UTD CHAPTER EXCHANGE

MIS 6308.003

Group 1

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Contents

Executive Summary

The current market for college textbooks is suffering from unique instances of market failure, wherein college students may want to purchase some, but not all, of the contents of a book. Rather than pay the full sticker price for a book which they will use only a fraction of, many of these students either do not make any purchase at all or illegally obtain the book online. In economic terms these are failed transactions and are instances of market failure. The following proposed system outlines a platform for an exchange that will attempt to solve this problem.

First, the system will increase the unit granularity of books in the textbook market by allowing second hand sales of eBooks to occur at the chapter level, allowing students looking for textbooks to purchase smaller portions of books in larger quantities. Second, the system will address potential market illiquidity, i.e. a student wanting to make a purchase but having nothing to buy one with, by offering a digital currency as a medium of exchange. Third, the system seeks to provide a market based solution to the exchange by adjusting prices on a near-fluid basis based on measured demand for a chapter.

This system will require a medium level of initial outlay and a small amount of annual upkeep, as well as the hiring of one additional employee. The development time of this system is estimated to be one year.

Problem Statement

In the current market for college textbooks students are buying books that they will only partially use. In essence, this is an issue that is arising from inefficient bundling, that is, content providers are offering “bundles” of chapters (books) that students – and the professors that assign them - do not find desirable. Students also participate in a textbook market where prices are not indicative of market forces – some books are wildly expensive and others are very inexpensive with regards to how many students need them. Finally, students are poor! They occasionally do not buy books simply because they have no money, and a method does not yet exist to convert their old eBooks into valuable commodities.

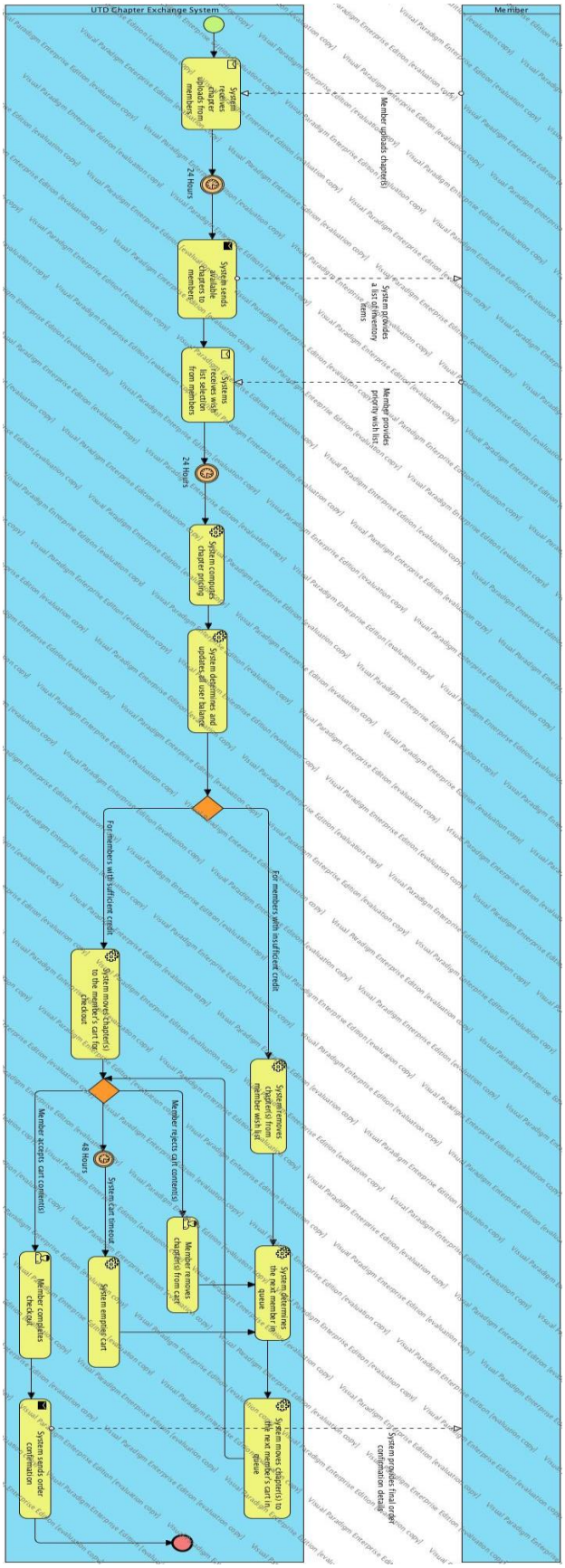
Objective

This proposed system will attempt to accomplish three specific objectives. First, the system will create an integrated digital content distribution platform that will provide increased granularity. Second, the system will reactively update prices sensitive to fluctuations in demand, as measured by an implemented wish list feature. Third, the system will implement a digital currency as a medium of exchange for textbooks. This currency is obtained by selling one’s own used textbooks through the system.

