

Phase Three: Project Analysis and Design

This chapter should include the analysis and design of your system. **Make sure you add text that explains each model.**

Perform your analysis and design using one of the following two approaches:

Using Structured Approach (only for non-object oriented projects.)

- a. Logical Data Flow Diagrams (Context, Level 0, and Child diagrams for all non-primitive processes)
- b. Physical Data Flow Diagram (**Optional**)
- c. Data Dictionary (Data Flow Description Form, Process Description Form, Element Description Form, Data Store Description Form, Data Structure). **At least 4 Forms for each.**
- d. State diagram (**Optional, Required for hardware projects**)
- e. Database Design (ERD).
- f. Output Design (Reports)
- g. Input Design (Screens)

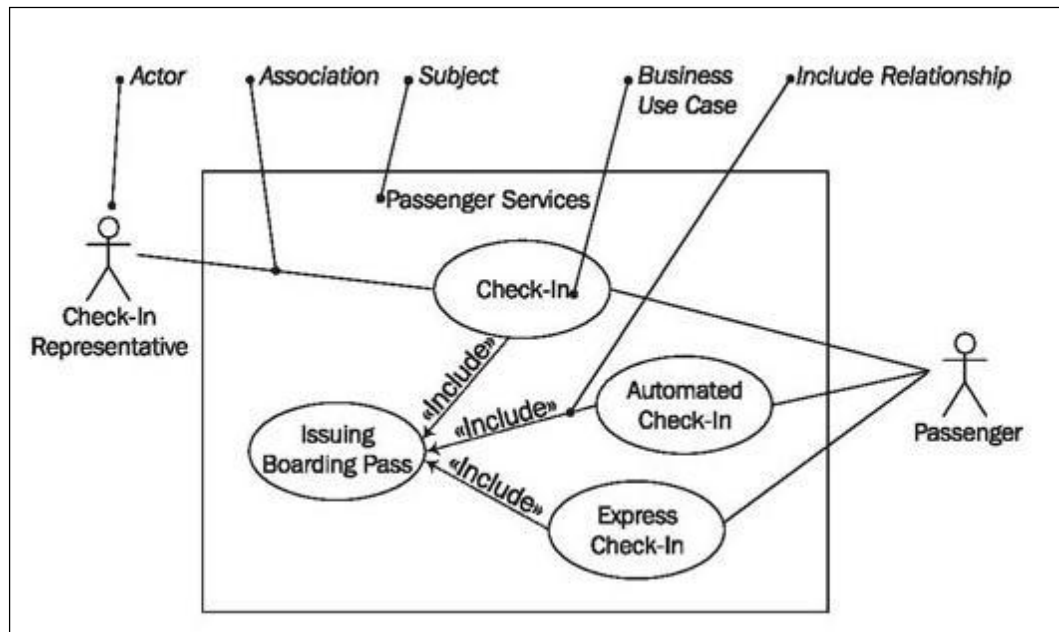
Using Object Oriented Approach

- a. Use Case Diagram.
- b. Activity Diagram. **At least 4**
- c. Sequence Diagram **At least 4**
- d. State Diagram. **At least 4**
- e. Design Class Diagram.
- f. Components Diagram.
- g. Deployment Diagram.
- h. Output Layout (Reports)
- i. Input Design (Screens)

