COMP 225- SOFTWARE ENGINEERING METHODOLOGIES

SUBMITTED BY:

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Contents

PART A

Problem:

Upgrade the manual system of the pharmacy to an automated computer system.

Implement Information System to support and enhance daily operation with increased productivity, while maintaining a high level of Customer Service.

Need:

- Register New Customer
- Track Medical history
- Manage Employee Operation
- Support daily transaction operations
- Order depleting pharmaceuticals from Supplier

Project:

- Detailed Work Order
- Inventory Management

Vision Statement

As S.M.A Pharmaceuticals continues to establish itself as a dominant retailer of pharmaceutical products, the requirements for information system becomes necessary to serve our growing customer base. A system capable of providing clear and accurate details of our customers, inventory and also supports our daily operations to serve the community.

System Capabilities

- Alert on low stock supplies
- Prompt to create a new order if the drug number fall below optimum level.
- Able to register new Customers and view profile
- Keep record of receiving drugs.

Business Capabilities

- Increased customer satisfaction.
- Able to manage the inventory by providing stock alert for ordering new drug supplies.
- Easy system management and easy for employee to track the status of customer and drugs.
- Increased overall business profit.

Work Flows

1.0 Customer Interaction

1.1 Employee asks for the customer information.
1.2 Customer provides information.
1.3 Employee performs system check Customer ID for previous record.
    1.3.1 New Customer is created if no record found.
    1.3.2 For returning customer, old profile is retrieved.
1.3 System validates information.
1.5 Employee asks for the signed medical prescription from customer.
1.6 Customer provides the prescription.
    1.6.1 Employee gives the prescribed drugs if the prescription is new.
    1.6.2 Employee gives the prescribed drugs if the refill is authorized, else the request is denied.
1.7 Transaction is added to Customer record.
1.8 Customer info is placed into new work order.

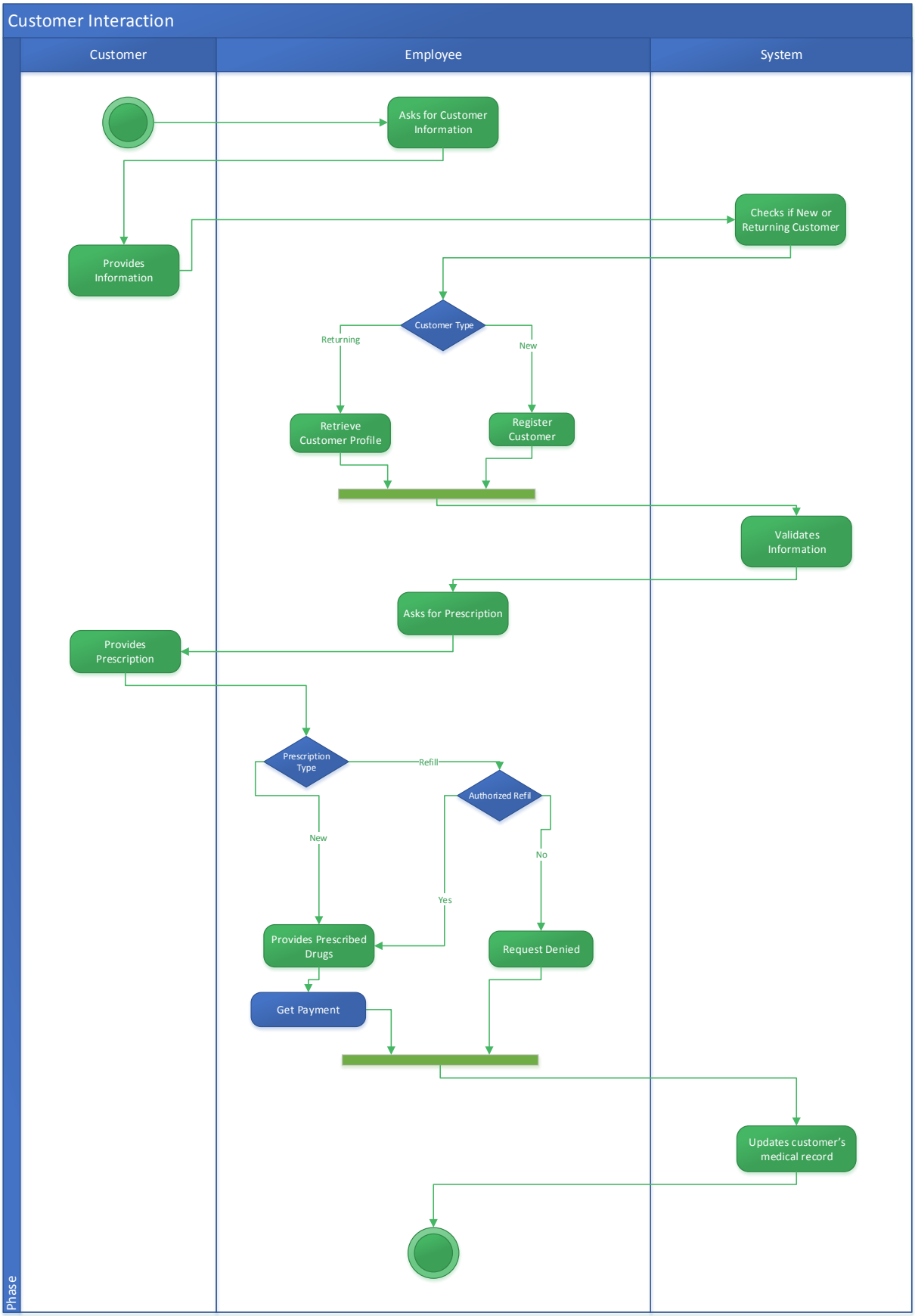
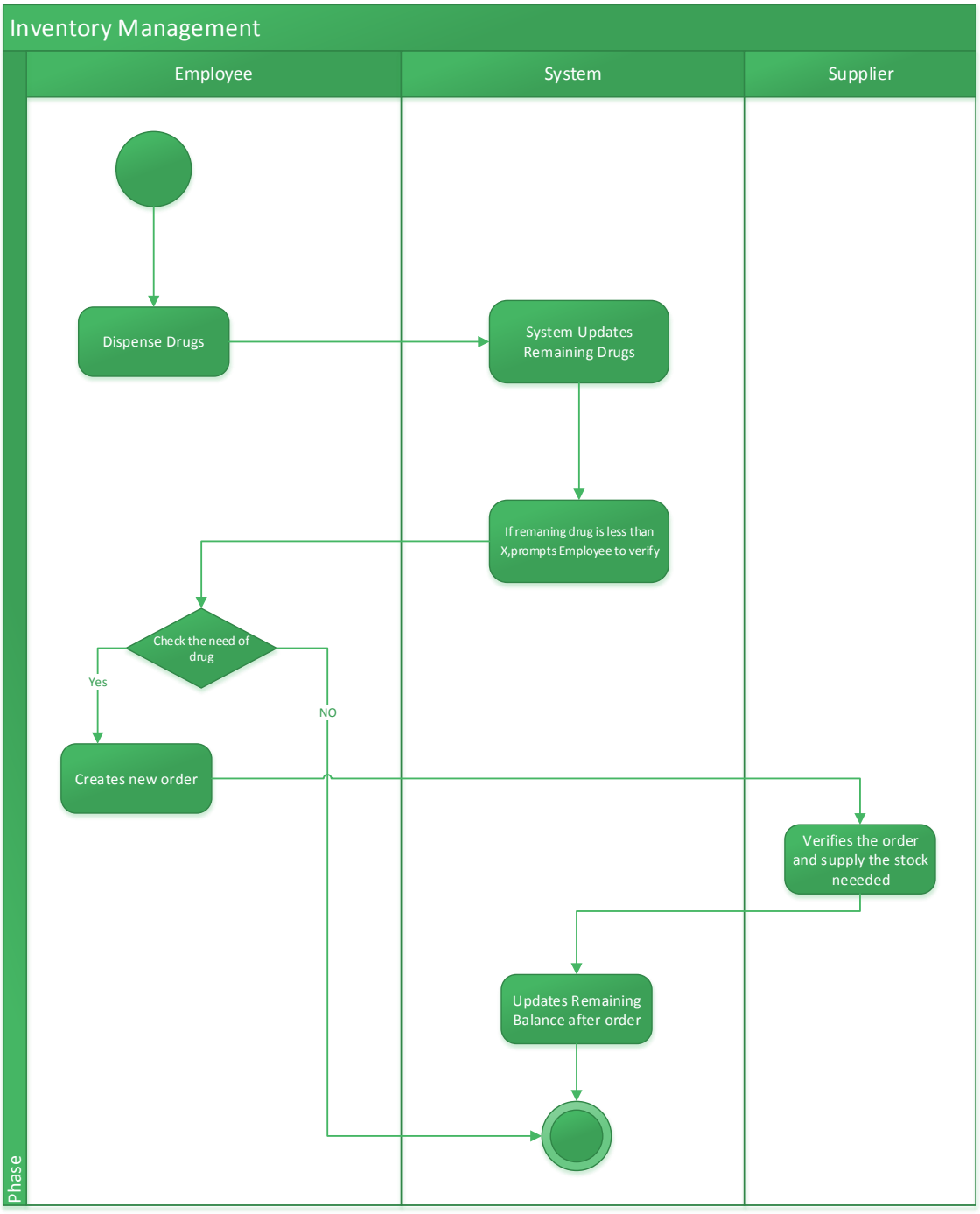

