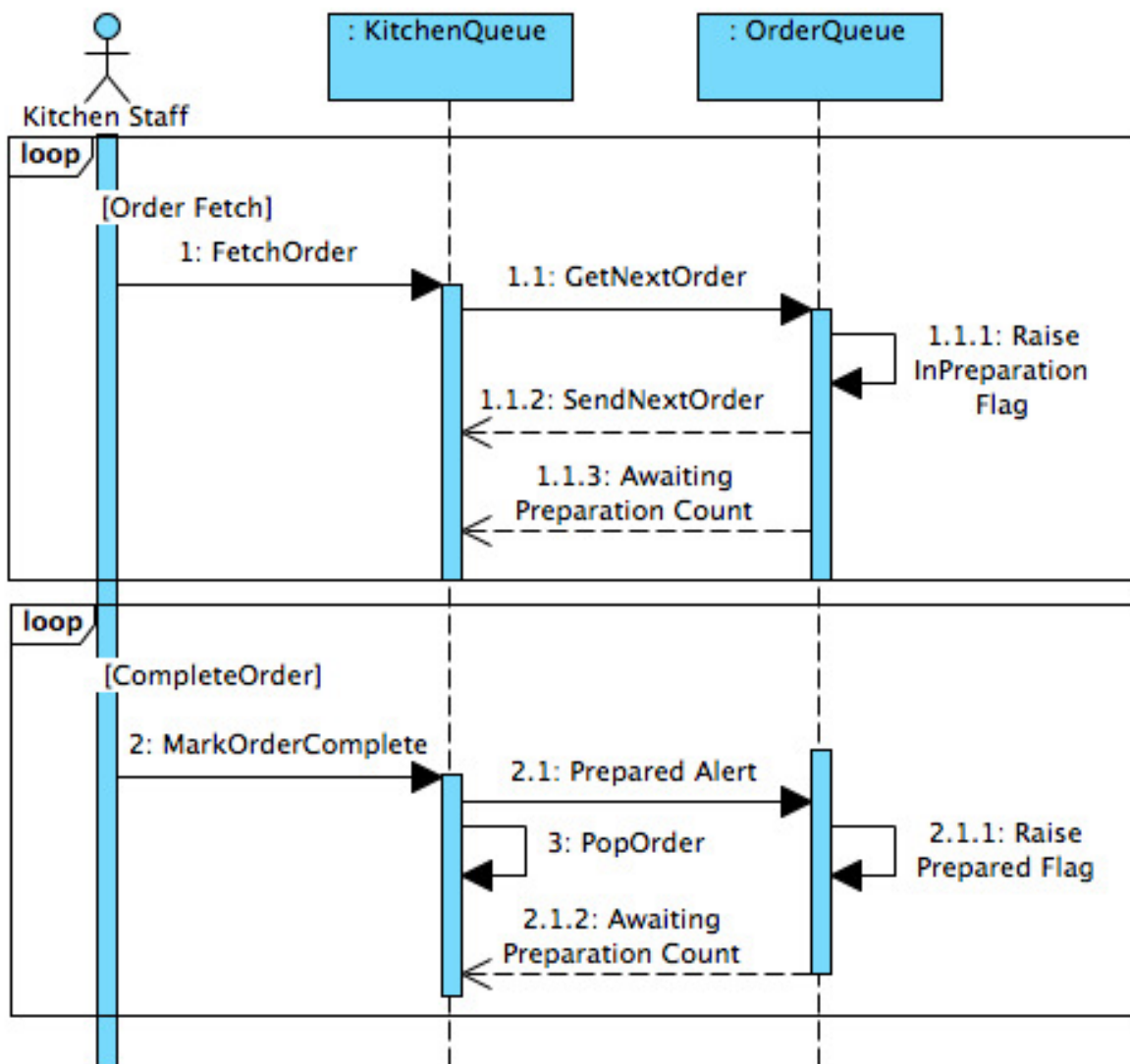