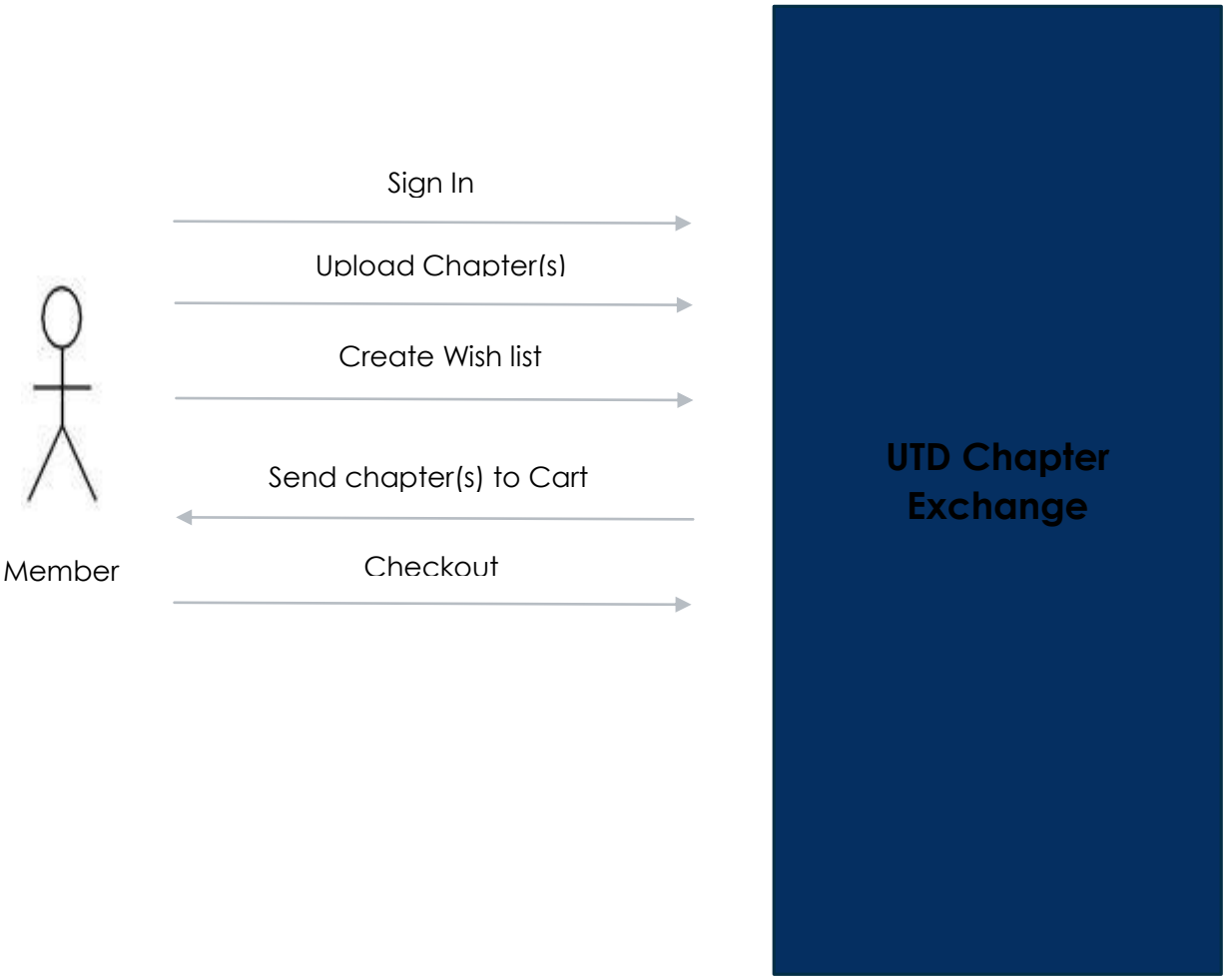
Scope

The estimated initial outlay for development of the proposed system is between $200,000 and $250,000, with $50,000 in additional upkeep required annually thereafter. This figure includes the cost of three developers for one year of development, plus costs for technology hardware and licenses, plus a yearly salary for one system administrator after project implementation.