Customer Interaction
Customer
Employee
System
Asks for Customer Information
Provides Information
Checks if New or Returning Customer
Customer Type
Returning
New
Retrieve Customer Profile
Register Customer
Validates Information
Asks for Prescription
Provides Prescription
Prescription Type
Refill
Authorized Refil
New
No
Yes
Provides Prescribed Drugs
Request Denied
Get Payment
Updates customer's medical record
Phase

DIAGRAM 1.0

2.0 Inventory Management

2.1 Employee dispense product.
2.2 System updates remaining balance of inventory.
2.3 If inventory level is below X, the system prompts employee to verify and create order for new supplies.
2.4 Employee creates order for specific drug after verifying the need.
2.5 Supplier verifies the order and supply the drugs ordered.
2.6 System updates balance of inventory.

Diagram 2.0



PARTB

USE CASE Model – Object Interaction

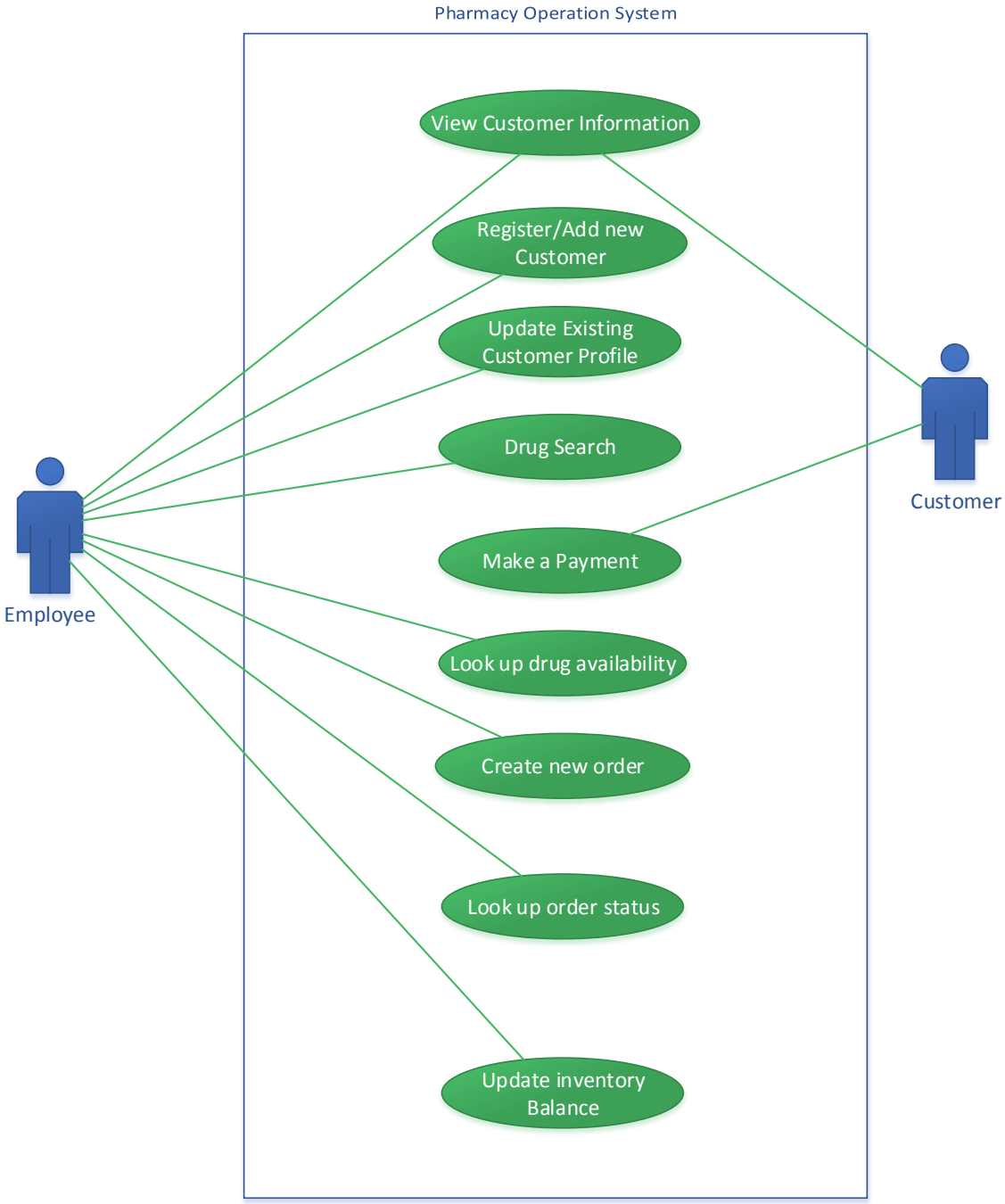
Event Table

Processes (Workflows):
Customer Interaction
Inventory Management

Event	**Trigger**	**Source**	**Use Case**	**Response**	**Destination**
1. Employee wants to get Customer information.	Customer wants to buy drug.	Employee	View Customer Information	Customer provides information	Customer
2. Register a new Customer.	Customer is new.	Employee	Register new Customer.	Information is filled.	Employee
3. Update Customer Profile.	Exiting customer's information changed.	Employee	Update Customer Profile		
4. Customer provides prescription.	Employee request prescription	Customer	Drug Search	Drug availability details	Employee
5. Customer makes payment	Employee request payment	Customer	Make a Payment	Employee completes transaction	Employee
6. Time to confirm the low stock alert	Low inventory prompt by system	Employee	Look up drug availability		
7. Time to produce a new order	Employee wants to create an invoice	Employee	Create a new order	Order confirmation Order saved	Supplier Employee
8. Employee wants	Order status	Employee	Look up	Order status	Employee

	to check the order status	Inquiry		order status	details	
9.	Shipping fulfills order	Order fulfillment notice	Supplier	Verify order shipment	Employee confirms delivery	Employee
10.	Time to update the remaining balance of drugs	Confirmation of drug order		Update the inventory balance	Record saved	Employee

