

SOFTWARE REQUIREMENTS ANALYSIS SPECIFICATION

*CIS 375 - Steiner
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Version 1.0*

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1. Introduction

1.1. Goals and Objectives

Overall Goal:

1. Automate the various processes at ChocAn that are currently being done manually.
2. Centralize all member and provider information in a database, located at a ChocAn data center. The data will be accessible remotely through ChocAn terminals available to ChocAn employees as well as all providers.
3. Database will then be used to automatically generate reports for members, providers, and managers every week.

Objectives:

1. Create a database to store member and provider data
2. Create software to process membership payments and determine membership status
3. Create front-end for providers to enter service information into and obtain provider directory
4. Create front-end for operators to modify member/provider data
5. Create software to generate reports for members, providers, and managers
6. Design ChocAn terminals
7. Create software that allows terminal to communicate with data center

1.2. Statement of Scope

1.2.1. Inclusions

The data store includes:

- Customer Information
 - Name, ID number, Address, Phone Number, Email Address, Status
- Employee Information
 - Name, ID number, Email Address
- Service Information
 - Service Code, Provider ID Number, Provider Name, Provider Phone Number, Processed Status

Software Description:

- Inputs
 - Member, provider, and employee information in a centralized data store
- Processing
 - Allow operators to add, remove, or modify customer information through an interface.
 - Allow providers for ChocAn to enter service information remotely through a ChocAn terminal.
 - Allow providers for ChocAn to request a provider directory, which contains a list of all services and service codes.
 - Generate reports to tell members what services they had received along with processing status, to tell providers what services they have billed to ChocAn, and to tell managers who billed them with services that week along with any services that have not been processed yet. These reports are sent via email to the appropriate recipients.

- Outputs
 - Reports for members, providers, and managers.
 - Provider directory
- 1.2.2. Exclusions
- None.

1.3. Software Context

- The members of ChocAn will be able to use their member cards to receive services from providers associated with ChocAn. They will give their member cards to providers who swipe their card into the ChocAn terminals, and the terminal will tell the provider if the member card is valid. Then they are able to receive services and the bill will go to ChocAn.
- Membership fees are handled by Acme Accounting Services, which is able to process all payments made by members and suspend them if they have not paid their dues, or reinstate them if they have. They are able to remotely access the ChocAn database, where they update membership status every evening at 9 PM.
- Providers associated with ChocAn are given ChocAn terminals which handle communication with the ChocAn servers, and they will handle verifying member information. When they are finished providing the service, the provider can swipe the person's member card and enter information about the service in a ChocAn terminal to get the service billed to ChocAn.
- Members, providers, and managers will get weekly reports automatically generated by the software via email.
- Members will get reports containing a list of the services they received through ChocAn that week. If they have not visited anyone, they will not receive a report.
- Providers will get reports containing a list of the services they provided to ChocAn, the fees that are to be paid by ChocAn, and a total of the number of services they were provided and the total amount to be billed to ChocAn. Even if a provider has not provided any services that week, they will still receive a report.
- Managers will receive a report containing all the providers that need to be paid that week, and how much money needs to be paid to each of them.

1.4. Major Constraints

- Team members have jobs and other classes they have to allocate time towards.
- Project has to be completed by August 20th of 2018.
- Team Members have limited experience with the usage of databases.

2. Usage Scenario

2.1. User Profiles

Actor Name	Description
Member	Chocoholics Anonymous member who pays a monthly fee for access to all the services offered from ChocAn.
Service Provider	A healthcare professional who works with members to fight their chocolate addiction, and bills ChocAn for their services.
ChocAn Manager	ChocAn manager is in charge of the services and operation of Chocoholics Anonymous and makes sure that they are effective in order to help members with their addiction.
ChocAn Operator	ChocAn employee who updates member and provider information.
Acme Accounting Services	Manages receiving payments and determining membership status.

2.2. Major Software Functionality

- Link database that allows terminal to have access to customer and provider information.
 - Member name, Member #, Member Address
- Store provider/service data in database.
 - Service Name, Service Code, Fee
- Provide menu for operators to select whether they would
 - Like to add, delete, or modify database records for providers or members.
 - Allow operators to search via each column in the database.
 - Actually make changes to the records.
- Provide menu for providers to either order a provider directory or bill a service to ChocAn.
 - Create a provider directory via information from the database.
 - Allow the provider to enter the information to bill the service, and update the database accordingly.
 - Information entered includes Provider Name, Member Information, Comments, Date of Provided Service, Service Code, Member Name, Member #
 - Provider directory contains Service Name, Service Code, Fee for all services.
- Generate reports for service providers, members, and managers.
 - Email reports to members, providers, and managers.

- Member report: member name, number, address, city, state, zip code, and a list of dates of services, provider names, service names for every service the member received through ChocAn.
- Provider report: provider name, number, address, city, state, zip code, and a list of dates provided and ordered, member name and number, service code, fee for all , total services provided and total fee.

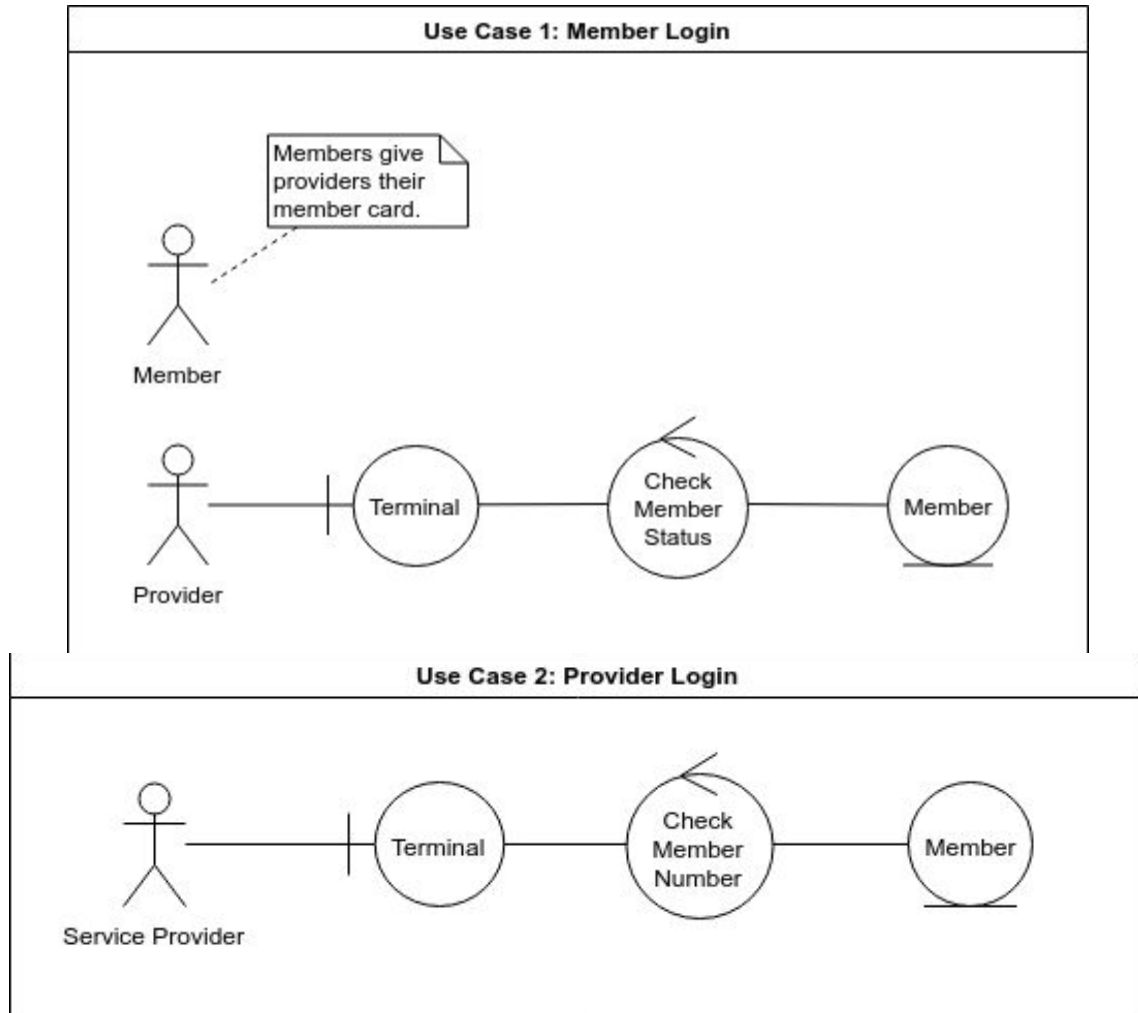
2.3. Special Usage Considerations

- None.