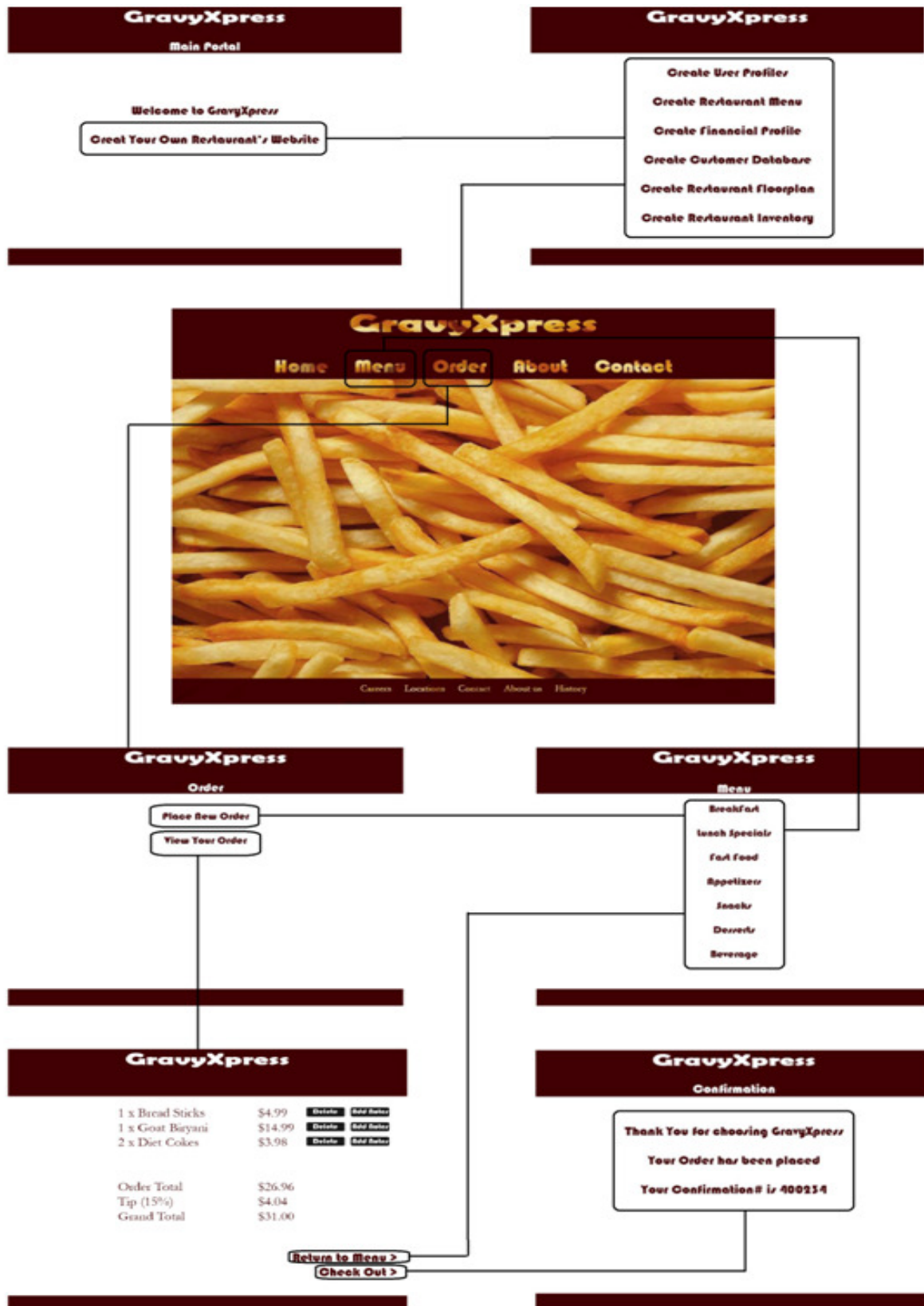
Manage Menu as a Chef:

4. User Interface Specification

A) Preliminary Design:

Main Menu of GravyXpress in the Eyes of the Customer:

User Interface:

B) User Effort Estimation:

1   Restaurant customer orders 1 Slice of Cheese Pizza with data entry of Extra Onions from the menu while sitting at a restaurant table.
    Assume the tablet or some mobile device is in the restaurant customer interface: "Main Menu".
    NAVIGATION: 4 taps, as follows
    - a   Tap "View Menu"
    - b   Tap "Breads"
    - c   Tap "Cheese Pizza Slice"
    - d   Tap "Attach Note"

    DATA ENTRY: 1 tap and 12 keystrokes
    - a   One tap to get cursor into textbox.
    - b   Type in "extra onions" (without quotes) on virtual keyboard.

    NAVIGATION: 4 taps, as follows
    - a   Tap "Attach Note"
    - b   Tap "Order"
    - c   Tap "View Order Status" at the bottom of screen.
    - d   Tap "Main Menu" to go back to beginning.

    Total of 9 taps and 12 keystrokes for the order. 9/21 or 3/7 of the activity goes to Navigation and 12/21 of the activity goes to Data Entry.

2   Chef wants to add the Stuffed Crust Pizza slice into the menu at a price of $1.50 and with an inventory count of cheese of 10 lbs.
    Assume the tablet or mobile device is in the interface for the chefs and logged in.
    NAVIGATION: 3 taps, as follows
    - a   Tap "Create Restaurant Menu"
    - b   Tap "Breads"
    - c   Tap "Add New Item" at the top of the screen

    DATA ENTRY: 3 taps and 39 keystrokes, as follows
    - a   One tap to get cursor in the "Name:" textbox.
    - b   19 keystrokes and an additional 3 keystrokes to make S, C, and P capital in "Stuffed Crust Pizza" (no quotes).
    - c   One tap to get cursor in "Price:" textbox.
    - d   4 keystrokes to type in "1.50" (no quotes).
    - e   One tap to get cursor in "Inventory Count:"
    - f   13 keystrokes to type in "10 lbs cheese" (no quotes).

    NAVIGATION: 2 taps, as follows
    - a   Tap "Add Item"
    - b   Tap "Main Menu"

    Total of 8 taps and 39 keystrokes for the user scenario. 8/47 of the activity goes to Navigation and 39/47 of the activity goes to Data Entry.

5. Domain Analysis

Although the scope of this project extends that of the Domain Model drawn above, the above represents the core of GravyXpress as we envision it. We view GravyXpress as a cloud based communication system that facilitates communication between Customers, Waiters, Chefs, and Kitchen staff. Any other feature is secondary.

In this simplified representation, in order to keep the relationships between the different objects and players clear, we have eliminated some of the objects that clutter the domain model. One such object is a controller to interface between other objects in the domain. Such an object makes it difficult to trace communication, and will only be included in the design phase when we outline the attributes and methods of individual objects.

Objects with circles at their left upper corner represent entities, while those with triangles represent boundary cases.

A summary of the domain model is as follows:

1. Upon visiting any page in the GravyXpress website, the page-maker renders all of the html dynamically, if necessary setting secure cookies with the cookie maker.
2. A restaurant manager creates a restaurant through the restaurant creation module.
   a. In doing so, he initializes the restaurants menu, capacity, order queue, and kitchen queue to empty or default values.
3. Upon placing an order (by either a customer or a waiter) items from the menu are combined with table information as well as other information relevant to an order and passed into the order queue.

4. When the Kitchen Staff is ready to prepare the next order, it will query the Order Queue for the next item.
5. When order items are added or removed from a table's order, this change will feature in the Order Queue.
6. Customers can send real time notifications telling waiters to service their table.
7. GravyXpress also keeps a dynamic cheque that updates itself as more items are added or removed from a customer's order.

In the design of this Domain Model, we have buried several interesting innovations.

The first of these innovations is the realtime notification system that represents the core of GravyXpress's communication infrastructure. Rather than continue polling the server for incoming notifications over HTTP, we will use the the HTML5 websockets two way communication infrastructure to enable the server to notify clients when appropriate rather than simply responding to client HTTP requests.

The reason for implementing GravyXpress's communication system this way is based on the fact that we intend GravyXpress to be a cloud based service. If many restaurants all over the world create subdomains, we don't want clients to pummel GravyXpress's server with HTTP requests continuously. The new HTML5 websockets infrastructure allows connections to remain open and for the server to initialize requests.

Another interesting innovation is the separation between the Kitchen Queue and the Order Queue. The philosophy behind this decision is that we want customers to be able to change their mind about an order right until the kitchen has begun to prepare it.

We therefore require the Kitchen Staff to retrieve orders from the Order Queue rather than simply pushing all orders directly to them. Aside from this benefit, this design model also ensures that the Kitchen Staff are able to retrieve items whenever is necessary.

