Requirements Analysis and Specification (COE691)

Lab 4

Due the Week of March 25, 2024 (In Your lab Session), Late submission will not be accepted

Objectives

Review requirement analysis modeling Using Context Diagram, Data Flow Diagrams, Entity relationship Diagram (ERD), and State Machine Diagram

Part I: Context Diagram and DFD (30 points)

A* Cuisine Case Study: This case study is a work of fiction. Names, characters, places and other details either are products of the case author's imagination or are used fictitiously. Any resemblance to actual events or locales or persons, living or dead, is entirely coincidental.

A systems analyst has collected the following information about a project he is working on for a small catering firm. To assist him, **draw the Context Diagram and the DFD Level 0 diagram**.

A* Cuisine is a small-scale catering firm with seven employees. During a typical summer weekend, A* Cuisine caters 16 picnics with 25 to 60 people each. The business has grown rapidly over the past year, and the owner wants to install a new computer system for managing the ordering and buying process. A* Cuisine has a set of nine standard menus. When potential customers call, the receptionist describes the menus to them. If the customer decides to book a picnic, the receptionist records the customer information (e.g., name, address, phone number, etc.) and the information about the picnic (e.g., place, date, time, which one of the standard menus, total price) on a contract. The customer is then faxed a copy of the contract and must sign and return it along with a deposit (often by credit card or check) before the picnic is officially booked. The remaining money is collected when the picnic is delivered. Sometimes, the customer wants something special (e.g., birthday cake). In this case, the receptionist takes the information and gives it to the owner who determines the cost; the receptionist then calls the customer back with the price information. Sometimes the customer accepts the price; other times, the customer requests some changes, which should go back to the owner for a new cost estimate. Each week, the owner looks through the picnics scheduled for that weekend and orders the supplies (e.g., plates) and food (e.g., bread, chicken) needed to make them. The owner would like to use the system for marketing as well. It should be able to track how customers learned about A* Cuisine and identify repeat customers so that A* Cuisine can mail special offers to them. The owner also wants to track the picnics on which A* Cuisine sent a contract, but the customer never signed the contract or booked a picnic.

Part II: Entity Relationship Diagram (20 points)

Express Burger Restaurant Case Study: This case study is a work of fiction. Names, characters, places and other details either are products of the case author's imagination or are used fictitiously. Any resemblance to actual events or locales or persons, living or dead, is entirely coincidental.

As college students in the 1980s, Mike and Judy Stone often dreamed of starting their own business. While on their way to a business class, Mike and Judy drove by a popular local family restaurant and noticed a "for sale" sign in the window. Mike and Judy quickly decided to purchase the business, and Express Burger Restaurant was born. The restaurant is moderately sized, consisting of a kitchen, dining room, counter,

storage area, and office. Currently, all paperwork is done by hand. Judy and Mike have discussed the benefits of purchasing a computer system; however, Mike wants to investigate alternatives and hire a consultant to help them. Perishable food items, such as beef patties, buns, and vegetables are delivered daily to the restaurant. Other items, such as napkins, straws, and cups, are ordered and delivered as needed. Mike Stone receives deliveries at the restaurant's back door and then updates a stock log form. The stock log form helps Mike track inventory items. The stock log form is updated when deliveries are received and nightly after daily sales have been tallied. Customers place their orders at the counter and are called when their orders are ready. The orders are written on an order ticket, totaled on the cash register, and then passed to the kitchen where the orders are prepared. The cash register is not capable of capturing point-of-sale information. Once an order is prepared and delivered, the order ticket is placed in the order ticket box. Mike reviews these order tickets nightly and makes adjustments to inventory. In the past several months, Mike has noticed several problems with Express Burger's current information systems, especially with the inventory control, customer ordering, and management reporting systems. Because the inventory control and customer ordering systems are paper based, errors occur frequently. These errors often affect delivery orders received from suppliers as well as customer orders. Mike has often wanted to have electronic access to forecasting information, inventory usage, and basic sales information. This access is impossible because of the paper-based system.

"*Although express burger is well recognized for its fast foods, especially the express burger special, plate lunches are also offered. These include such main menu items as barbecue ribs, grilled steak, meat loaf, and grilled chicken breast. The customer can choose from a variety of side items, including roasted garlic mash potatoes, twice-baked potatoes, coleslaw, corn, baked beans, and Caesar salad. Many downtown businesses often call and place order for express mighty meal. These are combination meals consisting of a selection of main menu items and three side orders. The customer can request express mighty meals to feed five, ten, fifteen, or twenty individuals. Once each month, a bill is generated and sent to those business customers who have charged their order. Mike and Judy have found that many of their business customers are repeat customers and often place orders for the same express burger mighty meals. Mike asks you if is possible to track a customer's order history, and you indicate that it is indeed possible.*"

1. **Based on the information provided in the previous scenario *in italic*, what entities will Express Burger need to store information about?**
2. **For the entities identified in previous part, identify a set of attributes for each entity as well as specify an identifier for each entity.**
3. **What rules did you apply when selecting the identifier?**
4. **Draw the entity relation diagram and be sure to specify the cardinalities for each relationship.**

Part III: State Machine Diagram (10 points)

Draw a state machine diagram for the job Application below

A job application is created when an application form is received, and the details recorded. The application will then be read by the manager and may be shortlisted or rejected. If rejected, the application is filed

for six months. At the end of this time, it is discarded. If it is shortlisted, interview details are sent out and the interview is usually confirmed by the applicant. Once the interview has taken place, the applicant may not be successful; in this case a rejection letter is sent, and the application is filed for six month and then discarded. If the offer is rejected by the applicant the application is filed for six months, and then discarded; if accepted, the application terminates, and other procedures take over.

Submit your lab

To submit your lab, include the following in a pdf file.

1- Context Diagram and DFD for Part I
2- ERD and answers to questions in Part II
3- State machine diagram for Part III.
4- Save your work as a .pdf file and upload it by the due date. This is individual work; no group work is allowed. **A software for plagiarism check will be applied on each submitted work. Please get yourself familiar with Ryerson's plagiarism policy. Do not forget to add a cover page with your name and ID in the report.**