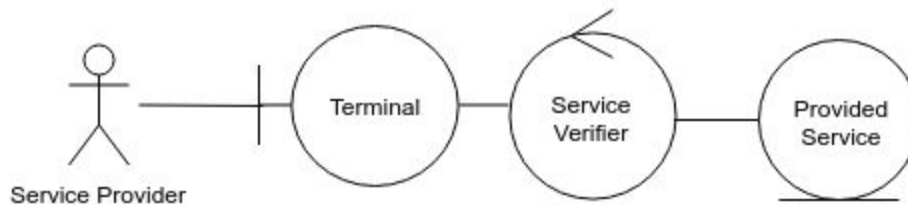
3. Data Model and Description

3.1. Data Description

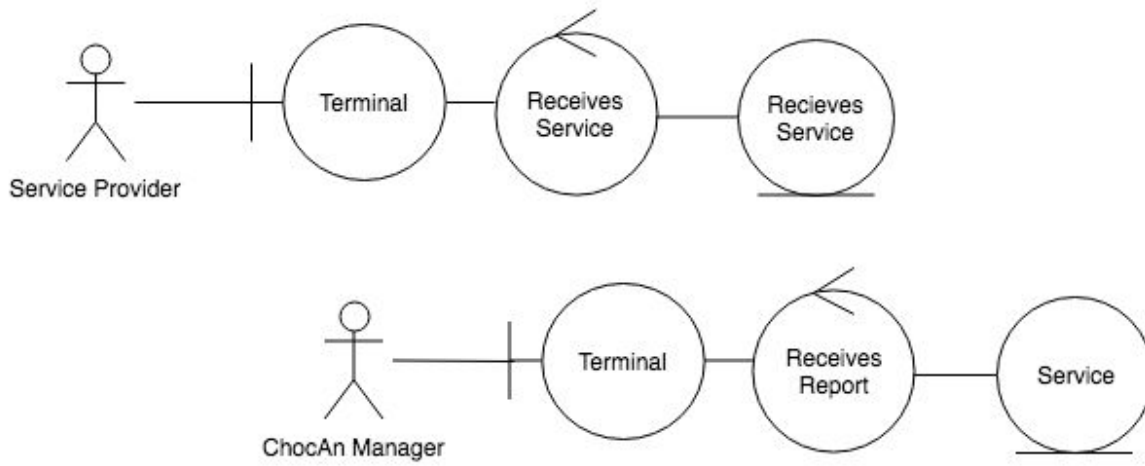
3.1.1. Robustness Diagrams



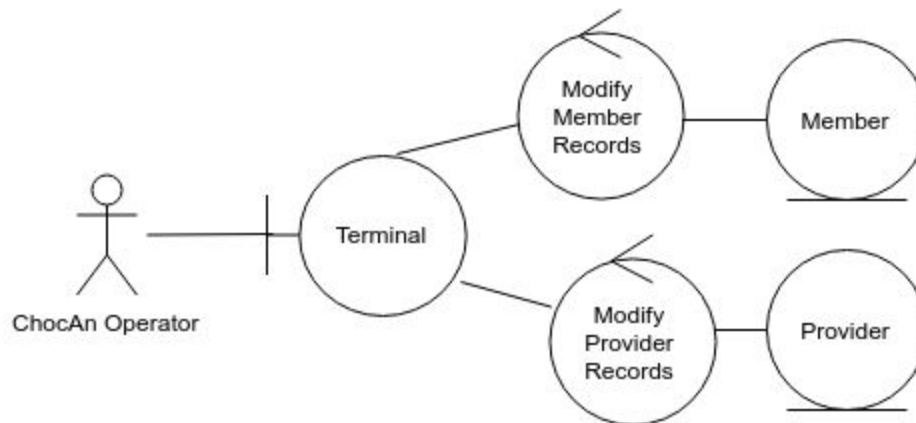
Use Case 3: Bill Services



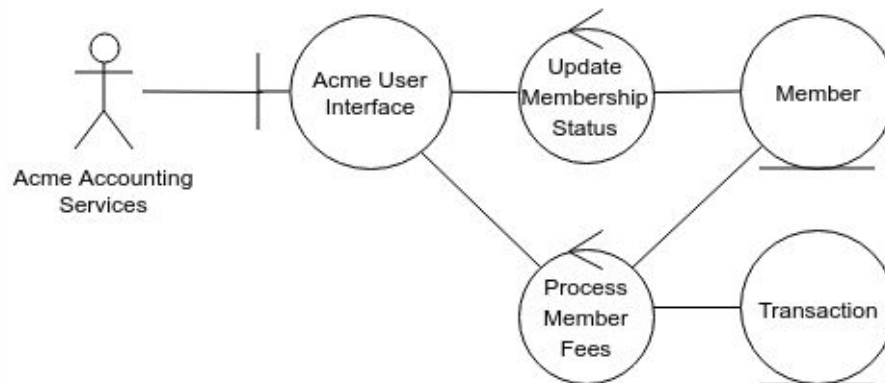
Use Case 4: Send Reports



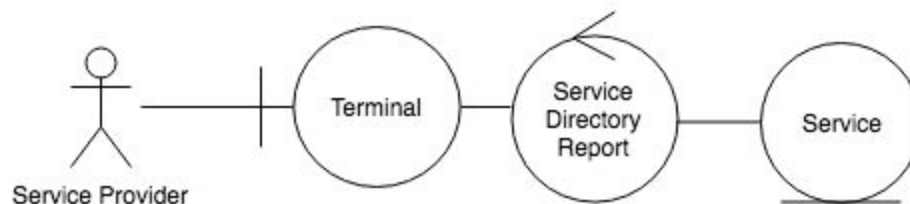
Use Case 5: Modify/Member Provider Records