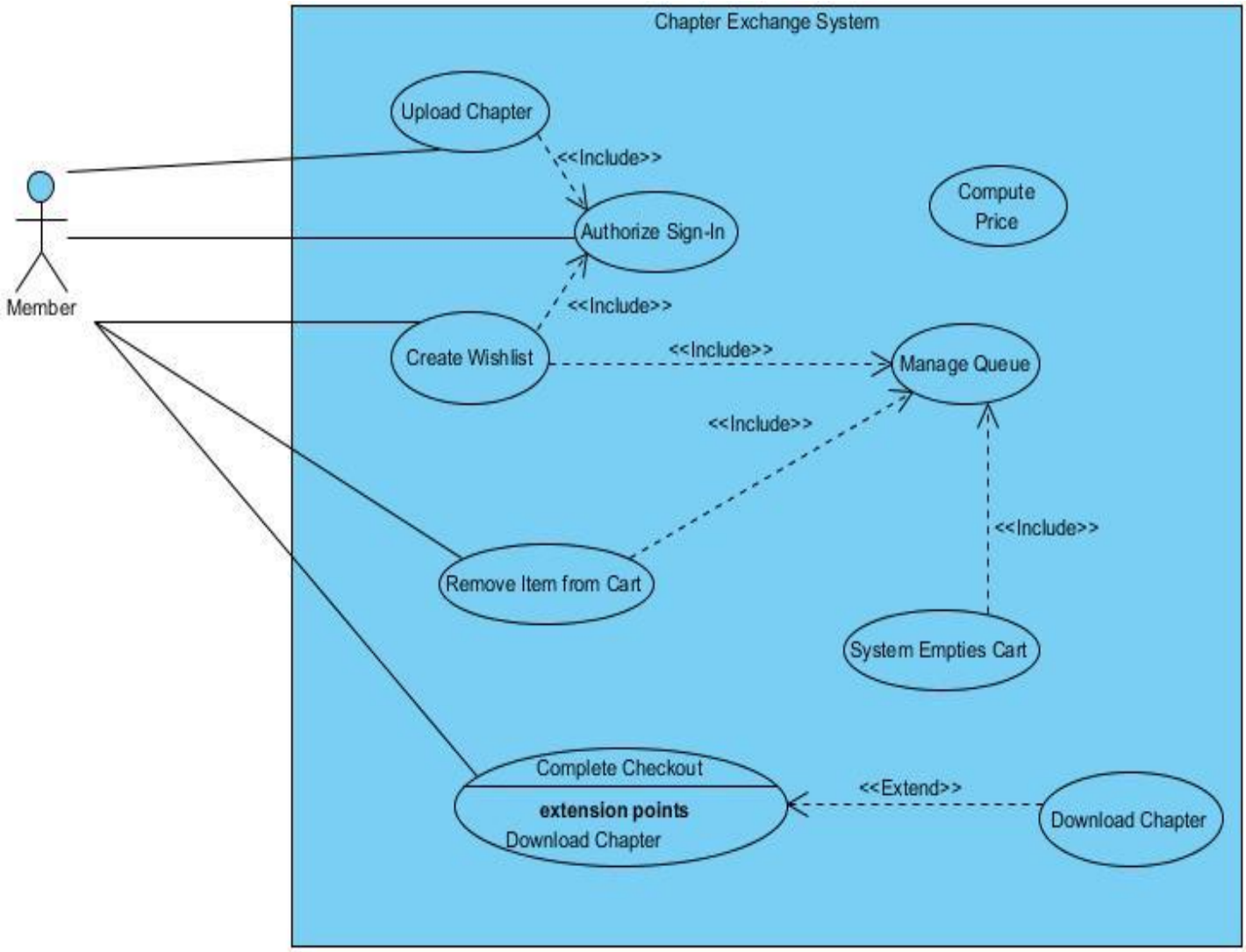
Business Process Model



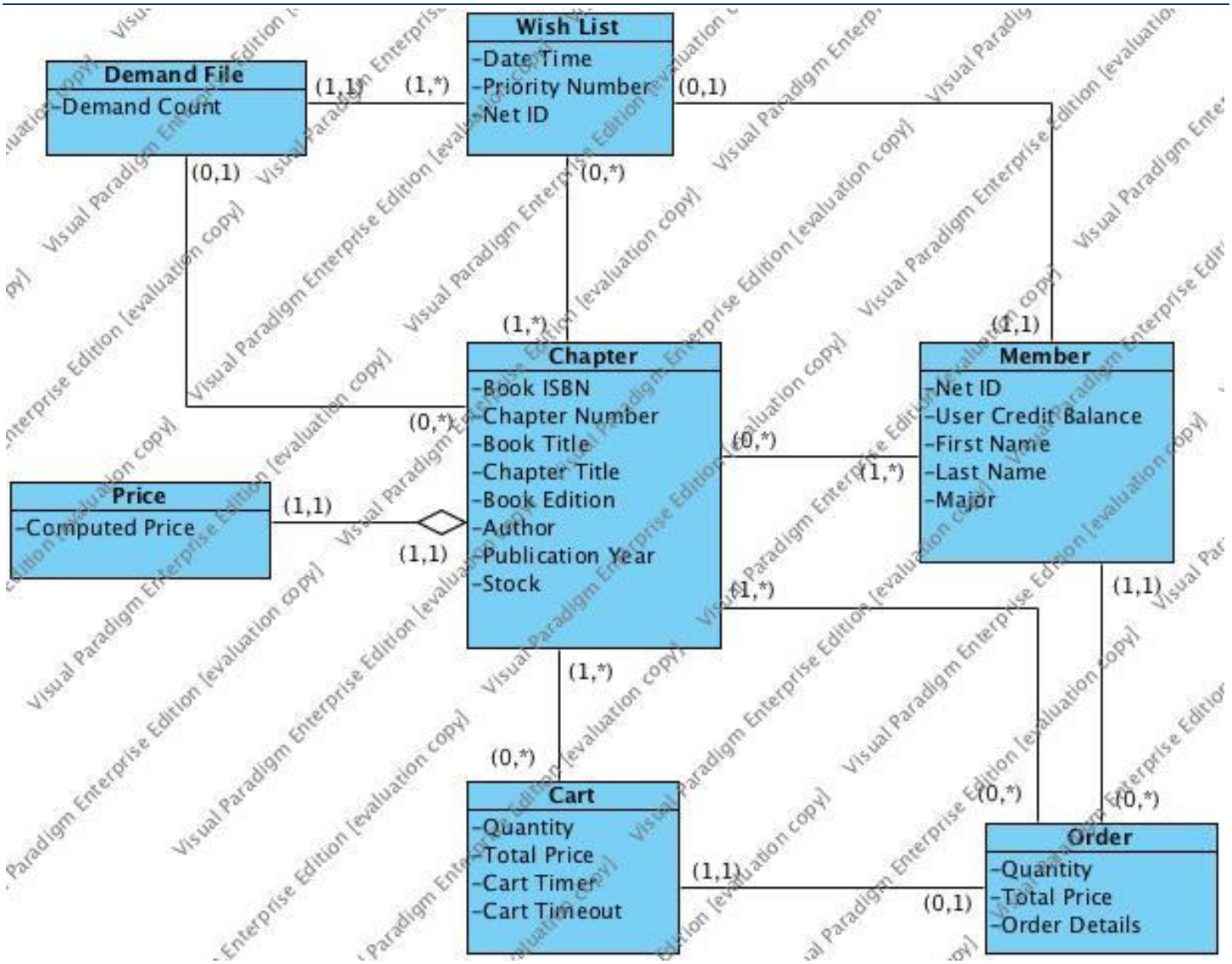
Context Diagram



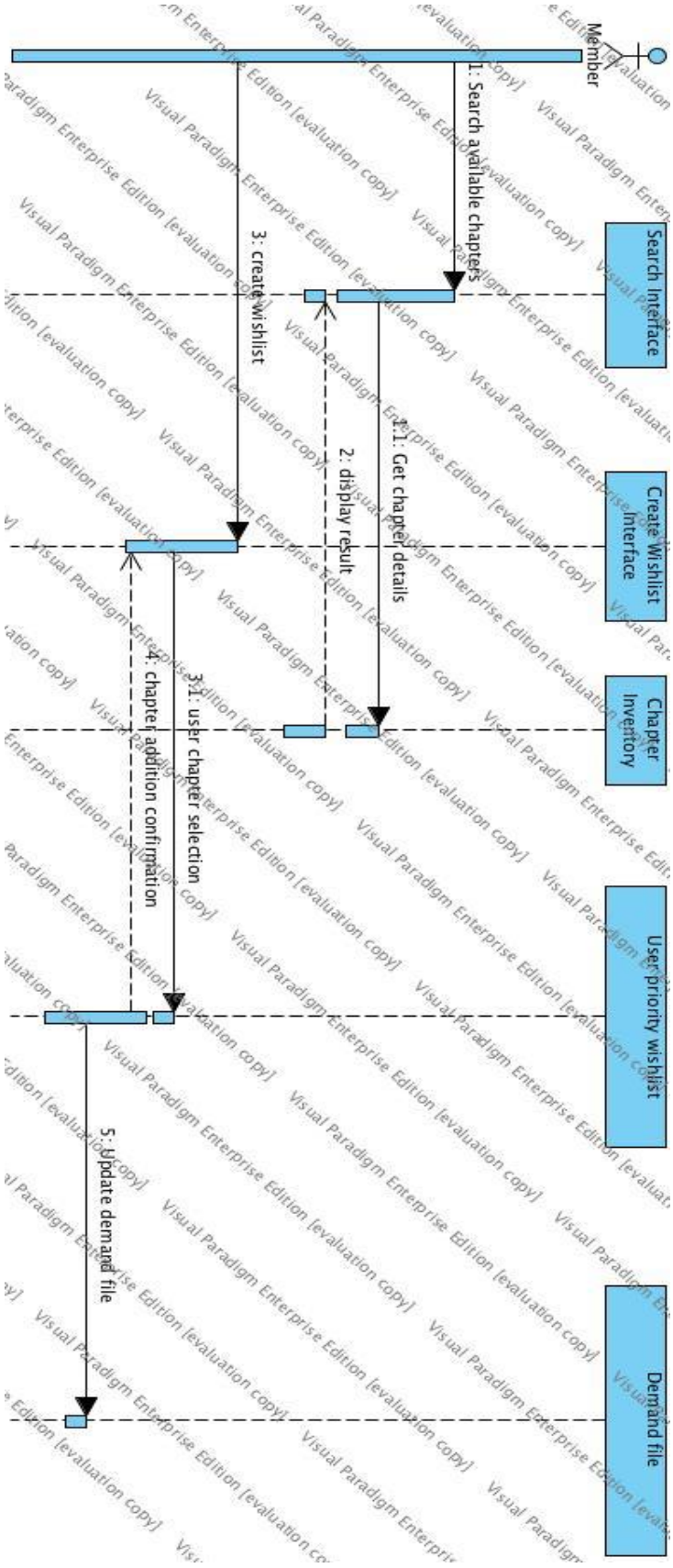
Use Case Diagram



Class Diagram



Sequence Diagram



Data Dictionary

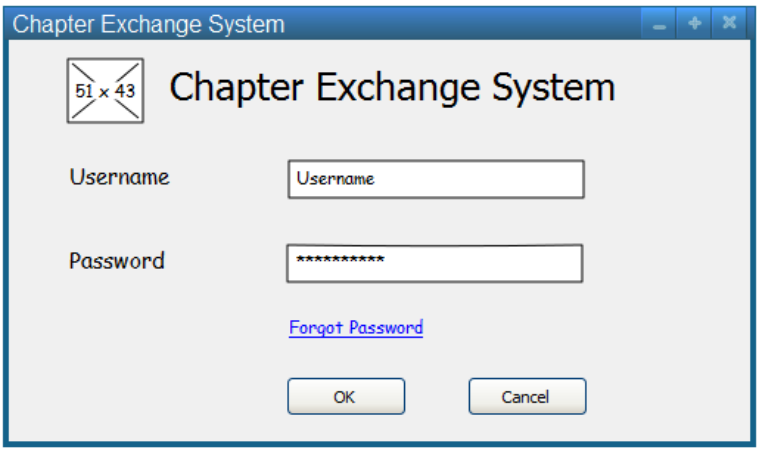
1. Authorize Sign-In
    a. NetID = Data Element
    b. Password = Data Element
    c. Member Data File = NetID + Password + User Credit Balance + First Name + Last Name + Major
2. Upload Chapter
    a. Chapter Details = Book ISBN + Book Title + Chapter Number + Chapter Title + Book Edition + Author + Publication Year
    b. Chapter Inventory = {Chapter Details + Upload Details + Stock}
    c. Upload Details = NetID + DateTime
3. Create Wish list
    a. User Priority Wishlist = {Chapter Detail + DateTime + Priority Number + NetID}
    b. Priority Number = Data Element
    c. Demand File = {Chapter Detail + Demand Count}
4. Compute Price
    a. Demand File = {Chapter Detail + Demand Count}
    b. Computed Price = Data Element
5. Manage Queue
    a. User Credit Balance = Data Element
6. Remove Item from Cart
    a. Cart Contents = 1{Chapter Details} + Quantity + Total Price
    b. Selected Deletion = {Chapter Details}
7. System Empties Cart
    a. Cart Contents = 1{Chapter Details} + Quantity + Total Price
    b. Cart Timer = Data Element
    c. Cart Timeout = [True|False]