A downside to this model was that the Kitchen Staff had no way of knowing whether the restaurant was busy, and could not pace themselves accordingly. We worked around this problem by designing the Kitchen Queue with an interface that tells the Kitchen how many orders are in the order queue in real time.

Description	Type	Concept Name
Creates a restaurant through the restaurant creation module.	D	Manager
Takes food from the order queue and places it in the kitchen queue.	D	Kitchen Staff
Prepares the food and can alter the menu.	D	Chef

Customer can order food and have a table assigned to him.	D	Customer
Is assigned a table and is notified when the food is ready.	D	Waiter

Concept Pair	Association Description	Association Name
Page maker – cookie maker	Page-maker renders all of the html dynamically, if necessary setting secure cookies with the cookie maker	Conveys request
Restaurant manager- restaurant builder	Initializes the restaurants menu, capacity, order queue, and kitchen queue to empty or default values	Conveys request
Customer (or waiter)- ordering interface	Items from the menu are combined with table information as well as other information relevant to an order and passed into the order queue.	Conveys request
Kitchen Staff- Order Queue	Queries the Order queue for the next item to prepare	Conveys request

|		
Customer/Waiter -Order Queue	When order items are added or removed from a table's order, this change will feature in the Order Queue.	Conveys request
Customers- Notifier	Send real time notifications telling waiters to service their table	Conveys request
Customer's order- Dynamic cheque	GravyXpress also keeps a dynamic cheque that updates itself as more items are added or removed from a customer's order.	Conveys request

6. Plan of Work

For the first part of the second report, we had six days to do the interaction diagrams and project management. Our target was to spend three days on each, but if we needed more time to do the interaction diagrams, we would adjust accordingly to spend at least one day on the project management. The interaction diagrams and project management are highlighted by two grey bars under the black bar that represented the first part of the second report.

For the second part of the second report (highlighted by a dark blue bar), we had seven days to work on the various subsections. We spent two days on the class diagram and interface specification (highlighted by a medium blue bar). We spent one day on both class diagrams and data types and operation signature specification. We spent also spent one day on the traceability matrix. These were highlighted by light blue bars. We spent the next five days on system architecture and system design (highlighted by a second medium blue bar).We spent at least one day on all the subsections of this section, but spent at least two days on the Global control flow. These were also highlighted by light blue bars.

For the second full report, highlighted by a dark green bar, we had seven days to work. We spent two days on the remaining subsections and spent one day on project management. These were highlighted by light green bars.