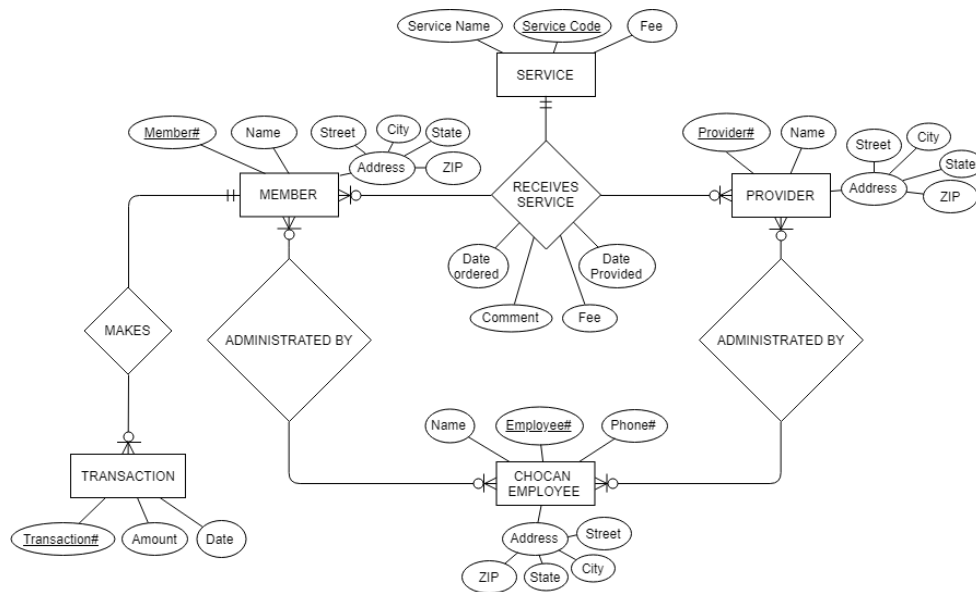
Use Case 6: Modify Membership Status



Use Case 7: Send Provider Directory



3.1.2. Entity-Relationship Diagram



3.1.3. Data Flow Diagram

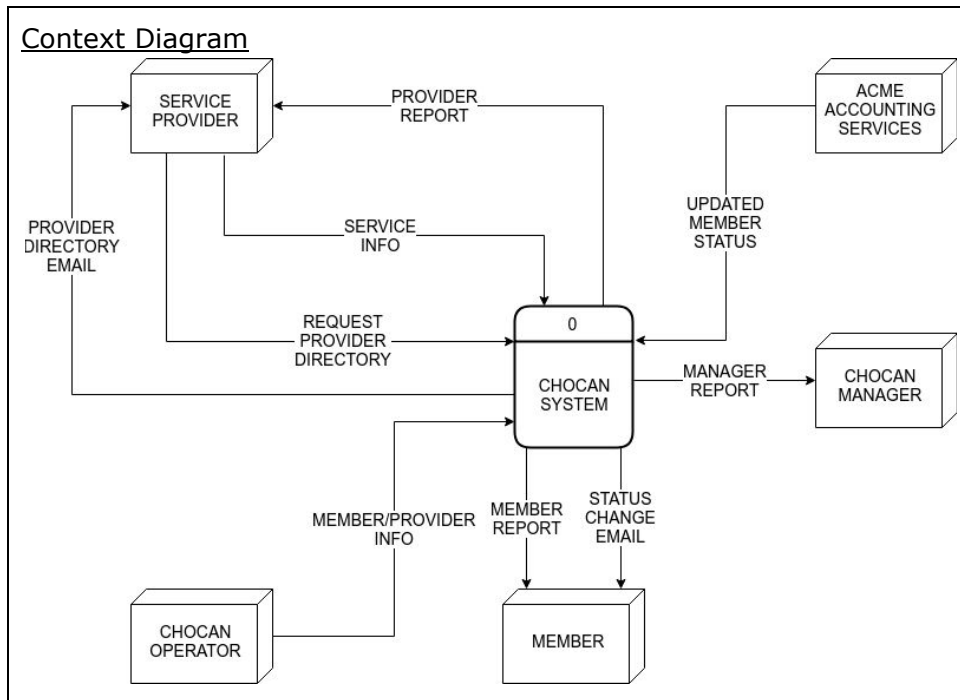


Diagram 0 DFD

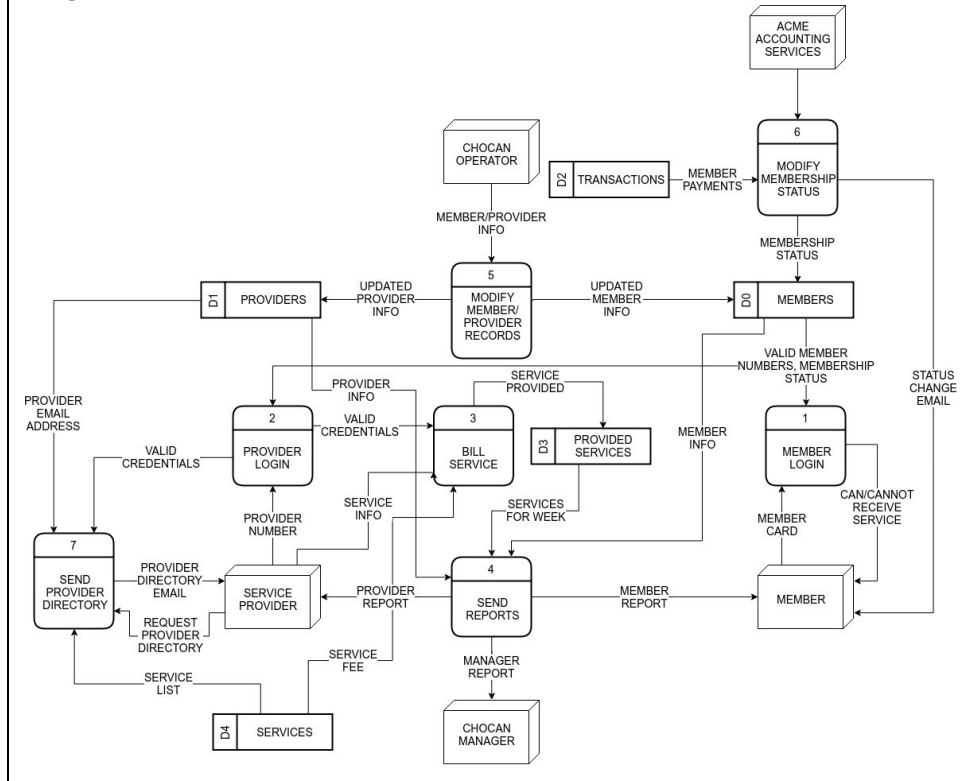


Diagram 1 DFD

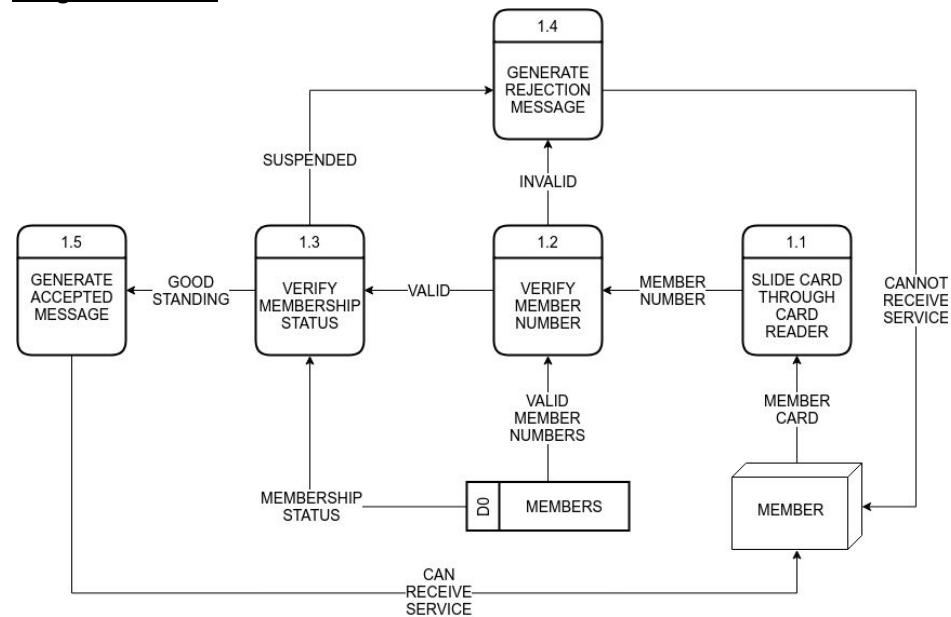