UML use case diagram



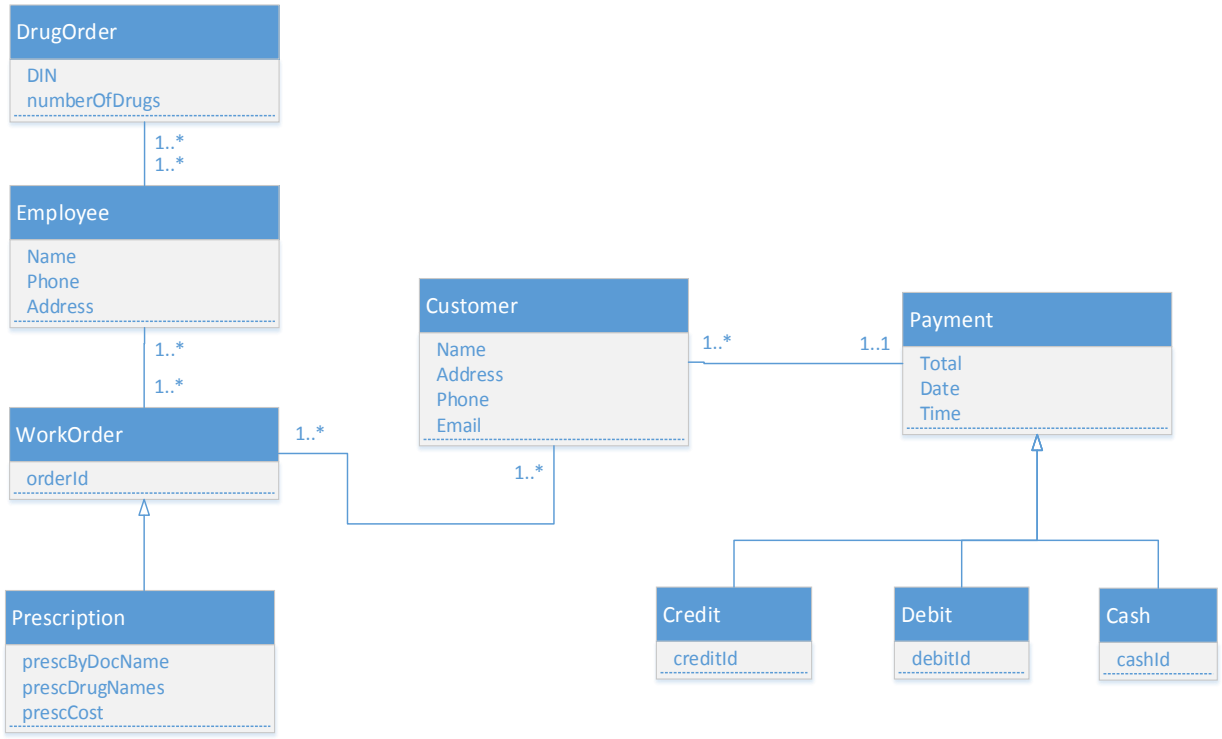
Prioritized List of Use Cases

S. No.	Use Case	Priority
1.	Create a new Order	High
2.	Register New Customer	High
3.	Update the inventory Balance	High
4.	Verify order shipment	High
5.	Update Customer Profile	High
6.	View Customer Information	Medium
7.	Look up order status	Medium
8.	Drug Search	Medium
9.	Make a payment	Low

Brief Use Case Descriptions

Use Case Name	Description
View customer information	To get access to Customer Information saved in database, Employee would need to ask Customer information (Name and phone Number). Both Employee and Customer would be able to view Customer Profile, but only Employee can access the information retrieved from the database.
Register new customer	Only employee can register new customer .Profile is created from the information(Name,Address, Phone number,email) provided by the Customer.
Update customer profile	Only an employee can update customer profile if existing customer wants to change information. Discrepancies are corrected with documentary evidence.
Drug search	Employee can perform a drug search to look up for the prescribed drugs in their inventory. Information is returned to the user from inventory management subsystem.
Make a payment	Customer makes a payment on request from employee and payment date, time and payment total details are shown through an invoice including total and timestamp.
Create a new order	To create new order, employee verifies low balance in stock and place an order to the supplier if the drug is of high-medium priority.
Look up order status	Employee can view the status of a shipment in process and make necessary arrangements for its delivery.
Verify order shipment	Checks are performed by employee to verify the quality and quantity of shipment. Confirmation is sent to supplier.
Update the Inventory balance	The system is updated to reflect the new balance stock.

Domain Class Diagram



Part C

Fully Developed Description

A. Create a new Order

Use Case Name:	Create new Order	
Scenario:	Create an order of drugs to refill stock	
Triggering Event:	Employee wants to place drug order	
Brief Description:	To create new order, employee verifies low balance in stock and place an order to the supplier.	
Actors:	Employee	
Stakeholders:	Management,Sales	
Related Use Case:	Check up drug availablity	
Preconditions:	Employee must confirm the low stock alert. An unique orderId must be there for each order.	
Postconditions:	Order must be created and saved .	
Flow of activities:	Actor	System
	3. Employee initiates the creation of new order. 4. Employee verifies the drug.(check the drug availability use case). 5. Add the drug into Drug Order. 6. Repeat steps 4,5 until all the drugs indicated in low stock are added into the order.	1. Automatic low stock alert. 2. Prompt Employee to add particular drug into new drug order with OrderID. 3.1 Create a new order with OrderID. 4.1 Display drug information. 5.1 Add a drug.

	7. Employee confirms the stock alert. 8. Employee makes a payment.	7.1 Complete order. 7.2 Compute Totals 7.3 Display invoice 8.1 Verify Payment 8.2 Creates an order transaction 8.3 Finalize order.
Exception conditions:	1. If Employee doesn't want to place order of drugs, then he can cancel the low stock alert and can save the alert to check later. 2. When Employee checks the drug availabliy and there is no need of new order, then he can cancel the order. 3. If the payment is rejected due to bad verification,then a. Order is canceled b. Order is put on hold.	