Examples of Models required

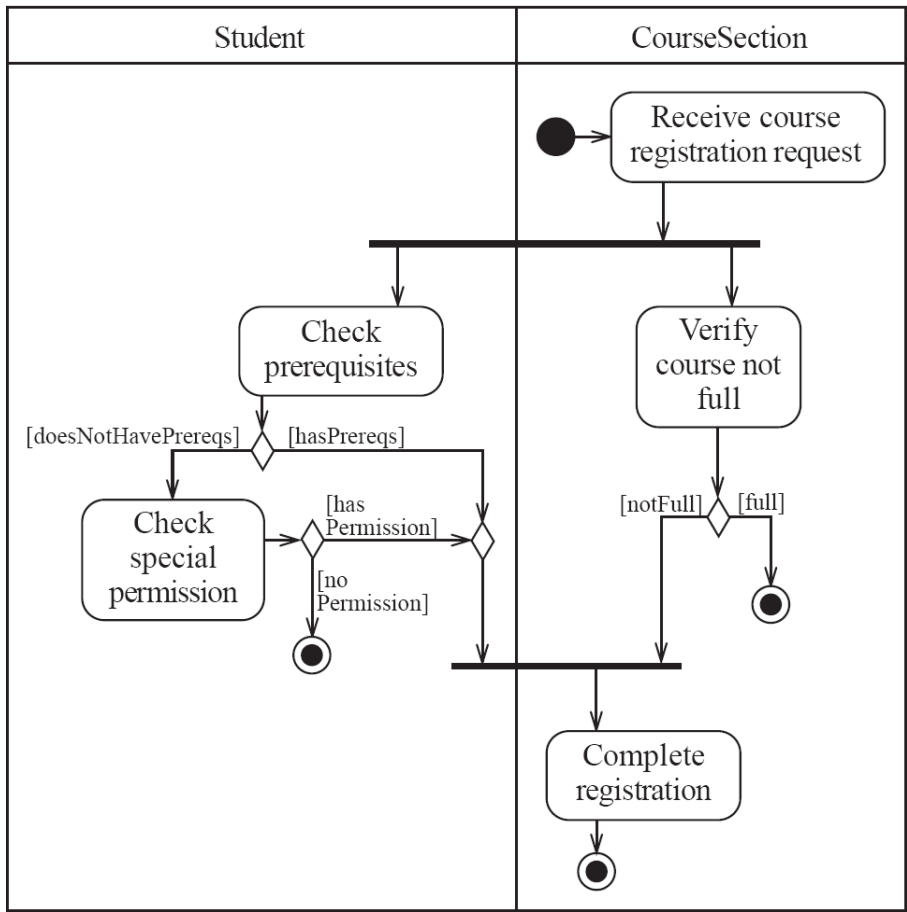
Use Case Diagrams

A use case diagram is a graphical view of all of the actors, use cases, and their interactions identified for a system.



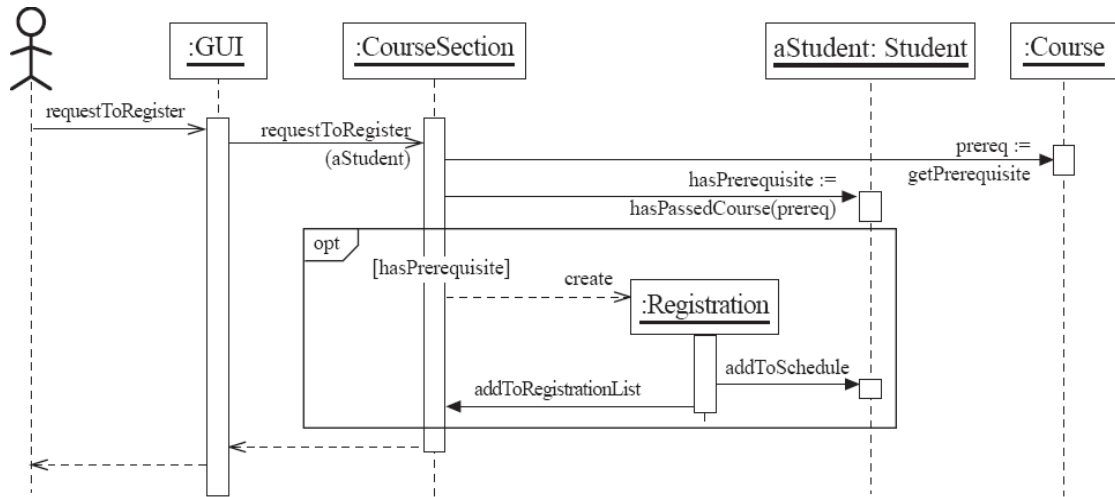
Activity Diagram

Activity diagrams represent the dynamics of the system. Each activity diagram shows the flow of control within a particular use case. It shows the flow of control from activity to activity in the system, what activities can be done in parallel, and any alternate paths through the flow.