Diagram 2 DFD

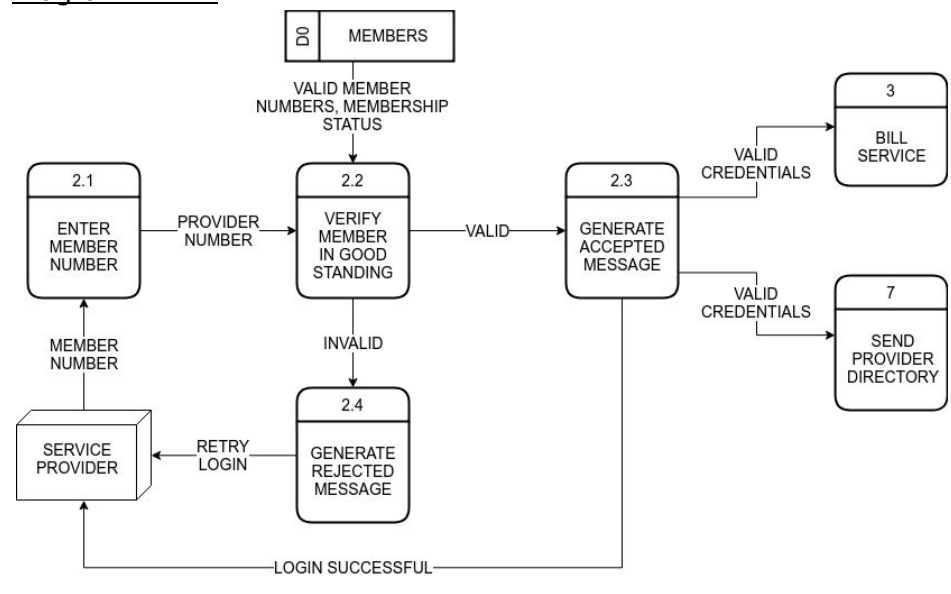


Diagram 3 DFD

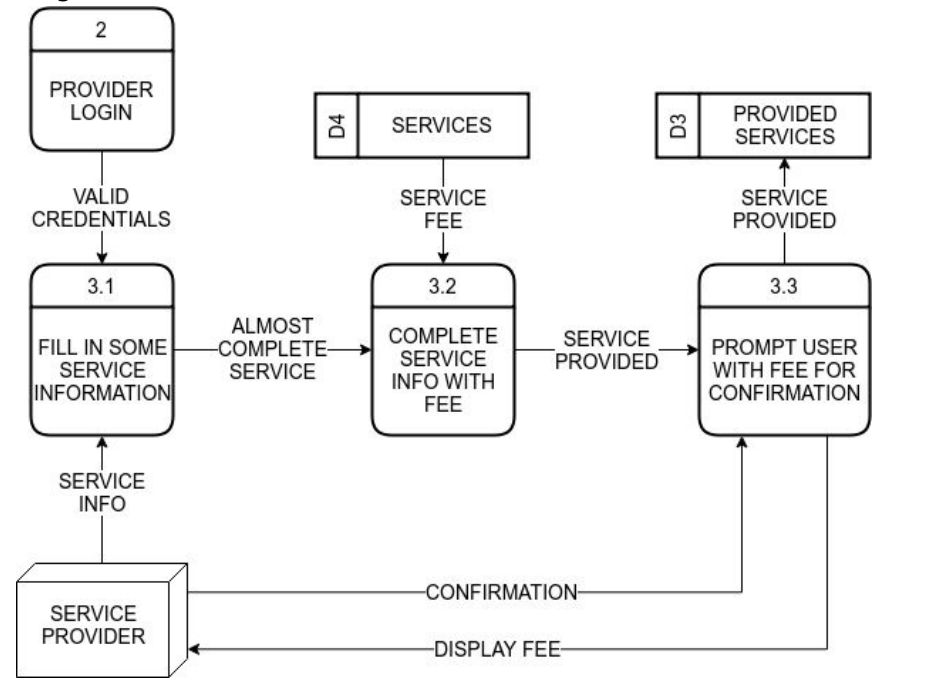


Diagram 4 DFD

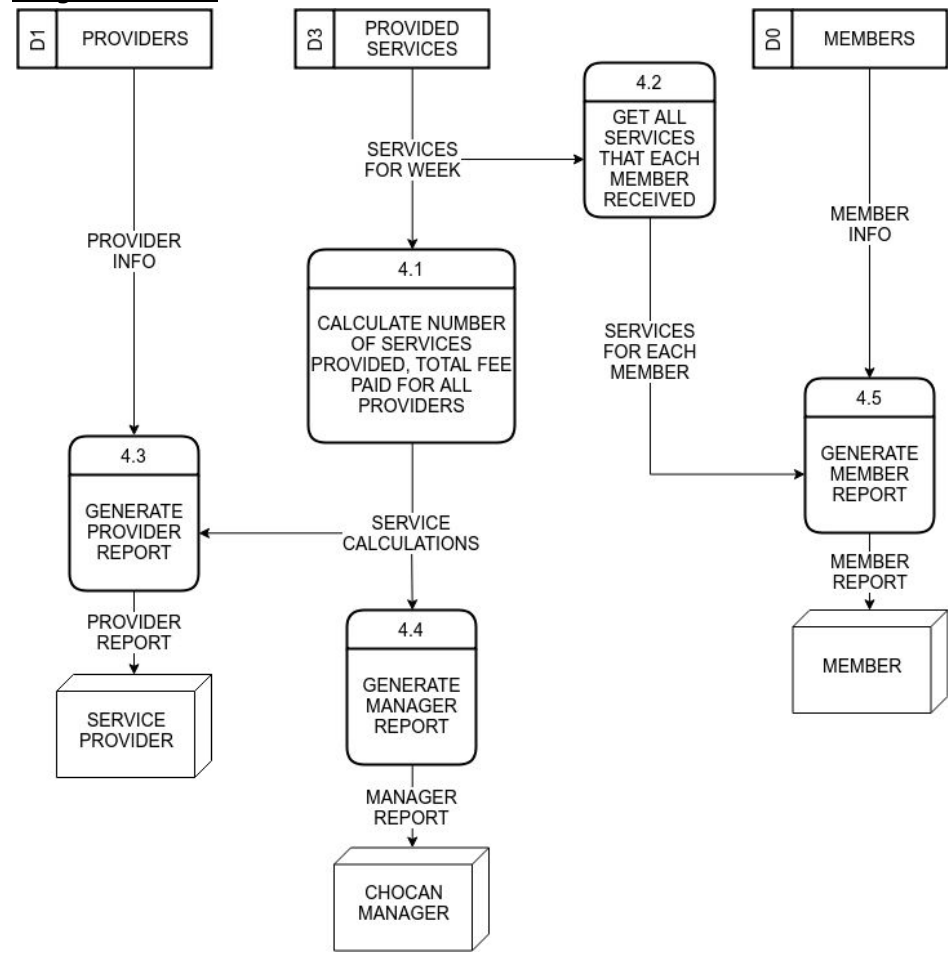


Diagram 5 DFD

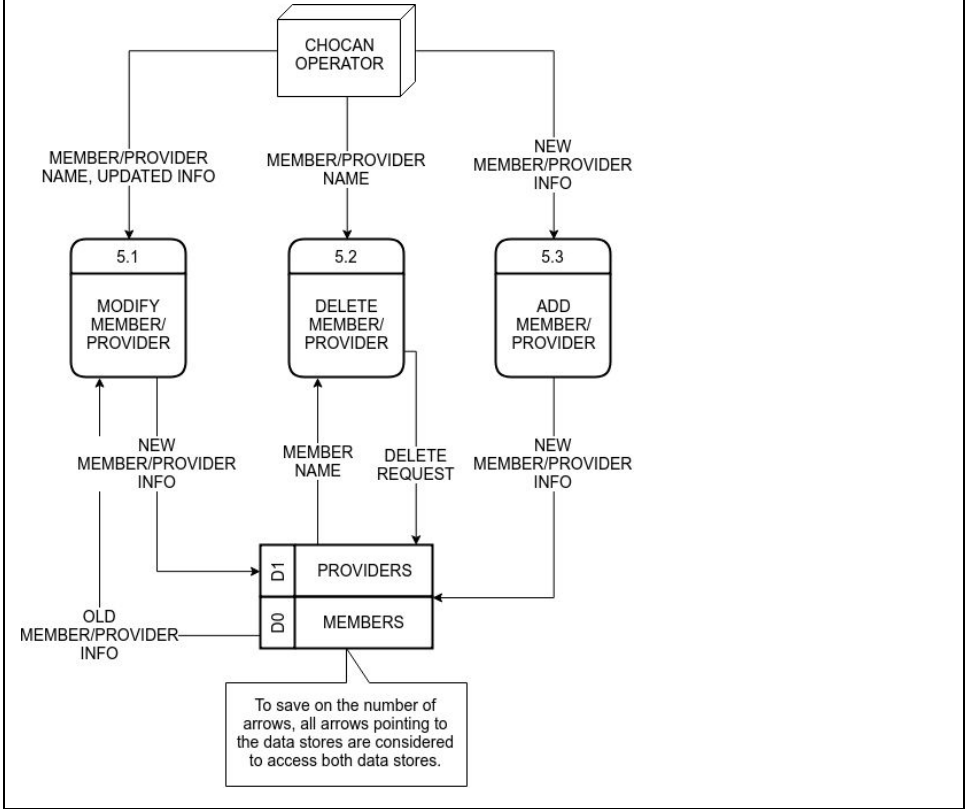


Diagram 6 DFD

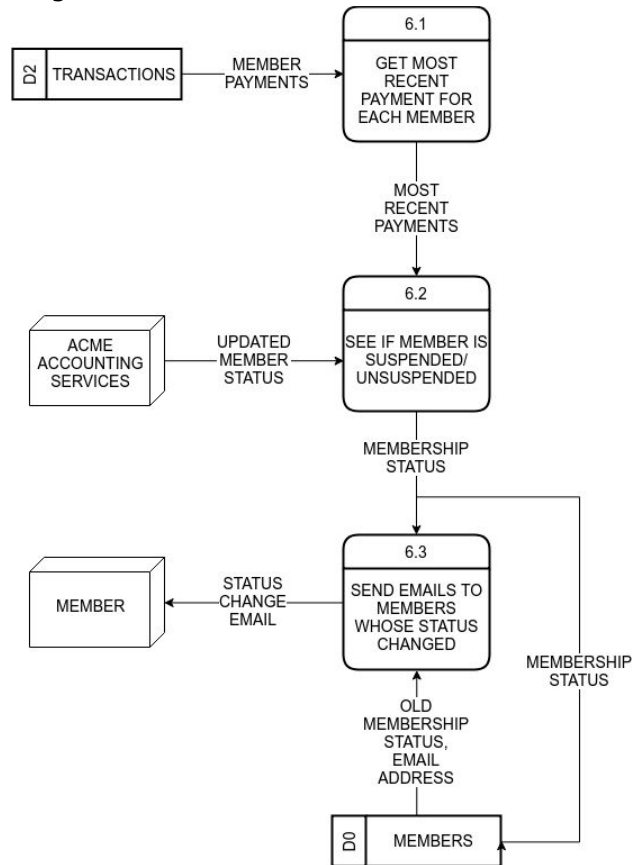
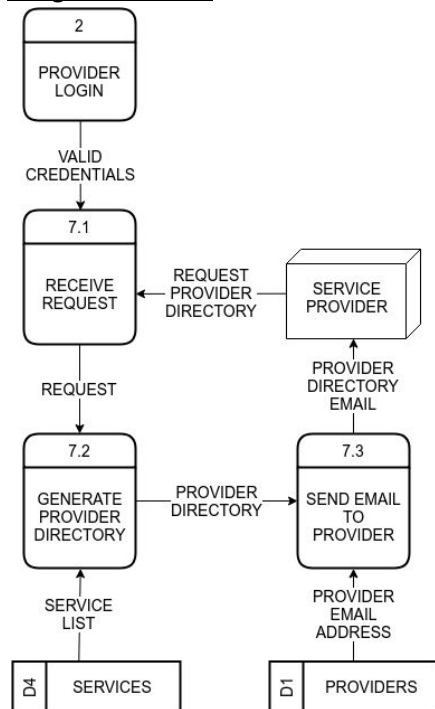