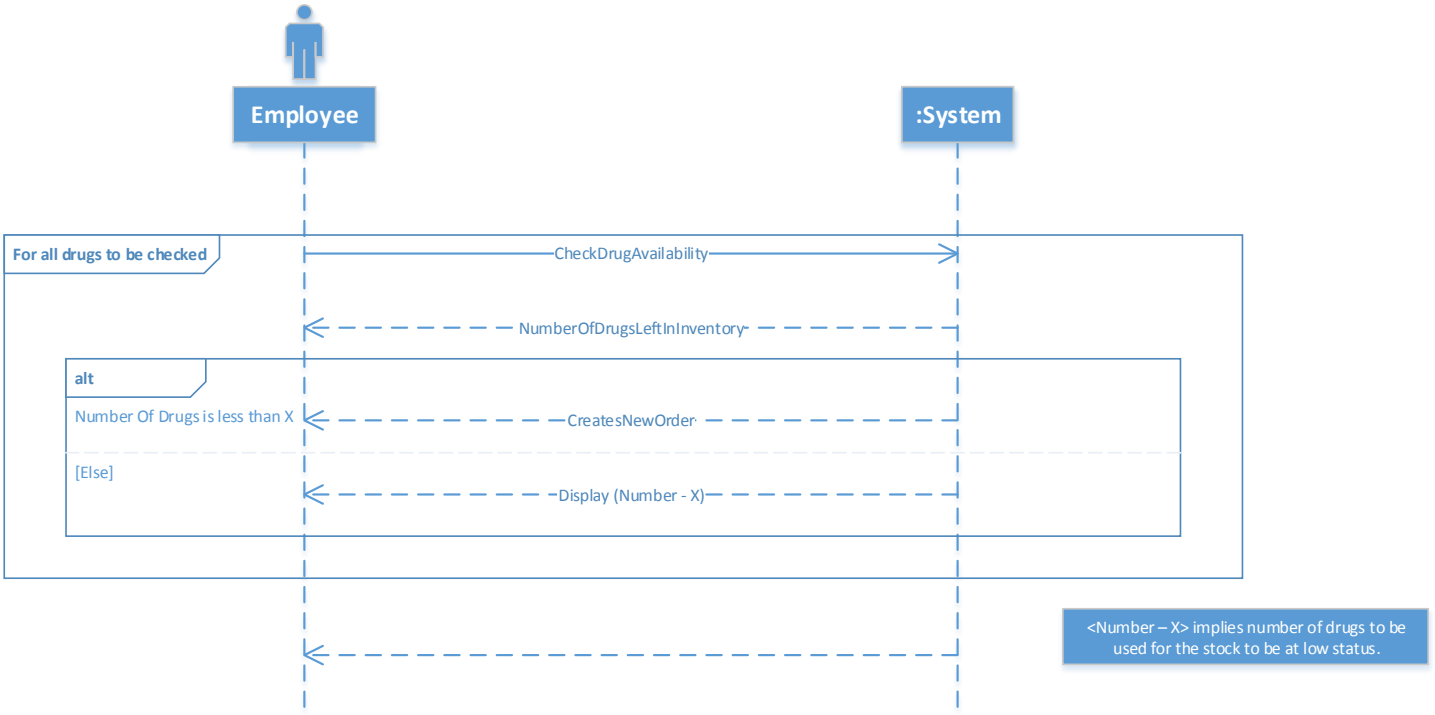
B. Register New Customer

Use Case Name:	Register a Customer	
Scenario:	Add a new Customer into the system	
Triggering Event:	New Customer comes with Prescription	
Brief Description:	Employee can register new customer .Profile is created from the information(Name,Address, Phone number,email) provided by the Customer.	
Actors:	Employee	
Stakeholders:	Management	
Related Use Case:	Update existing Customer Profile	
Preconditions:	Account must be identifiable with Customer Name and Phone Number	
Postconditions:	Customer must be created and saved.	
Flow of activities:	ACTOR	SYSTEM
	1. Customer provides prescription to employee. 2. Employee initiates to add a new Customer into system. 3. Employee ask for customer name and phone number. 4. Employee asks for customer Address. 5. Employee asks for customer email.	2.1 Creates a new customer. 2.2 Prompts for Customer name and phone number. 3.1Creates Name 3.2Prompt for address 4.1 Creates address 4.2 Promts for email(optional). 5.1 Creates email 5.2 Add Customer 5.2 Assocaite Customer, name, phonenumber, address. 5.3 Register Customer and returns valid Customer details.
Exception conditions:	3-Customer is already there is the System.	

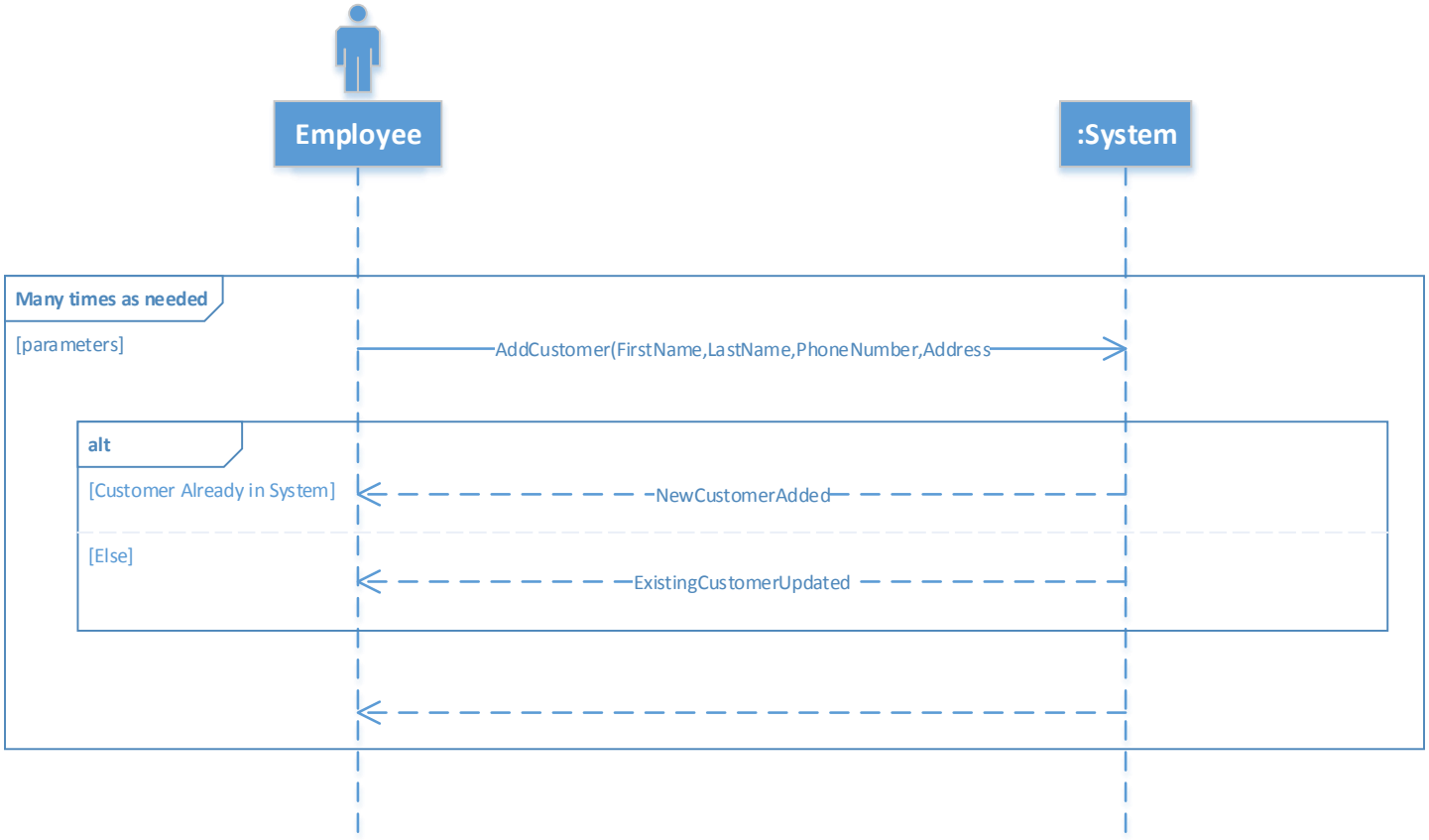
	5-Customer may not have email address, then field can be left empty.