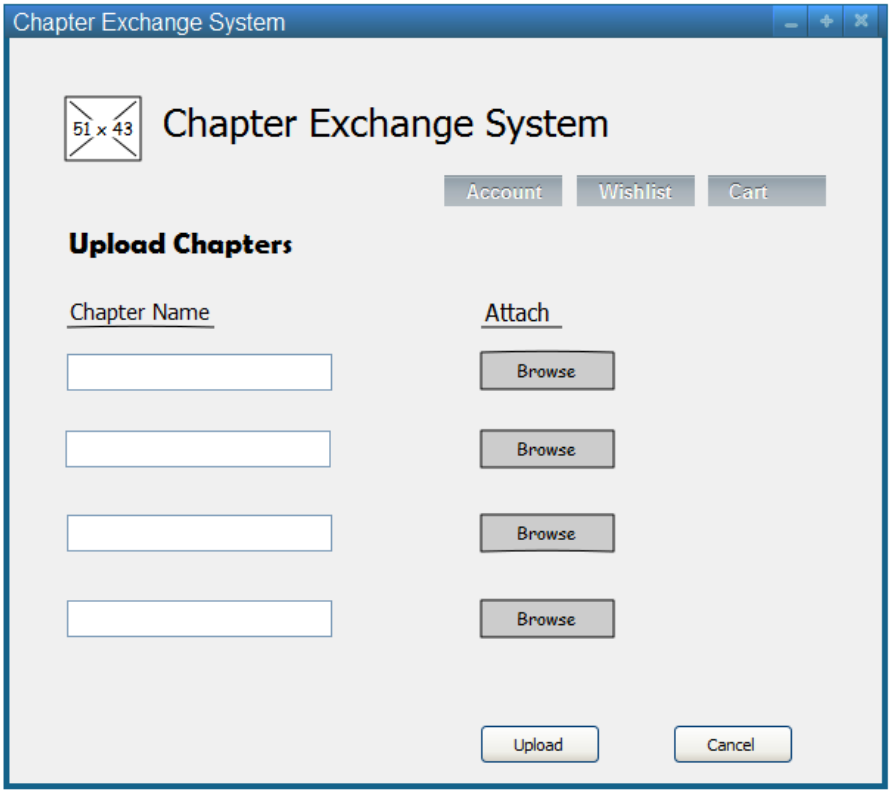
8. Complete Checkout

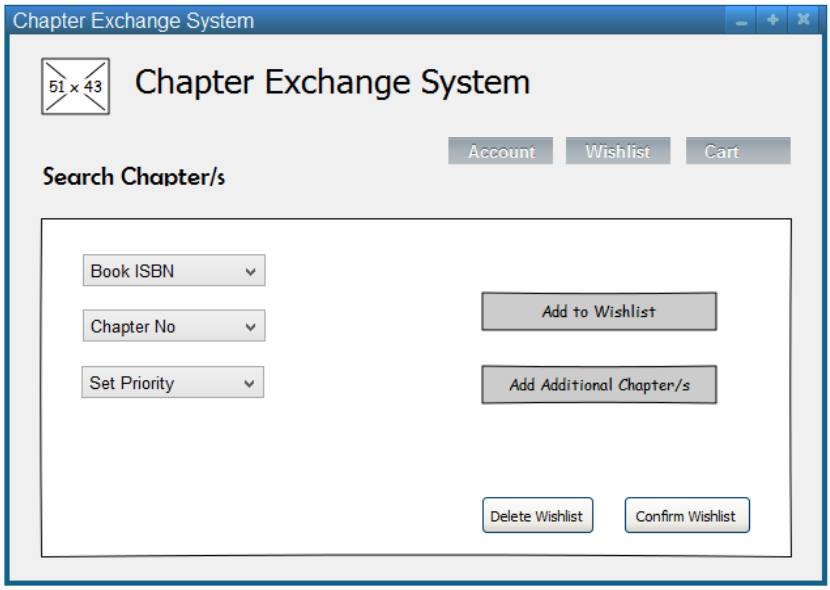
    a. Order Details = 1{Chapter Details} + Quantity + Total Price

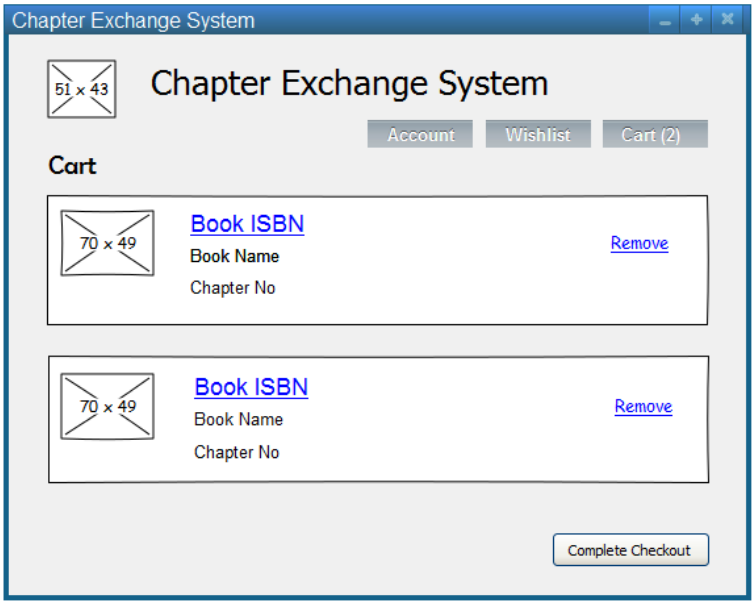
Overall, the Chapter Exchange System will allow the user to exchange e-book chapters with other users via a credit based medium.