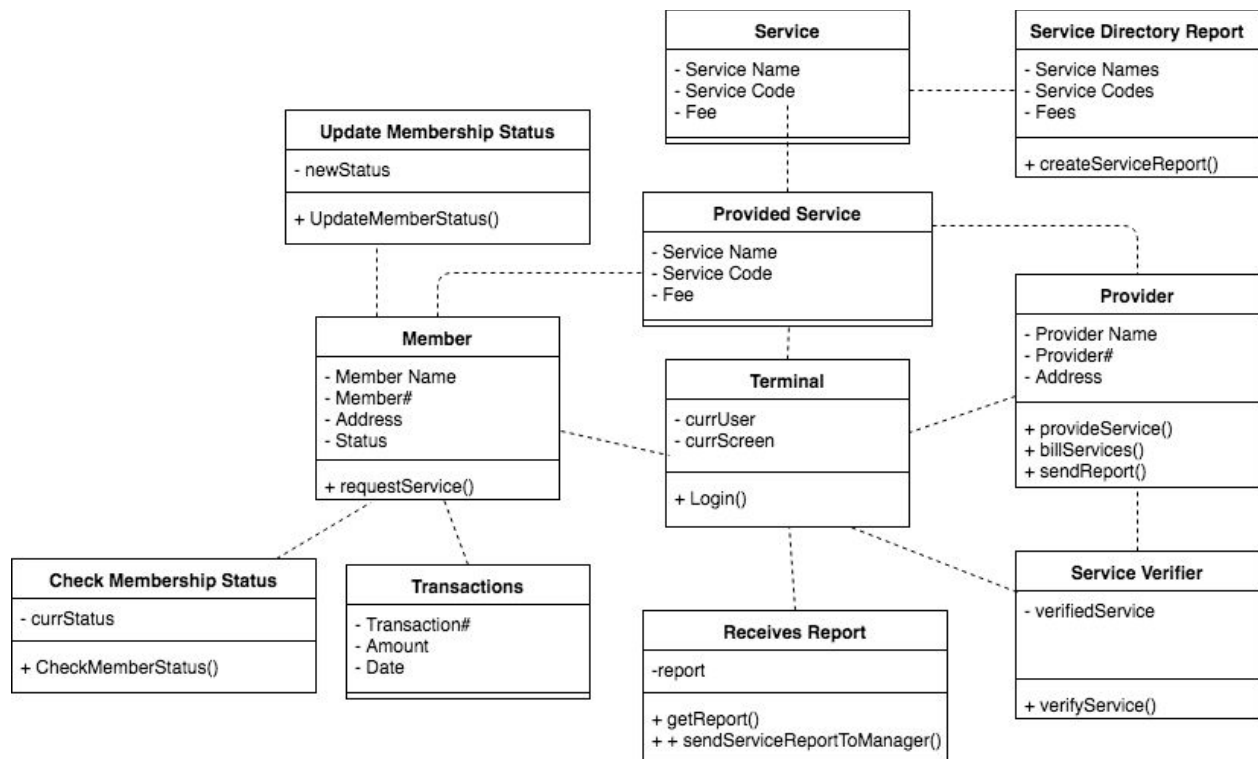
Diagram 7 DFD



3.1.4. Object Relationships

Service RESPONSIBILITIES - Holds data on services provided by Provider and received by Member - Service Name - Service Code - Fee COLLABORATIONS - Receives Service - Member - Provider	Member RESPONSIBILITIES - Receives Service - Makes Transactions - Member# - Member Name - Member Address COLLABORATIONS - Service - Provider - Transaction - ChocAn Employee	Provider RESPONSIBILITIES - Gives Service to Member - Provider# - Provider Name - Provider Address COLLABORATIONS - Service - Member - ChocAn Employee
Transaction RESPONSIBILITIES - Holds data on transaction made by member - Transaction# - Amount - Date COLLABORATIONS - Member	Process Member Fees RESPONSIBILITIES - Processes a Members member fees COLLABORATIONS - ACME - Member	Check Member Status RESPONSIBILITIES - Check Member status COLLABORATIONS - Member
Check Provider Number RESPONSIBILITIES - Checks Provider Number COLLABORATIONS - Provider	Service Verifier RESPONSIBILITIES - Verifies the correct service is being provided by the Service Provider - Service Name - Service Code COLLABORATIONS - Service - Provider	Receives Report RESPONSIBILITIES - sends report to ChocAn Manager COLLABORATIONS - Provider - ChocAn Manager
ACME RESPONSIBILITIES - Process Member Fees - Update Membership Status COLLABORATIONS - Member	Update Membership Status RESPONSIBILITIES - Changes Membership status COLLABORATIONS - ACME - Member	Service Directory Report RESPONSIBILITIES - Sends new report of available services to Provider - Service Name - Service Code COLLABORATIONS - Provider
		Terminal RESPONSIBILITIES - interface between actors and system COLLABORATIONS - Member - Provider

3.1.5. Complete Data Model



3.1.6. Data Dictionary

See the document "Data Dictionary UC3.xlsx" for the data dictionary.

4. Functional Model and Description

4.1. Use Cases

- 1) Use Case 1, Member Login: The purpose of the member login is to create an efficient and accurate way to display membership status to the provider. The membership status can either be valid, invalid number, or membership suspended which means that fees are owed. The provider also needs the member login to be able to bill ChocAn after a health care service has been provided.
- 2) Use Case 2, Provider Login: The purpose of the provider login is to be able to swipe the member's card through the terminal to get membership status. If the status is Valid, the provider can then bill ChocAn after a health service has been provided.
- 3) Use Case 3, Bill Services: After a service is performed, the service provider records the current date and time, the date service was provided, service ID, member number, provider number, and additional comments. The total cost of services is added up and is sent to Chocoholics Anonymous along with the above information.
- 4) Use Case 4, Send Reports: Members, ChocAn Managers, and Service Providers are sent automated generated reports. The reports are sent out every Friday evening to the team members/leaders. Reports can also be requested by the manager at any time.
- 5) Use Case 5, Modify Member/Provider Records: A ChocAn Operator must go into the system and modify the records of a member or provider.
- 6) Use Case 6, Modify Membership Status: Acme looks at which members have or have not paid their membership dues, and determines whether a member is in good standing or if they are suspended (more than 1 month without paying dues). This data is then entered into the system each evening.
- 7) Use Case 7, Send Provider Directory: Service Provider sends a request for the Provider Directory from the system in order to get a full list of all the types of services and their corresponding 6 digit service code number.

For more details on each of the use cases, please refer to the following documents for more information.

Use Case Document	Filename
Member Login	Use Case 1: Member Login
Provider Login	Use Case 2: Provider Login
Bill Service	Use Case 3: Bill Services
Send Reports	Use Case 4: Send Reports
Modify Member/Provider Records	Use Case 5: Modify Member/Provider Records
Modify Membership Status	Use Case 6: Modify Membership Status
Send Provider Directory	Use Case 7: Send provider Directory

4.2. Software Interface Description

4.2.1. External Machine Interfaces

The ChocAn worker grabs all the information from the ChocAn consumer and gets all the information from them, then then enter this information into a form on the computer screen. It is then saved inside of a Database. Finally the reports are sent to a ChocAn Manager every friday evening.

Interfaces to other machines (computers or devices) are described.


4.2.2. External System Interfaces

Interface between the system and Acme's software for updating membership status.

4.2.3. Human Interface

After the ChocAn worker has had its interaction with the ChocAn customer, the provider then login into the system, puts down all the necessary information such as Name, Phone number, Email address, current living address and the customers notes. After this is entered, it is then sent to the manger where he reviews the information and the bill goes back to the customer to insure they are paid for the service they provided. The customer can review this by swiping their card and then seeing what payments they have to make and what the reason of their visit was.

4.2.3.1. User Screen Interface Layouts



The image shows a user interface layout for the ChocAn Company. It features a light blue background with the company name "ChocAn Company" in a large, bold, black font at the top center. Below the name, there is a label "Member Number:" followed by a white text input field with a thin black border. Underneath the input field is a green rectangular button with the word "Validate" in black text, centered on the button.

Member Report

Address: _____ City: _____ State: _____ Zip: _____

Member Name: _____

Member Number: _____

Email: _____

Member Name	Member Number	Service code	Fee	Total Services Provided	Total Fee Cost	Date service preformed	Submission date
			\$XX.XX		\$XX.XX		
			\$XX.XX		\$XX.XX		

ChocAn Report

ID Number	Therapist Name	Patients Name
XXXXXX	Helper	Getting help
XXXXXX	Helper	Getting help
XXXXXX	Helper	Getting help
XXXXXX	Helper	Getting help

Provider Report

Address: _____ City: _____ State: _____ Zip: _____

Provider Name: _____

Provider Number: _____

Email: _____

Member Name	Member Number	Service code	Fee	Total Services Provided	Total Fee Cost	Date service preformed	Submission date
			\$XX.XX		\$XX.XX		
			\$XX.XX		\$XX.XX		

Manager Reports

Provider ID	Has Paid	# of Consultations	Fee for the week	Overall Fee
XXXXXX	yes	3	\$199.00	\$399.00
XXXXXX	no	6	\$199.00	\$699.00
XXXXXX	no	2	\$199.00	\$299.00
XXXXXX	yes	1	\$199.00	\$199.00

ChocAn Company

Provider Directory

Billing Services

ChocAn Reports

ChocAn Directory

Service	Service ID Number	Billing Cost
Dietitian	123456	\$XXXX
Aerobics	234567	\$XXXX
Weight lifting	654321	\$XXXX
calisthenics	654322	\$XXXX

4.2.3.2. Exception User Screen Interface Layouts

ChocAn Company

Member Number:

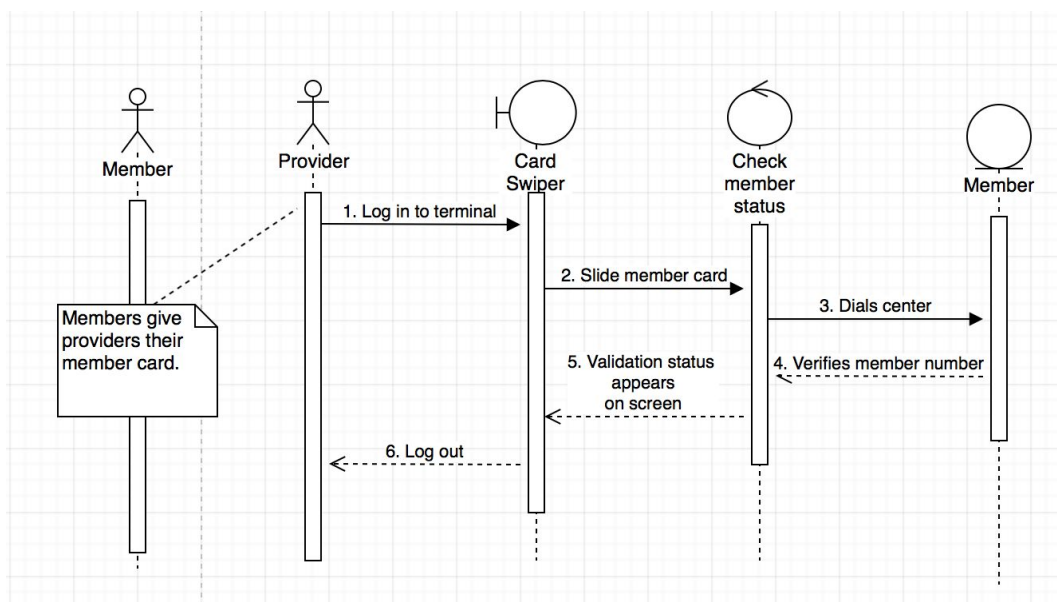
Not Validated

ID Number: 00000	Therapist Name: _____	Date: XX/XX/XXXX
First Name: _____	Last Name: _____	SSN: _____
Address: _____		
Phone Number: _____	<div style="border: 1px solid black; padding: 10px; text-align: center;"> ERROR: First Name was not entered or given. Please enter First Name or put N/A </div>	
Email Address: _____		
Patients Notes: _____		