System Sequence Diagram

Create an Order

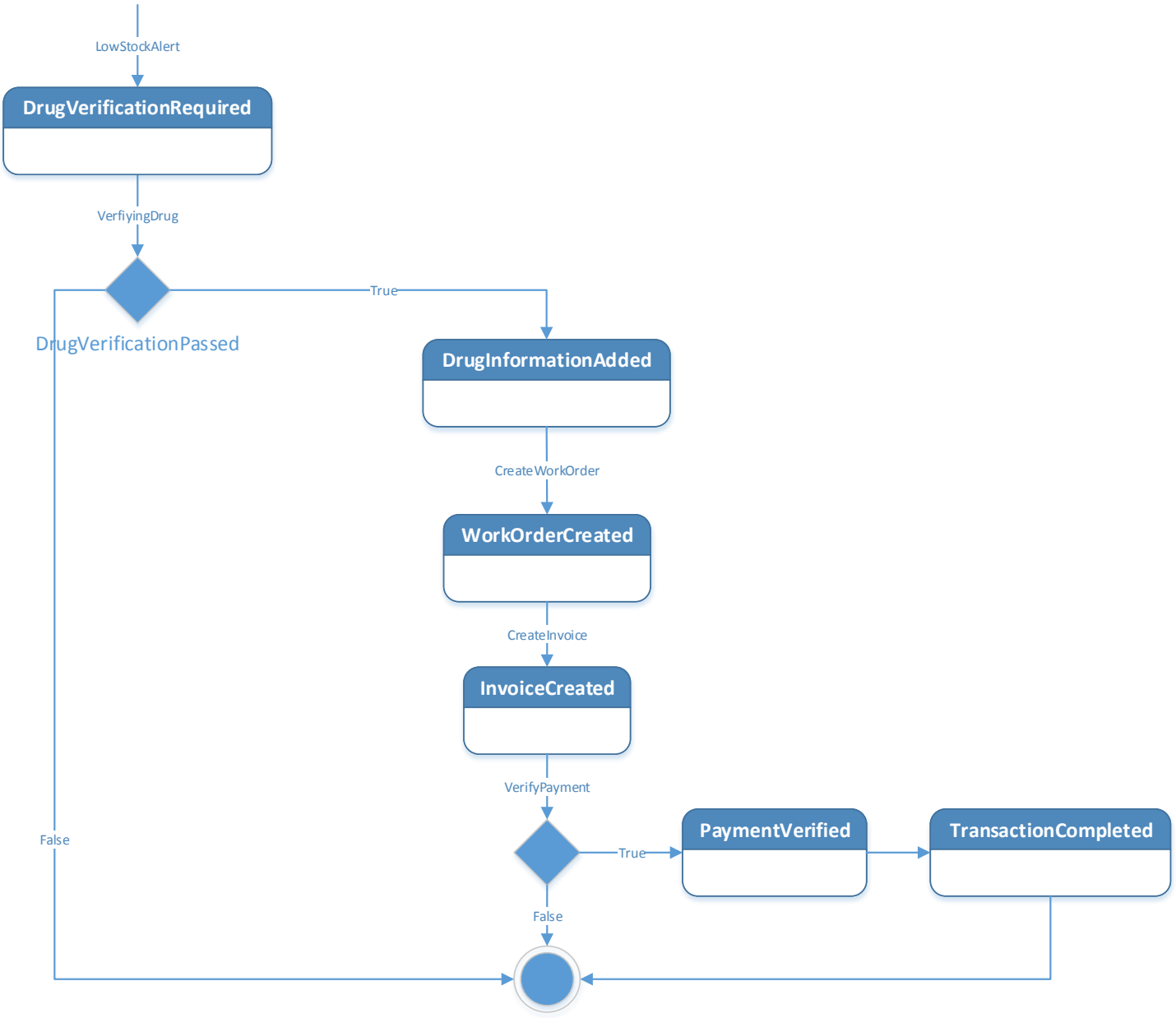


Register a new Customer

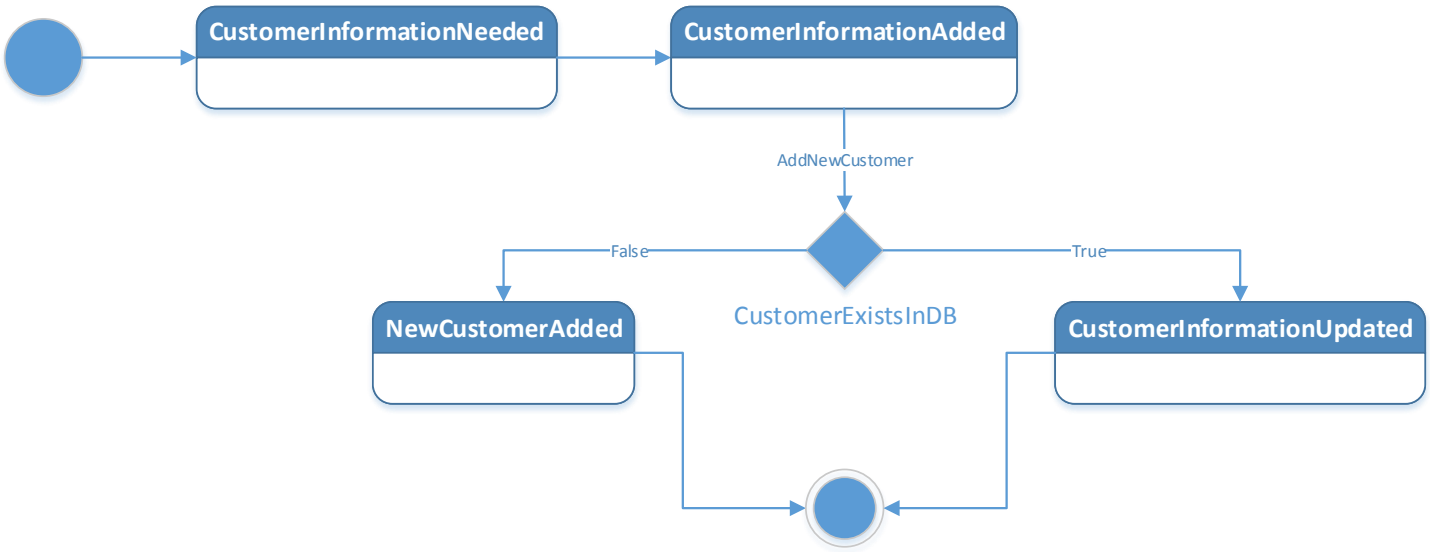


State Machine Diagram

Create an Order

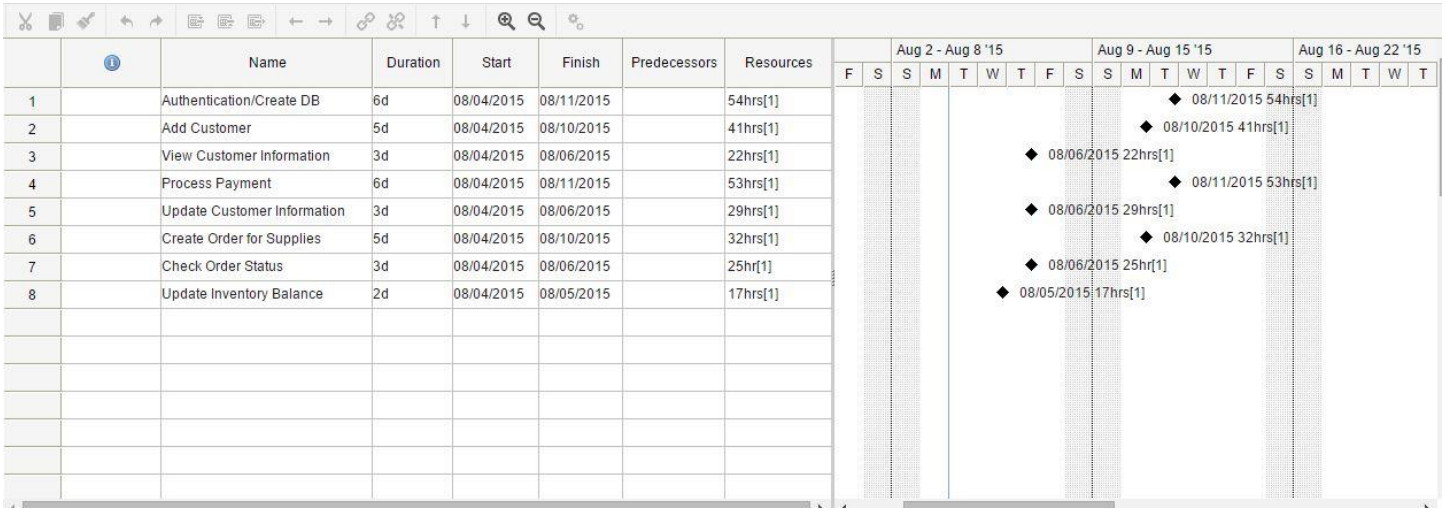


Register a new Customer



Gantt Chart

Task Mode	Task Name	Duration	Start	Finish	Cost	Hours Work
Manually Scheduled	Authentication/Create DB	6 days	Mon 8/3/15	Mon 8/10/15	$3,998.00	54hrs
Manually Scheduled	Add Customer	5 days	Mon 8/10/15	Fri 8/14/15	$2,194.00	41hrs
Manually Scheduled	View Customer Information	3 days	Wed 8/12/15	Fri 8/14/15	$1,898.00	22hrs
Manually Scheduled	Process Payment	6 days	Mon 8/17/15	Mon 8/24/15	$3,498.00	53hrs
Manually Scheduled	Update Customer Information	3 days	Mon 8/24/15	Wed 8/26/15	$1,962.00	29hrs
Manually Scheduled	Create Order for Supplies	5 days	Mon 8/17/15	Fri 8/21/15	$2,475.00	32hrs
Manually Scheduled	Check Order Status	3 days	Thu 8/27/15	Mon 8/31/15	$1,799.00	25hr
Manually Scheduled	Update Inventory Balance	2 days	Sat 8/29/15	Mon 8/31/15	$2,264.00	17hrs