1. The Chapter Exchange System will allow members to upload chapters of their owned eBooks in exchange for system credits.
2. The Chapter Exchange System will allow members to acquire chapters that other members have uploaded by means of exchanging their system credits for ownership of the eBook chapter.
3. The system will allow uploaded chapters to be available for members to view and request via their User Priority Wish list.
4. The Chapter Exchange System will be structured such that the ability of a member to upload a particular chapter will be limited to exactly one occasion that is a member may not upload a chapter more than once.
5. The system, in the User Priority Wish list, will store a list of the chapters that the user would like to acquire in order of their most preferred chapter to least preferred chapter.
6. The Chapter Exchange System will compute, based on priority and chapter selection data aggregated from all User Priority Wish lists, prices for all available chapters and then deliver available chapters to the carts of members based on their priority settings, queue level and user credit balance.
7. The Chapter Exchange System will alert members when their chapters are in cart and ready for checkout.
8. The Chapter Exchange System will allow members the option to remove one, several, or all chapters from their cart before the transaction is finalized.
9. If a member has taken no action on their cart items after 48 hours the Chapter Exchange System will remove all items from their cart.
10. After any number or all of the items are removed from the cart, the system will allow the assignment queue to be recomputed based on the re-introduction of the chapters to the available pool of chapters. These chapters will then be re-distributed based on the factors identified in section 7 above.
11. After checkout is completed, the system will give members the option to download their new chapters.

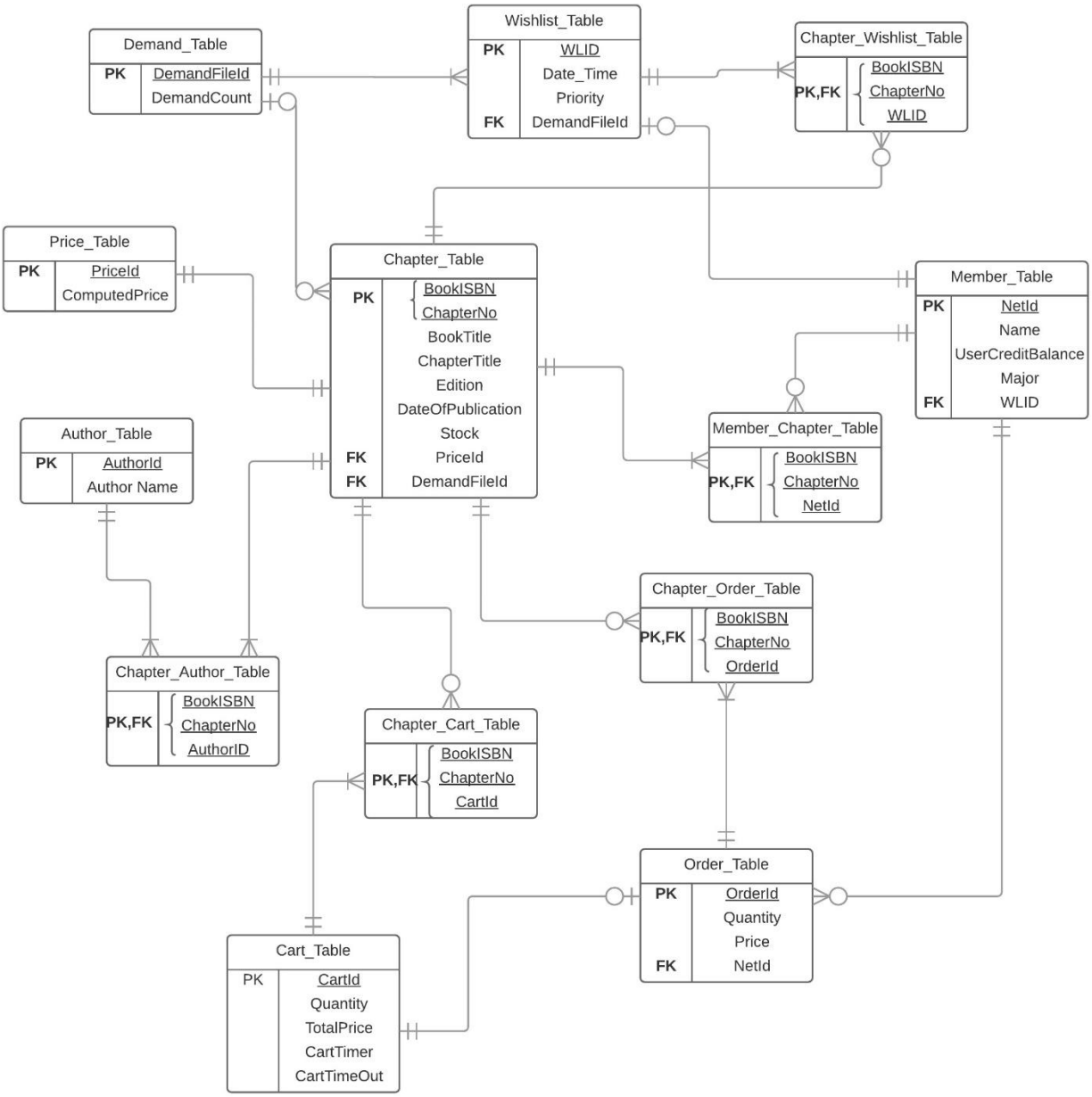

Chapter Exchange System
51 x 43
Chapter Exchange System
Username
Username
Password
****
Forgot Password
OK
Cancel


Chapter Exchange System
51 x 43
Chapter Exchange System
Account
Wishlist
Cart
Upload Chapters
Chapter Name
Attach
Browse
Browse
Browse
Browse
Upload
Cancel