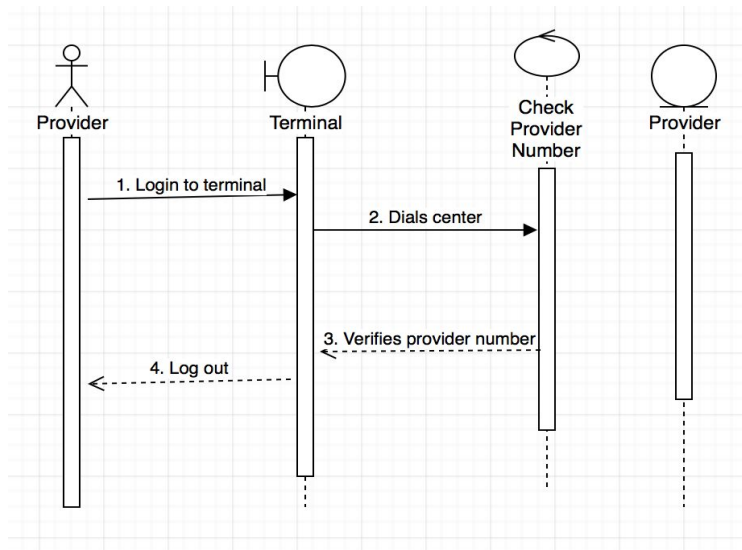
ChocAn Company		

4.3. Sequence Diagrams

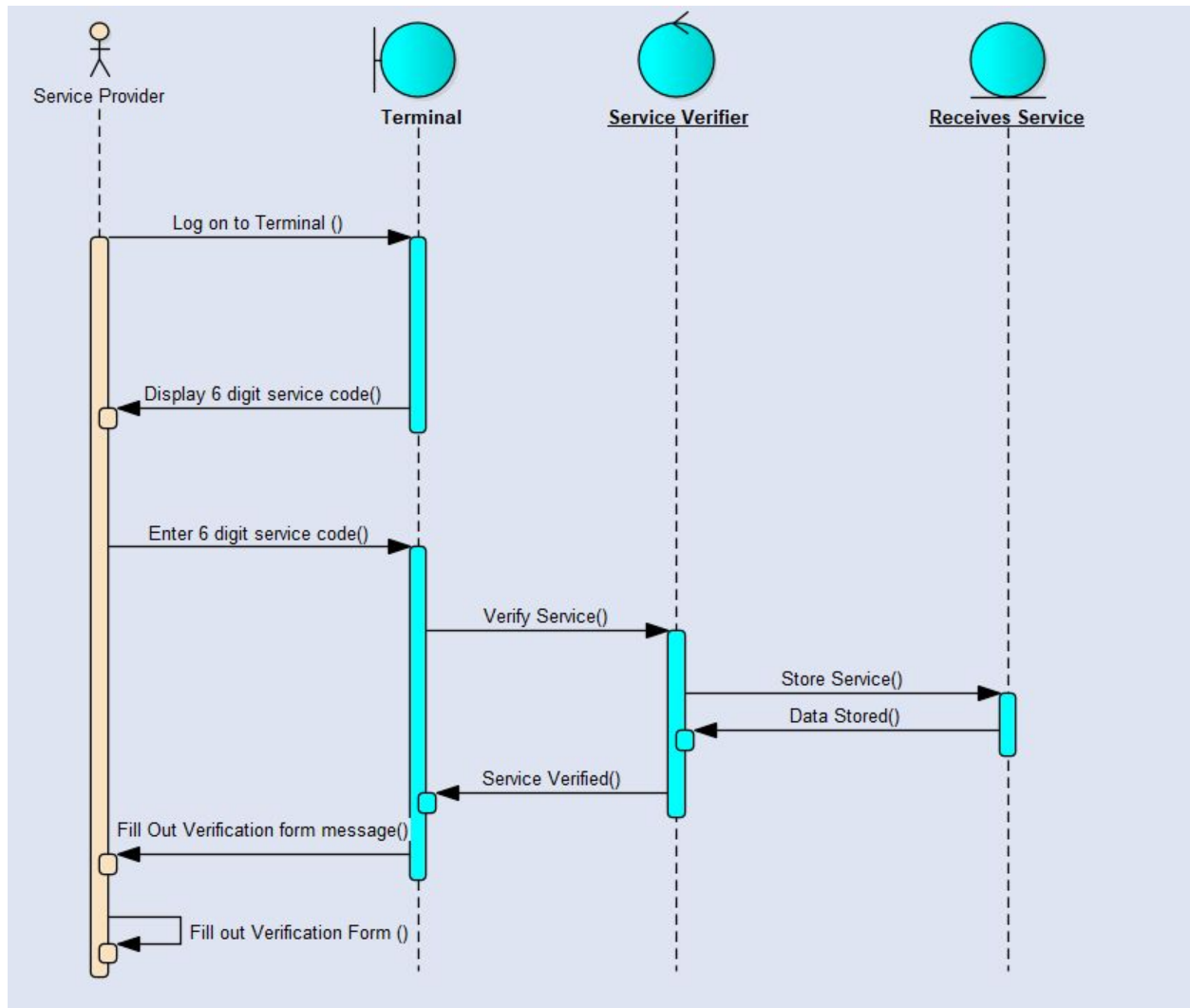
Use Case 1



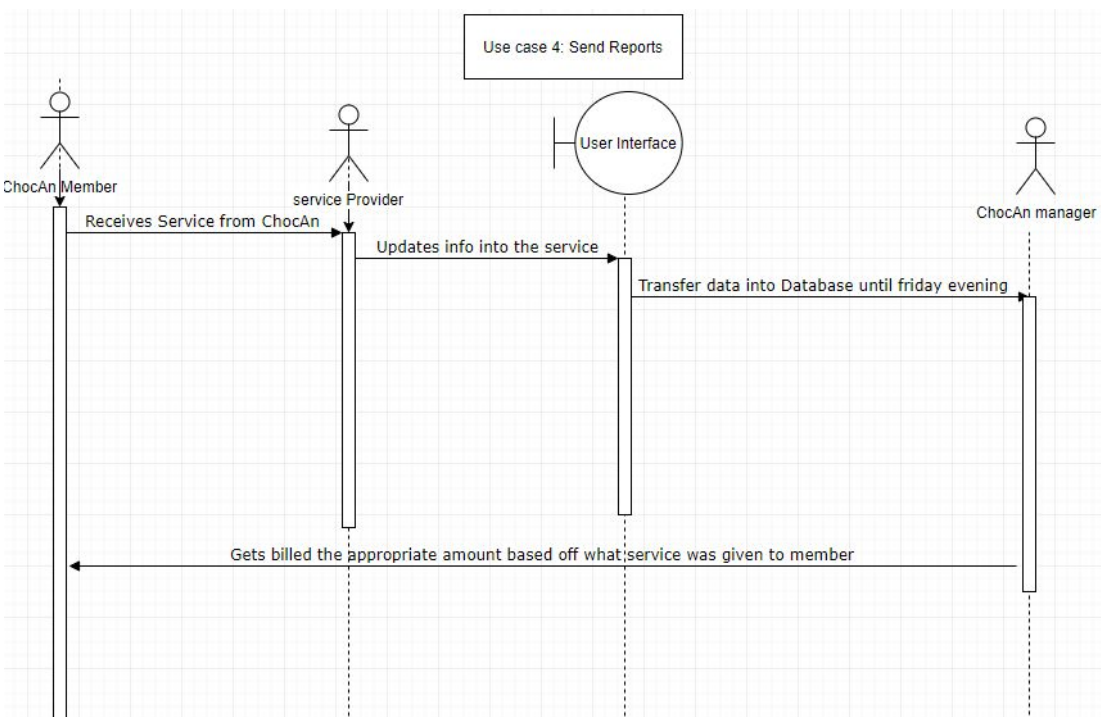
Use Case 2



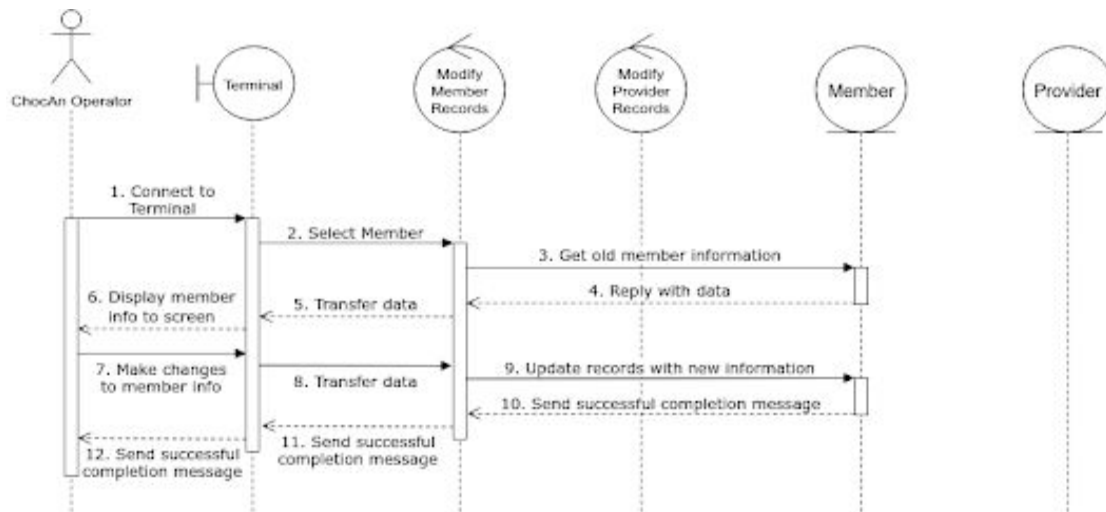