APPENDIX

Team Meetings

Meeting 01- May 14, 2015

Time-2:30 pm to 4:30 pm

Group Member	Present	Work Discussed and Assigned
Amandeep Kaur Aujla	Yes	Business Analysis and Topics discussed for project.
Sheldon Chin	Yes	
Manpreet Singh Matharu	Yes	

Meeting 02- May 21, 2015

Time-2:30 pm to 4:30 pm

Group Member	Present	Work Discussed
Amandeep Kaur Aujla	Yes	Pharmacy topic chosen for the project and further discussion carried out.
Sheldon Chin	Yes	
Manpreet Singh Matharu	Yes	

Meeting 03-May 28,2015

Time-12:30pm to 2:30 pm

2:30 pm to 4:30 pm

Group Member	Present	Work Discussed
Amandeep Kaur Aujla	Yes	First draft for the project is made. It includes the drafting of vision statement and first workflows for Customer interaction.
Sheldon Chin	Yes	
Manpreet Singh Matharu	Yes	

Meeting 04- June 04, 2015

Time- 12:30pm to 4:30 pm

Group Member	Present	Work Discussed
Amandeep Kaur Aujla	Yes	Two workflows are made and final sample is made.
Sheldon Chin	Yes	
Manpreet Singh Matharu	Yes	

Meeting 05-June 11, 2015

Time-12:30pm to 2:30 pm

2:30 pm to 4:30 pm

Group Member	Present	Work Discussed
Amandeep Kaur Aujla	Yes	An overview is done on two work flows and necessary changes are made.
Sheldon Chin	Yes	
Manpreet Singh Matharu	Yes	

Meeting 06- July 9, 2015

Time-2:30 pm to 4:30 pm

Group Member	Present	Work Discussed and Assigned
Amandeep Kaur Aujla	Yes	Rough draft of Event table for use cases is made.
Sheldon Chin	Yes	
Manpreet Singh Matharu	Yes	

Meeting 07- July13, 2015

Time-2:30 pm to 4:30 pm

Group Member	Present	Work Discussed
Amandeep Kaur Aujla	Yes	Events were reviewed and necessary changes were made.
Sheldon Chin	Yes	
Manpreet Singh Matharu	Yes	

Meeting 08-July14,2015

Time-9:00 am to 11:30 am

Group Member	Present	Work Discussed
Amandeep Kaur Aujla	Yes	Use case are discussed and rough draft is made.
Sheldon Chin	No	
Manpreet Singh Matharu	Yes	

Meeting 09-July 15, 2015

Time- 9:00am to 11:30am

Group Member	Present	Work Discussed
Amandeep Kaur Aujla	Yes	Use case based on the events is reviewed and prioritized and brief use case description is made.
Sheldon Chin	Yes	
Manpreet Singh Matharu	Yes	

Meeting 10-July 16, 2015

Time-12:30pm to 2:30 pm

2:30 pm to 4:30 pm

Group Member	Present	Work Discussed
Amandeep Kaur Aujla	Yes	The event table were re-edited and Use cases and description were changed according.
Sheldon Chin	Yes	
Manpreet Singh Matharu	Yes	

Meeting 11-July 23, 2015

Time- 9:00am to 11:30am

Group Member	Present	Work Discussed
Amandeep Kaur Aujla	Yes	Class diagram is made and whole part is reviewed and integrated together.
Sheldon Chin	Yes	
Manpreet Singh Matharu	Yes	

Meeting 12-July 30 2015

Time- 2:30 pm to 4:30pm

Group Member	Present	Work Discussed
Amandeep Kaur Aujla	Yes	Feedfack is given on Part B of project and problems are discussed.
Sheldon Chin	Yes	
Manpreet Singh Matharu	Yes	

Meeting 13-July 27 2015

Time- 2:30 pm to 4:30pm

Group Member	Present	Work Discussed
Amandeep Kaur Aujla	Yes	Full Description of the high priorty is discussed and finalized.
Sheldon Chin	Yes	
Manpreet Singh Matharu	Yes	

Meeting 14-July 31 2015

Time- 4:00pm to 6:00pm

Group Member	Present	Work Discussed

Amandeep Kaur Aujla	Yes	Sequence diagrams and Gantt Chart is discussed and finalized.
Sheldon Chin	Yes	
Manpreet Singh Matharu	Yes	

Meeting 15-Aug 8 2015

Time- 1:00pm to 4 pm

Group Member	Present	Work Discussed
Amandeep Kaur Aujla	Yes	The project is reviewd and necessary changes are made.
Sheldon Chin	Yes	
Manpreet Singh Matharu	Yes	

Discussion and Interview Agenda

Setting

Objective:

1. Determining processing rules for customer registration
2. Determine the inventory for drugs.

Date, Time and Location:

June 11, 2016, 12:30 pm, L3

Developers/Interviewers

Manpreet Matharu(Business Analyst)

Sheldon Chin(Software Engineer)

Client/Interviewee

Amandeep Aujla(Client)

Interview Questions

1. How satisfied are you with the efficiency of the current manual system?
   Answer: For the current period under study, our current manual system is not very efficient in delivery of service which might result in loss of business.

2. What areas of your daily operations would you like to improve?
   Answer: Increase the processing time for customer data entry and records management and Inventory Management

3. Explain the critical area you need the proposed information system to support
   Answer: Performing accurate checks and balances on inventory; and ability to enter and retrieve customer information in a timely fashion.

4. Is the business generating enough revenue to support the implementation of the proposed Information System?
   Answer: Yes

5. Are there any additional features you would like to include in the Information System?
   Answer: Maybe employee time monitoring and time management