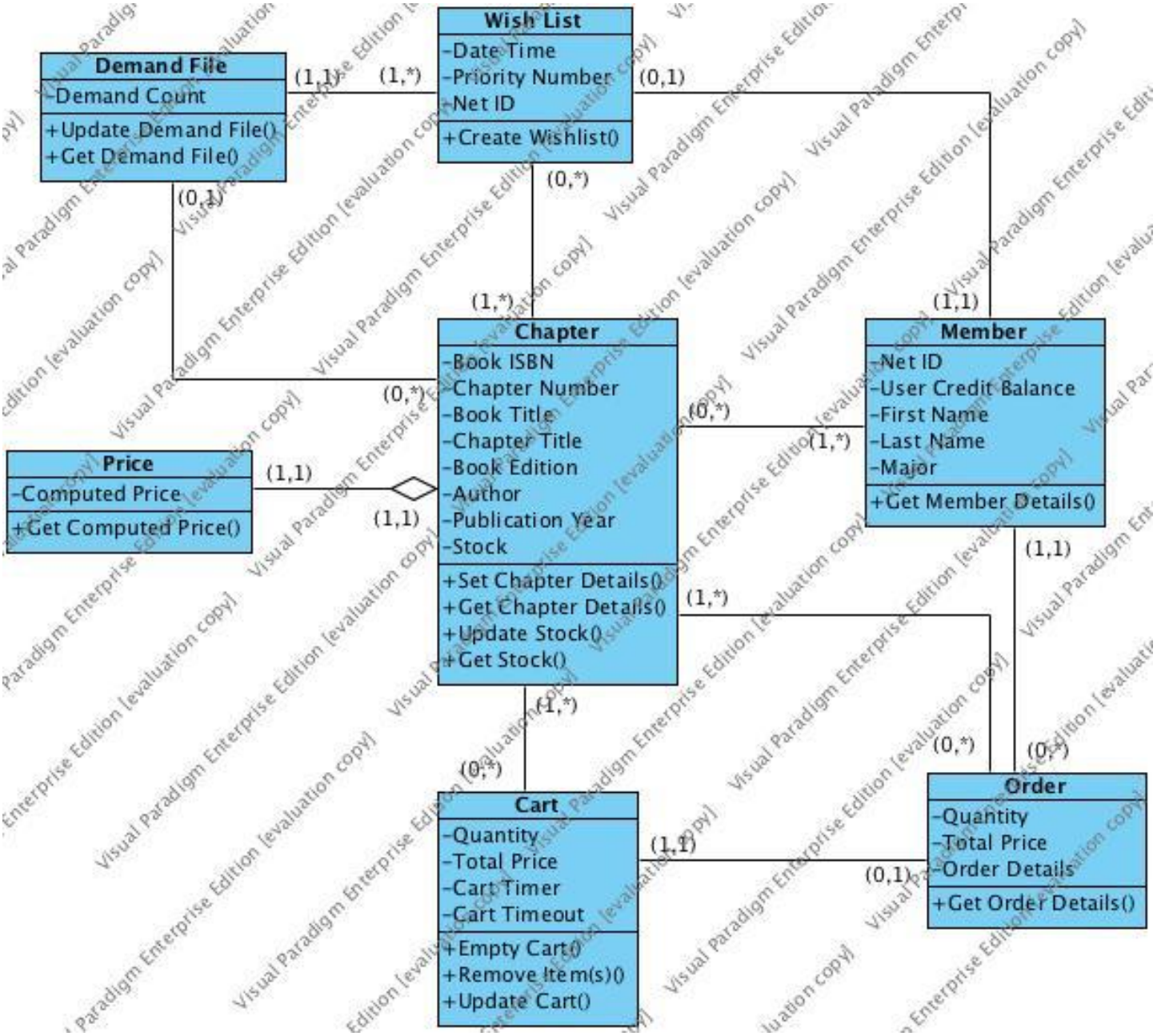

Chapter Exchange System
51 x 43
Chapter Exchange System
Account
Wishlist
Cart
Search Chapter/s
Book ISBN
Chapter No
Set Priority
Add to Wishlist
Add Additional Chapter/s
Delete Wishlist
Confirm Wishlist


Chapter Exchange System
51 x 43
Chapter Exchange System
Account
Wishlist
Cart (2)
Cart
70 x 49
Book ISBN
Book Name
Chapter No
Remove
70 x 49
Book ISBN
Book Name
Chapter No
Remove
Complete Checkout

Database Design



Complete Class Diagram



Method name: Create Wish list

Clients (Members):

Associated Use Cases: Authorize Sign-In, Create Wish List

Description of Responsibilities: Sets member's chapter preference and wish list contents

Arguments Received: Chapter selection, Priority

Type of Value Returned: Boolean

Pre-Conditions: Member should be logged in and the initial phase of inventory formation should be complete

Post-Conditions: Wish list for the selected (0-10 chapters) is created for the logged in member

Pseudocode:

Retrieve Chapter selection with priority

Retrieve user details

Repeat for each chapter selection

    Create chapter entry for the logged in user in the member table

    Update demand table with the chapter details

End

return true

Method name: Get Chapter Details

Clients (Members):

Associated Use Cases: Create Wish List, Compute Price, Complete Checkout

Description of Responsibilities: Receive selected information about chapter(s)

Arguments Received: Book ISBN, Chapter Number

Type of Value Returned: Object

Pre-Conditions: The book ISBN provided should be valid and chapter number should exist in specified book

Post-Conditions: Chapter details is returned for the specified book ISBN and chapter number

Pseudocode:

Retrieve book ISBN

Retrieve chapter number

Match book ISBN and chapter number in chapter table

If book ISBN and chapter number matches in chapter table

    Generate chapter details with the matched values

Else return NULL

return chapter details

Method name: Get Computed Price

Clients (Members):

Associated Use Cases: Create Wish List

Description of Responsibilities: Compute the price based on the demand file and number of chapters available in inventory

Arguments Received: Book ISBN, Chapter Number

Type of Value Returned: number

Pre-Conditions: The Demand file has the total demand count and the inventory has stock for each chapter in the demand file

Post-Conditions: Computed Price is returned

Pseudocode:

Retrieve book ISBN

Retrieve chapter number

Match book ISBN and chapter number in chapter inventory

If book ISBN and chapter number matches in chapter table

    Get supply from the matched values

Else set supply = 0

Match book ISBN and chapter number in the demand table

If book ISBN and chapter number matches in the demand table

    Get demand from the matched values

Else set demand = 0

Send supply and demand to demand Price calculator algorithm to generate computed price

return computed price

Method name: Update Demand File

Clients (Members):

Associated Use Cases: Create Wishlist

Description of Responsibilities: Update demand count in demand table for chapters in User Priority Wish List

Arguments Received: User Priority Wishlist Object

Type of Value Returned: Boolean

Pre-Conditions: User updates their wishlist

Post-Conditions: Demand count is updated in the demand table for chapters in User Priority Wish List

Pseudocode:

Retrieve user priority wishlist for the logged in user

Repeat for each chapter in user priority wishlist

    Update demand table with the chapter details

End

return true

Method name: Get Member Details

Clients (Members):

Associated Use Cases: Upload Chapter, Create Wishlist, Authorize Sign In, Complete Checkout

Description of Responsibilities: Retrieve details for a member

Arguments Received: NetID

Type of Value Returned: Object

Pre-Conditions: The NetId provided should be valid

Post-Conditions: Member information is returned

Pseudocode:

Retrieve NetId

Match NetId in Member table

If NetId matches in Member table

    Generate member details with the matched values

Else return NULL

return member details

Task Assignment

We divided our project group into two sub-groups to maintain consistency and efficiency. Task assignment were planned on sub-group basis rather than on individual basis.

Below is the division and members belonging to each division:

Group 1 = Anchit Jatana, Si-Tin Dang, Zachary Keller

Group 2 = Ashwini Siddaiah, Rishabh Verma

S No.	Project Activity/Deliverable	Allocation: Team/Group	Planned Deadline	Completion Date
Analysis				
1.	Executive Summary	Group 2	10/18/2015	10/16/2015
2.	Problem Statement	Group 1	10/16/2015	10/14/2015
3.	Business Process model using BPMN	Group 1	10/24/2015	10/25/2015
4.	Context Diagram	Group 2	10/21/2015	10/21/2015
5.	Use-Case Diagram	Group 2	10/28/2015	10/28/2015
6.	Class Diagram	Group 1	11/02/2015	11/04/2015
7.	Sequence Diagram	Group 2	11.07/2015	11.05/2015
8.	Data Dictionary	Group 1	11/01/2015	11/01/2015
9.	Functional Specification Document	Group 1	11/10/2015	11/10/2015
Design				
10.	Interface Design	Group 2	11/17/2015	11/17/2015
11.	Database Design	Group 1	11/21/2015	11/20/2015
12.	Class Diagram with methods	Group 1	11/27/2015	11/27/2015
13.	Method Definition	Group 1	11/28/2015	11/27/2015
14.	Project Presentation	Group 1 + Group 2	12/04/2015	12/04/2015

Schedule of Meetings

Group 1 = Anchit Jatana, Si-Tin Dang, Zachary Keller

Group 2 = Ashwini Siddaiah, Rishabh Verma

S No.	Date	Group/Members Present	Meeting Type (Group/Joint)	Topics Discussed
1.	09/18/2015	Group 1 + Group 2	Joint	Project Ideas, feasibility and execution plan
2.	09/25/2015	Group 1 + Group 2	Joint	Outline of the project idea drafting of scope
3.	09/28/2015	Group 1 + Group 2	Joint	Activity planning , formation of groups and approach to be followed
4.	10/09/2015	Group 1 + Group 2	Joint	Initial task assignment and deadlines
5.	10/14/2015	Group 1	Group	Relating to assigned task: Problem Statement
6.	10/16/2015	Group 2	Group	Relating to assigned task: Executive Summary
7.	10/21/2015	Group 2	Group	Relating to assigned task: Context Diagram
8.	10/25/2015	Group 1	Group	Relating to assigned task: Business Process model using BPMN
9.	10/28/2015	Group 2	Group	Relating to assigned task: Use-Case Diagram & Brief Use-Case Description
10.	11/01/2015	Group 1	Group	Relating to assigned task: Data Dictionary
11.	11/04/2015	Group 1	Group	Relating to assigned task: Class Diagram
12.	11/05/2015	Group 2	Group	Relating to assigned task: Sequence Diagram
13.	11/08/2015	Group 2	Group	Relating to assigned task: Sequence Diagram continued
14.	11/10/2015	Group 1	Group	Relating to assigned task: Functional Specification Document
15.	11/13/2015	Group 1 + Group 2	Joint	Compilation & Review of things done so far
16.	11/17/2015	Group 2	Group	Relating to assigned task: Interface Design
17.	11/20/2015	Group 1	Group	Relating to assigned task: Database Design
18.	11/27/2015	Group 1	Group	Relating to assigned task: Class Diagram with methods + Method Description
19.	11/29/2015	Group 1 + Group 2	Joint	Compilation & Review of things done so far
20.	12/04/2015	Group 1 + Group 2	Joint	Project Presentation