Use Case 3



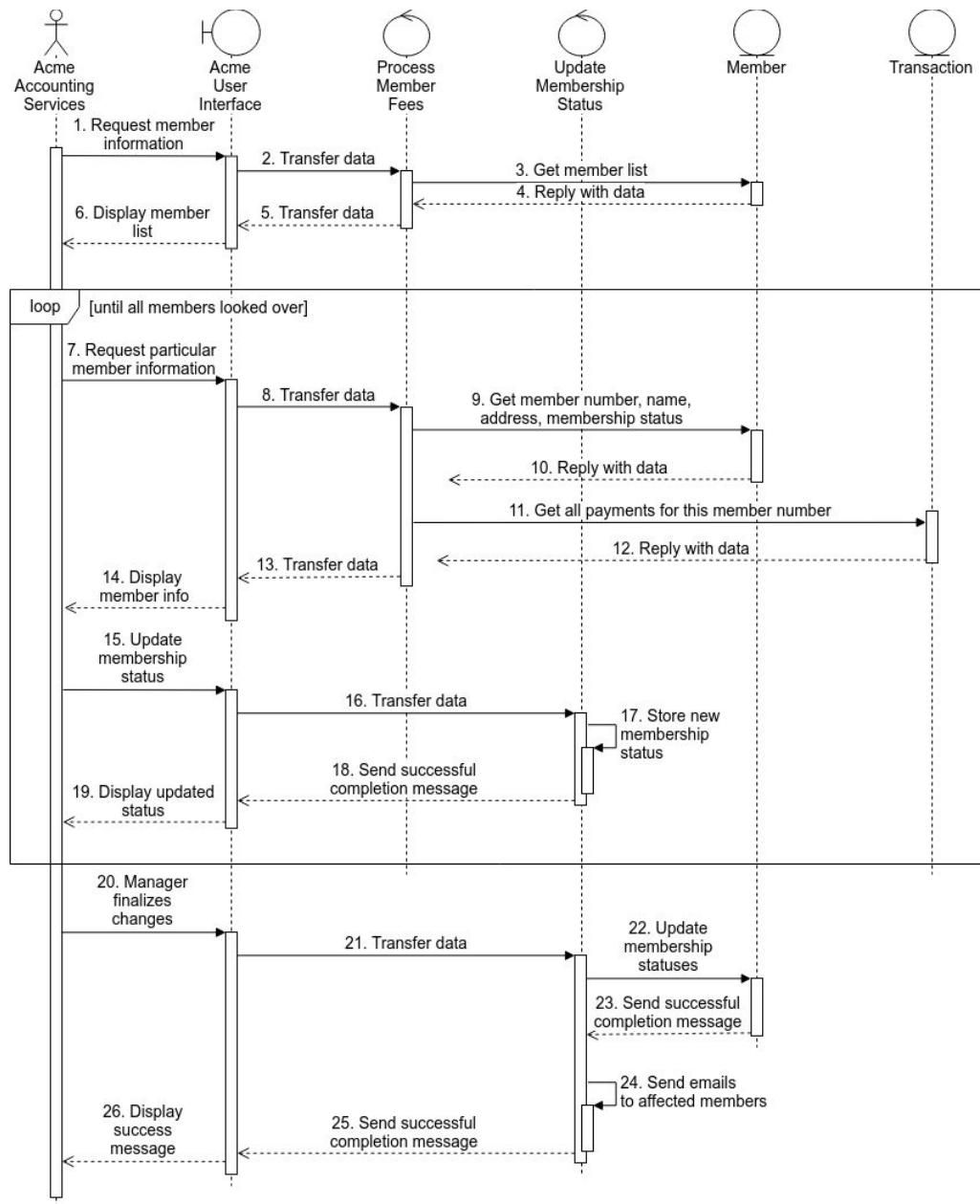
Use Case 4



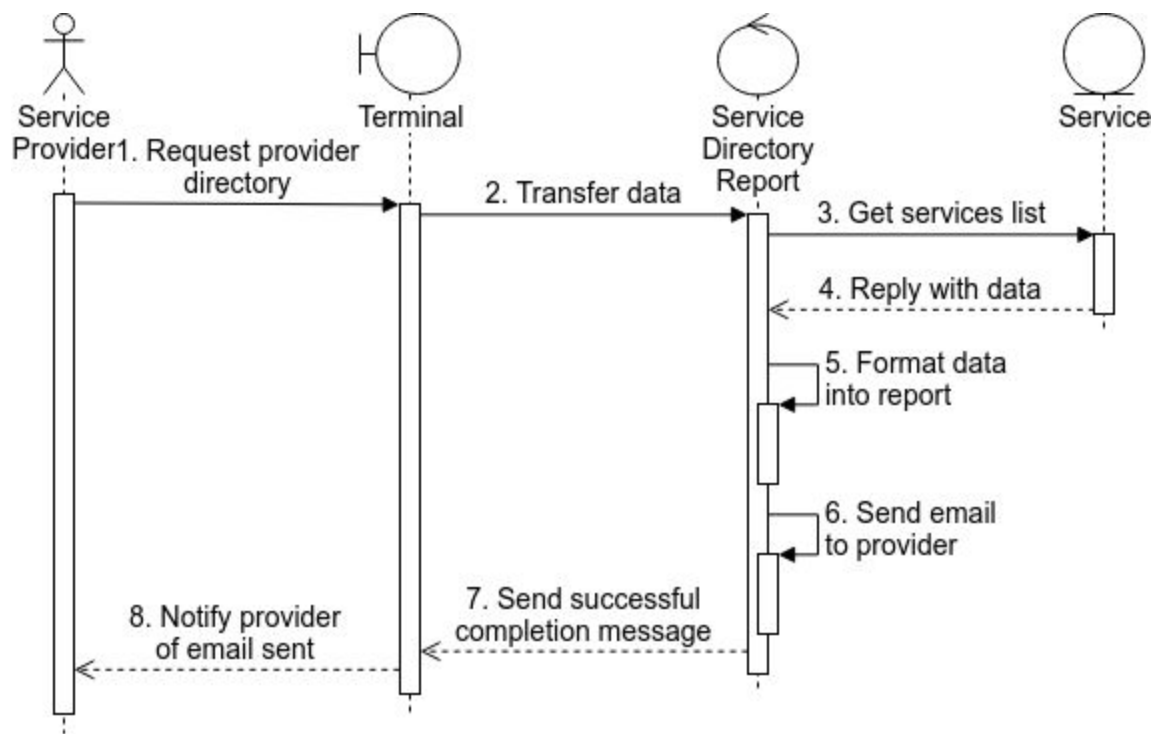
Use Case 5



Use Case 6

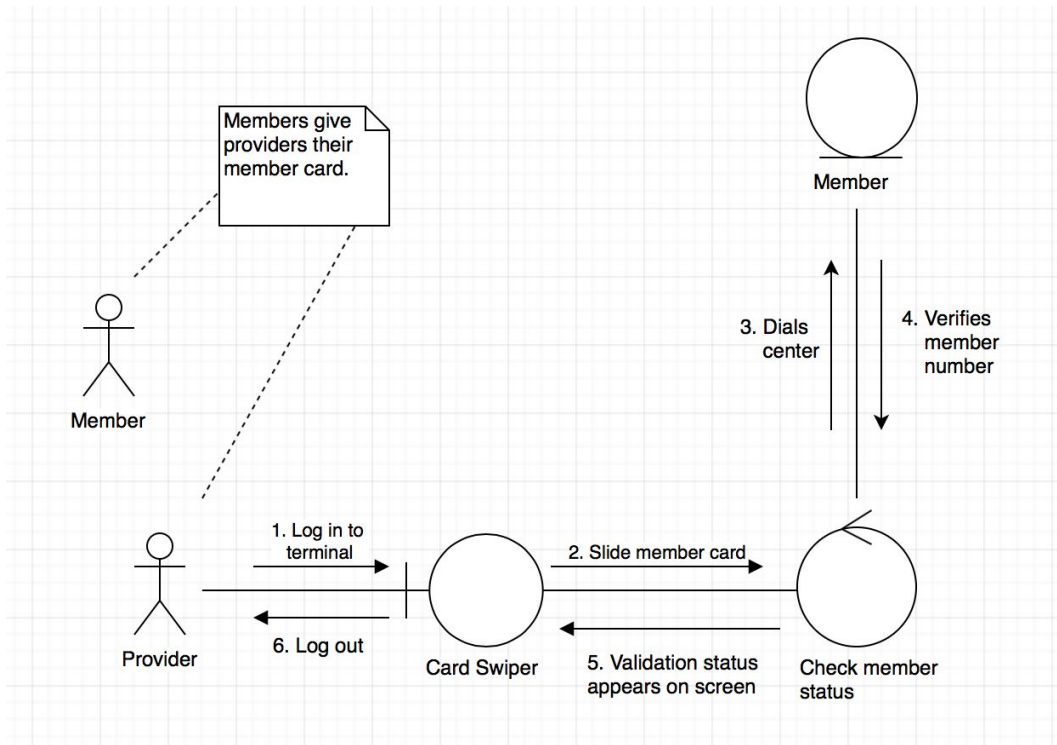


Use Case 7

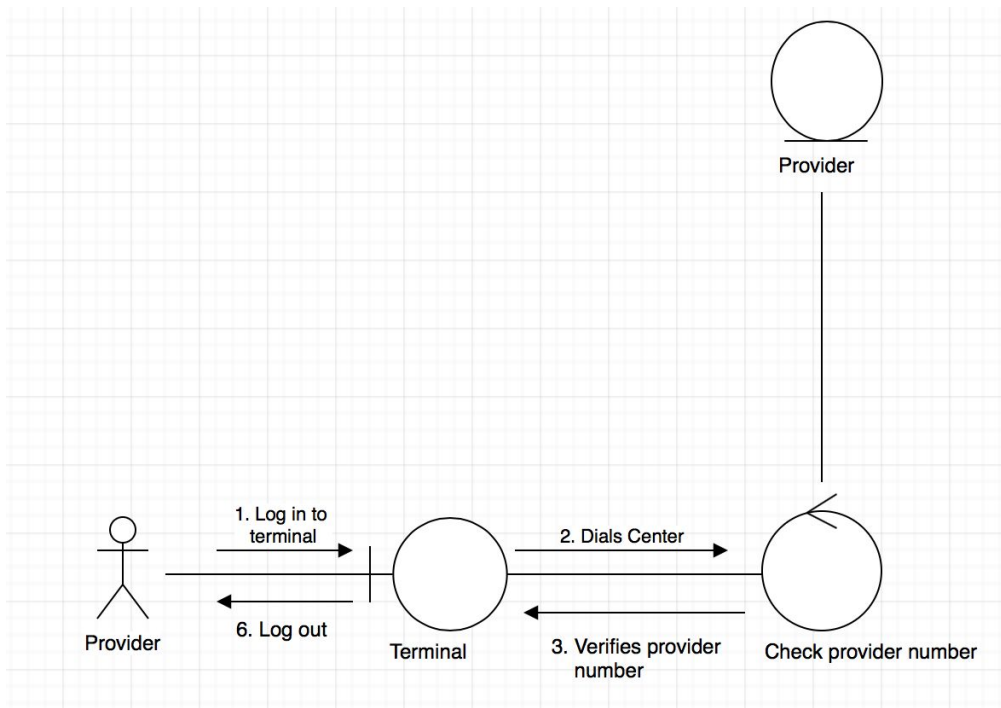