After completing the second report, we would rehearse for the first demo. This time period is represented by a maroon bar. We had twenty five days to perfect the project with the third report before presenting the second demo (represented by red and amber bars respectively). Finally, we had two days to work on the Electronic Project Archive (represented by a purple bar).
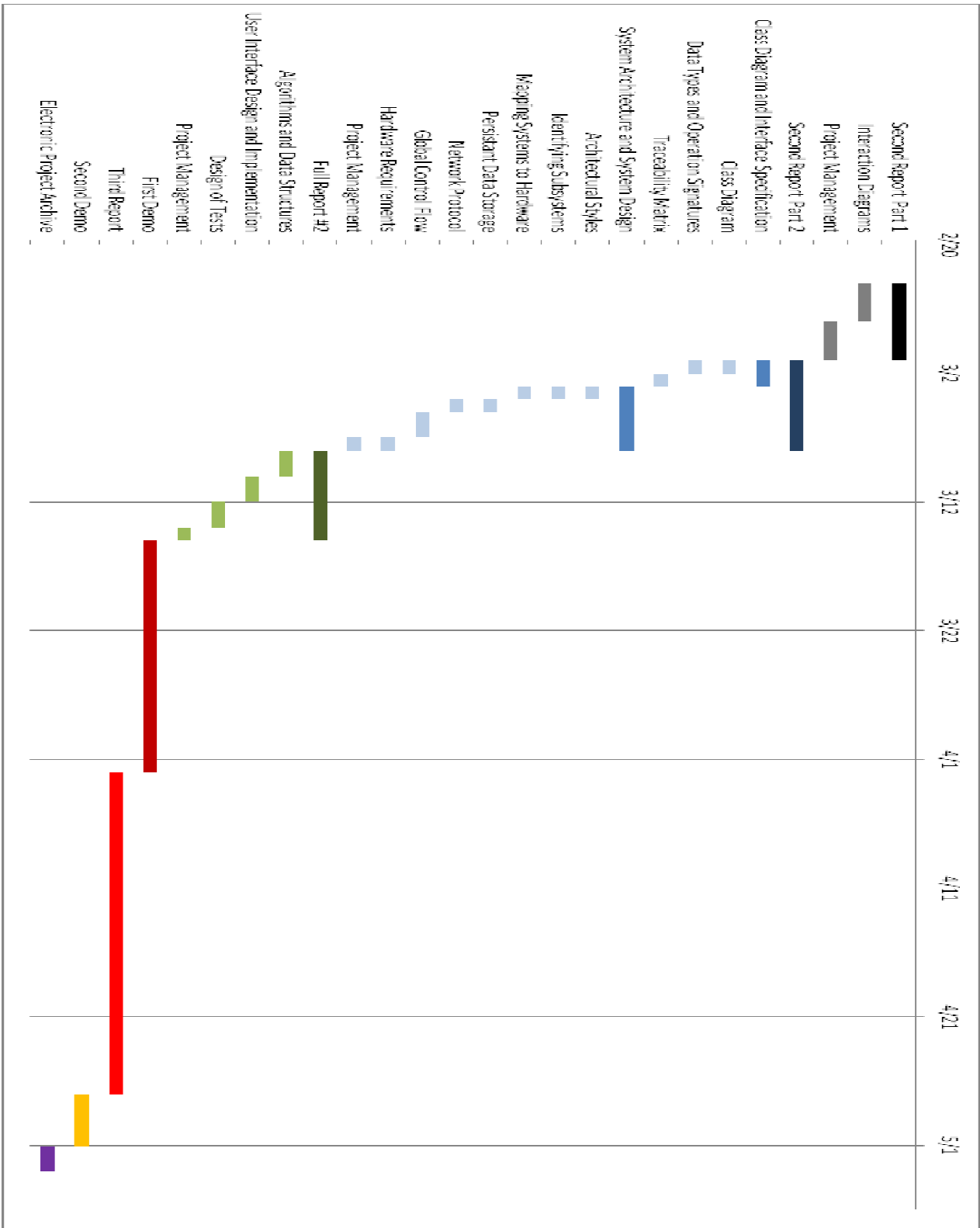
7. References:

1. General information from:
   a. <u>Software Engineering</u> by Ivan Marsic, Rutgers University
      http://www.ece.rutgers.edu/~marsic/books/SE/book-SE_marsic.pdf
2. Specific ideas/information:
   a. Role system for restaurant employees: borrowed from Group 15 - Spring 2007.
   b. Bartender position borrowed from Group 11 - Spring 2012.
   c. The floor plan idea, including color coding, from Group 2 - Spring 2012.
   d. The requirements for this report from the Professor's webpage
      http://www.ece.rutgers.edu/~marsic/Teaching/SE/report1.html
3. Software used:
   a. Google Drive to write the report.
   b. Microsoft Visual Paradigm for UML 10.1
      http://www.visual-paradigm.com/download/vpuml.jsp?edition=ce
   c. Adobe Photoshop for the UI mockups.
4. Pictures:
   a. The picture on the cover page:
      http://blogs.kqed.org/bayareabites/files/2011/04/e-la-carte.jpg
   b. The french fries picture in the UI Specification - Not sure exactly where Abdul got this. Will update later when we find the link.

Project Management:

Part 1:

- A designated person, Yehuda Cohen, made an announcement on Facebook chat that included all 6 members that we would have a Google+ Hangout meeting on a certain day at a designated time.
- The purpose of the Google+ Hangout was to discuss how we would divide up the work in order to complete Part 1 of this report.
- Next, the same person Yehuda, created a blank Google document on Google Drive and shared it with all 6 of us.
- Since then, all of us have edited the Google document collaboratively adding and gradually building this report.
- We assigned color coding (this person uses this color) to all 6 members, so we know what each person contributed and how much they contributed.
- We discussed changes by using the comments feature available in Google docs, often ensuing in long detailed discussion threads detailing nuances in the design.
- After a lot of battering and editing from members in the group, this document took shape.
- Another person, Rohit Lakshmanatirthakatte, was designated to reformat the color-coded document so that all text is in one format (Garamond 11-point font) except for headings and categories.
- Rohit also kept track of the due date, due time, and the number of days left, in order to remind the other members to contribute and complete report requirements.
- Finally, Rohit was chosen to use his Dropbox on Sakai to submit the report.
- We find this collaborative editing to be effective in building an airtight design.