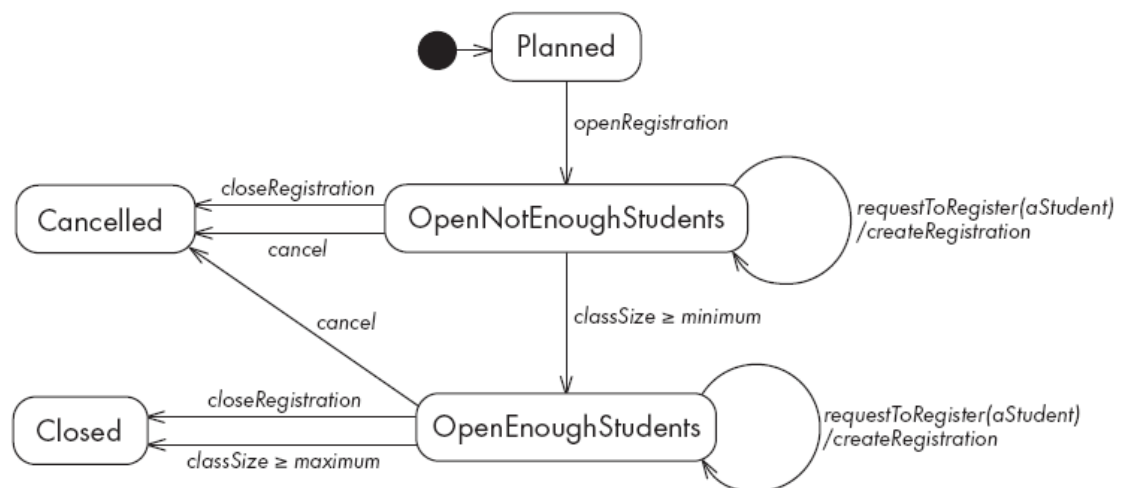
Sequence Diagram

A sequence diagram shows object interactions arranged in time sequence. It depicts the objects and classes involved in the use case and the sequence of messages exchanged between the objects needed to carry out the functionality of the use case.



State Diagram

A state diagram describes the behavior of a system, some part of a system, or an individual object.

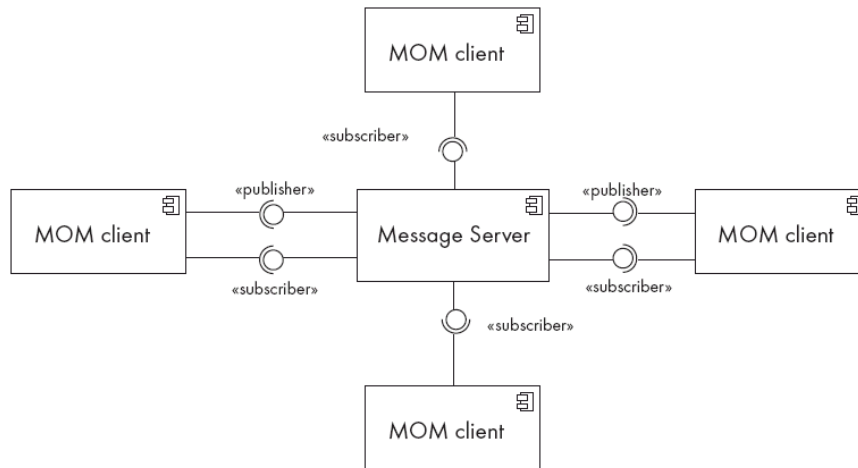


Design Class Diagram:

This is a class diagram that describes the solution (implementation) classes and their relationships. It should include also classes used to build the user interface and system architecture.

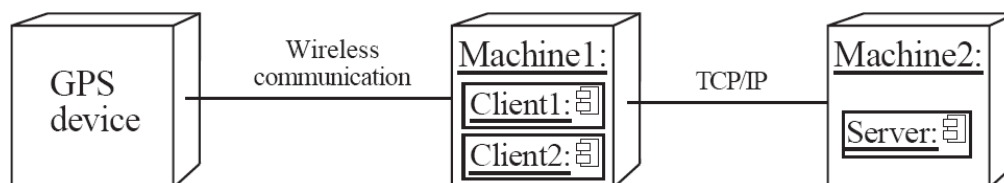
Components Diagram:

Show how the various components of systems are arranged logically



Deployment Diagram:

Show how the various components of systems are arranged physically



Data Dictionary

Data Flow Description Form

Data Flow Description	
ID	
Name	<u>Customer Order</u>
Description	<u>Contains customer order information and is used to update the customer master and item files and to produce an order record.</u>
Source	Destination
<u>Customer</u>	<u>Process 1</u>
Type of Data Flow	
<input type="checkbox"/> File <input checked="" type="checkbox"/> Screen <input type="checkbox"/> Report <input type="checkbox"/> Form <input type="checkbox"/> Internal	
Data Structure Traveling with the Flow	Volume/Time
<u>Order Information</u>	<u>10/hour</u>
Comments <u>An order record information for one customer order. The order may be received by mail, by FAX, or by the customer telephoning the order processing department directly.</u>	
<hr/> <hr/> <hr/>	

Element Description Form

Element Description Form

ID _____

Name Customer Number

Alias Client Number

Alias Receivable Account Number

Description Uniquely identifies a customer who has made any business transaction within the last five years.

Element Characteristics

Length 6 Dec. Pt. _____

Input Format 9(6)

Output Format 9(6)

Default Value _____

Continuous or Discrete

Alphabetic
 Alphanumeric
 Date
 Numeric
 Base or Derived

Validation Criteria

Continuous	Discrete
Upper Limit	Value
Lower Limit	Meaning
Upper Limit <u><999999</u>	_____
Lower Limit <u>>0</u>	_____
_____	_____
_____	_____

Comments The customer number must pass a modulus-11 check digit test. It is derived because it is computer generated and a check digit is added.

Data Store Description Form

Data Store Description Form

ID D1
Name Customer Master
Alias Client Master
Description Contains a record for each customer.

Data Store Characteristics

File Type Computer Manual
File Format Database Indexed Sequential Direct
Record Size (Characters): 200
Number of Records: Maximum 45,000 Block Size: 4000
Percent Growth per Year: 6 % Average: 42,000

Data Set Name Customer.MST
Copy Member Custmast
Data Structure Customer Record
Primary Key Customer Number
Secondary Keys Customer Name
Zip
Year-to-Date Amount Purchased

Comments The Customer Master records are copied to a history file and purged if the customer has not purchased an item within the past five years. A customer may be retained even if he or she has not made a purchase by requesting a catalog.

Process Description Form

Process Specification Form	
Number <u>13</u> Name <u>Determine Quantity Available</u> Description <u>Determine if an item is available for sale. If it is not available, create a backordered item record. Determine the quantity available.</u>	
Input Data Flow Valid Item from Process 1,2 Quantity on Hand from Item Record	
Output Data Flow Available Item (Item Number + Quantity Sold) to Processes 1,4 & 1,5 Backordered Item to Inventory Control	
Type of Process <input checked="" type="checkbox"/> Online <input type="checkbox"/> Batch <input type="checkbox"/> Manual	Subprogram/Function Name
Process Logic: IF the <u>Order Item Quantity</u> is greater than <u>Quantity on Hand</u> Then Move <u>Order Item Quantity</u> to <u>Available Item Quantity</u> Move <u>Order Item Number</u> to <u>Available Item Number</u> ELSE Subtract <u>Quantity on Hand</u> from <u>Order Item Quantity</u> giving <u>Quantity Backordered</u> Move <u>Quantity Backordered</u> to <u>Backordered Item Record</u> Move <u>Item Number</u> to <u>Backordered Item Record</u> DO write <u>Backordered Record</u> Move <u>Quantity on Hand</u> to <u>Available Item Quantity</u> Move <u>Order Item Number</u> to <u>Available Item Number</u> ENDIF	
Refer to: Name: _____ <input type="checkbox"/> Structured English <input type="checkbox"/> Decision Table <input type="checkbox"/> Decision Tree	
Unresolved Issues: Should the amount that is on order for this item be taken into account? Would this, combined with the expected arrival date of goods on order, change how the quantity available is calculated?	

Data Structure

Customer Name = First Name +
(Middle Initial) +
Last Name

Address = Street +
(Apartment) +
City +
State +
Zip +
(Zip Expansion) +
(Country)

Telephone = Area Code +
Local Number