Part 2:

- This time, Rohit Lakshmanatirthakatte, made an announcement on Facebook to remind everyone that Part 2 is due in a week.
- Rohit prepared blank pages that continues from the Part 1 report on Google Drive and kept track of the due date, due time, and the number of days left until submission.
- A few days before the due date Yehuda, made an announcement on Facebook calling all members to join a Google+ Hangout to discuss how we would split up responsibilities to complete Part 2.
- It was decided that:
  - Nabil Ali and Shivani Sethi would define the stakeholders, actors and their goals, and create 2 Fully Dressed Use Cases (CreateWebpage-Manager and ManageOrder-Kitchen Staff)
  - Yehuda Cohen would work on the Use Case Diagram and System Sequence Diagrams
  - Rohit Lakshmanatirthakatte would work on 4 Fully Dressed Use Cases (OrderFood-Customer, ServeTable-Waiter, ChangeMenu-Chef, ChangeDrinks-Bartender)
  - Abdul would work on Preliminary Design of the UI and Amizan would work on User Effort Estimation of the UI.
- In order to accomplish these tasks and complete the diagrams, we all downloaded and learned how to use the software Microsoft Visual Paradigm for UML 10.1. We used this software for Use Case Diagram and System Sequence Diagrams.
- Again, for the report, we color-coded our text to see who contributed what and how much of it.
- Finally, Rohit re-formatted the text to the same as Part 1 and submitted the report in his DropBox.

List of Product Ownership:

1. Team 1
   Shivani Sethi and Rohit Lakshmanatirthakatte
   Team 1 will implement the following functionality:
   1. Customer accesses GravyXpress online, stipulating whether he wants to order takeout or reserve a table at the restaurant.
   2. Upon entering the restaurant, customer chooses available table from the floor plan interface at the front desk.
   3. Customer reserves a table online.
   4. Customer places order from restaurant website (optionally).
   5. Customer signals for the waiter via GravyXpress for assistance.
   6. Customer sees status of his or her orders, total approximate time for their order to be finished, and option to cancel orders that have not yet been processed by the kitchen staff.
   7. After eating, customer views cheque via the app where he is prompted to stipulate gratuity.
   8. Customer (optionally) pays online through PayPal, or simply by credit card or cash and leaves.
   9. Customer accesses GravyXpress drive-thru interface on a touch-screen attached to a wall/window at drive-thru.

2. Team 2
   Amizan Jaleel and Nabil Ali
   Team 2 will implement the following functionality:
   1. Kitchen staff views a prioritized kitchen queue, detailing the most urgent orders.
   2. Bartenders view a prioritized bar queue, detailing the most urgent drinks orders.
   3. Kitchen staff marks an order complete using color code.
   4. Kitchen staff fetches the next order to add to one of the kitchen queues.
   5. Kitchen staff updates ingredient stock.
   6. Waiters are alerted when drinks or food have been prepared.
   7. Waiters are alerted when customers require assistance.
   8. Waiters are alerted when they are delegated a table.
   9. Waiters mark accounts paid for non-online payments.
   10. Waiters mark tables empty once the customers have vacated.

3. Team 3
   Abdul Rattu and Yehuda Cohen
   Team 3 will implement the following functionality:
   1. A restaurant manager joins GravyXpress, creating a domain for her restaurant.
   2. A restaurant manager sets and alters the preferences of his restaurant through a dashboard.
      2b. A restaurant manager uploads a floor plan of the restaurant, and names all the tables.
   3. A restaurant manager creates user accounts for his employees.
   4. A restaurant manager or a chef updates a restaurant's menu.
   5. A restaurant manager or a bartender updates a restaurant's drinks menu.
   6. A restaurant manager may view the restaurant's order history from the dashboard, including customer feedback associated with the order.
   7. A restaurant manager or a chef may view and update the stock of ingredients.
   8. A restaurant manager or a bartender may view and update stock of drinks ingredients.

4. Team Website Updates (Minor Tasks)
   Rohit Lakshmanatirthakatte (primarily)
   Description: Updating events, important announcements, group member tasks, and links to upload and download files in the group website (URL is on the cover page).