4.4. Communication Diagrams

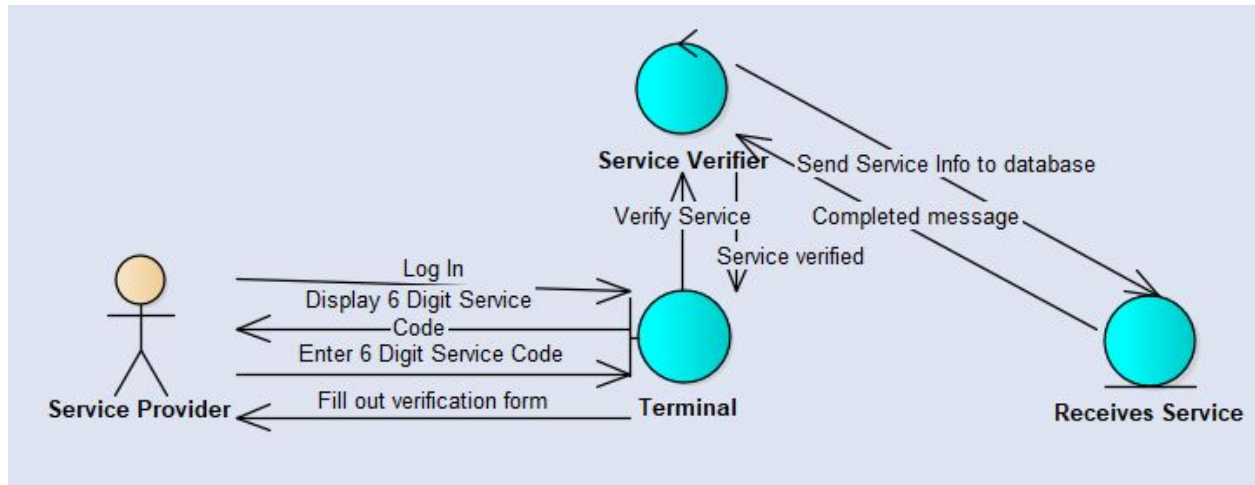
Use Case 1



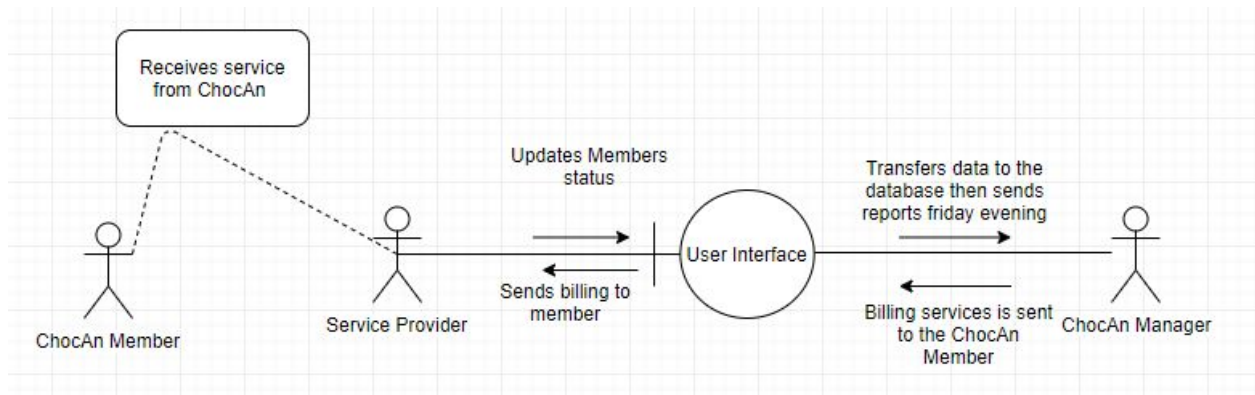
Use Case 2



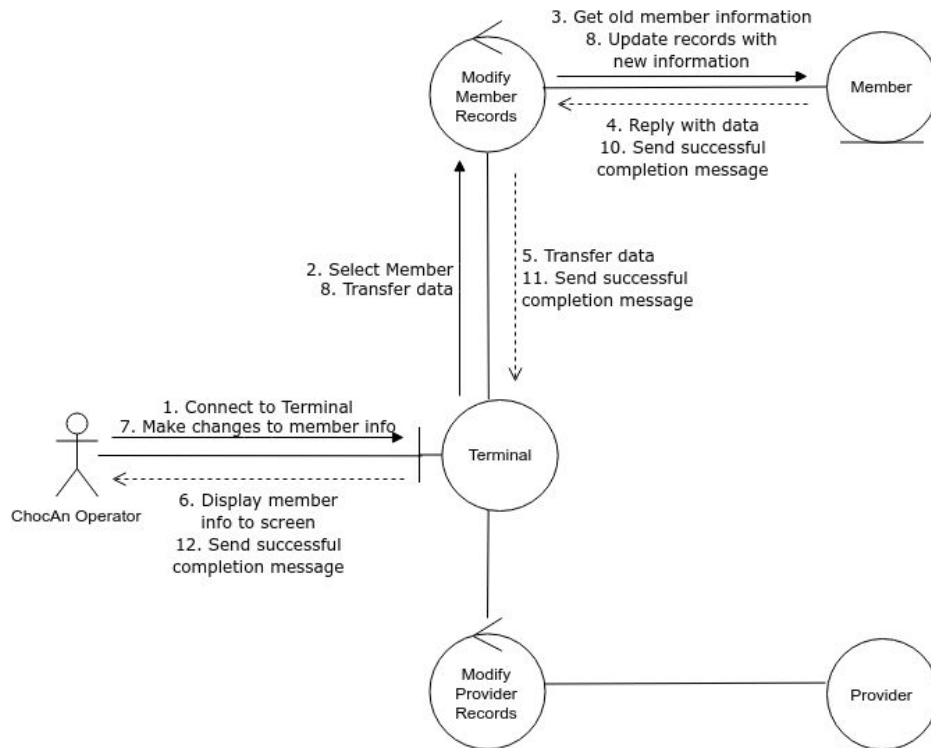
Use Case 3



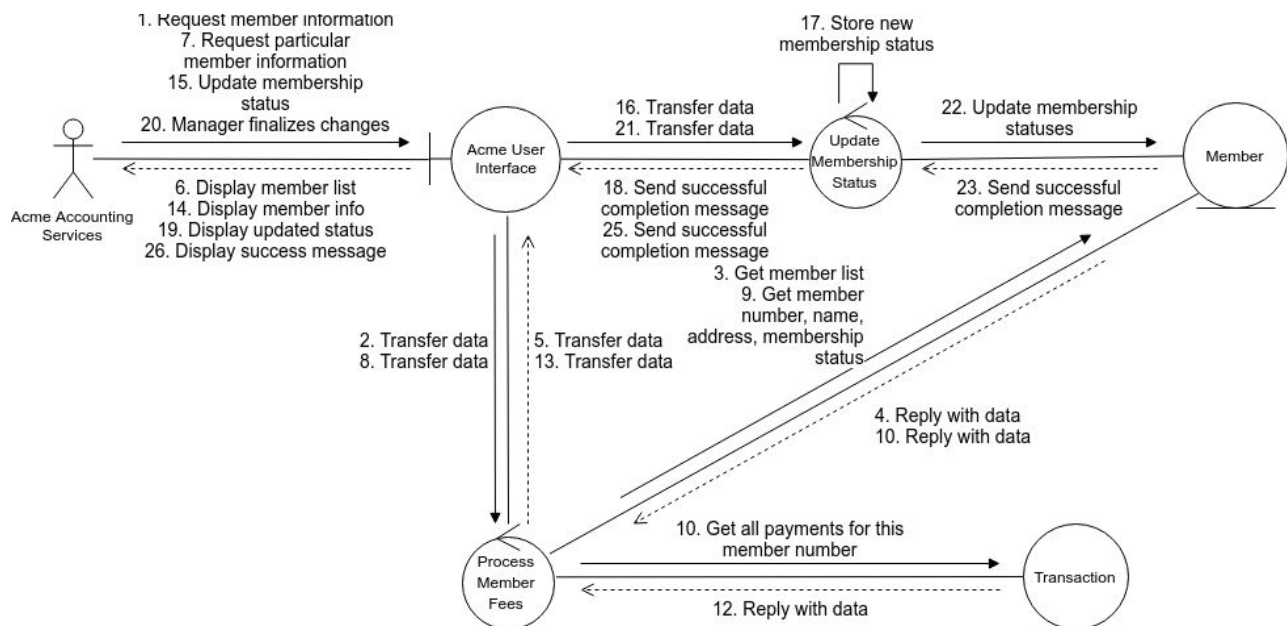
Use Case 4



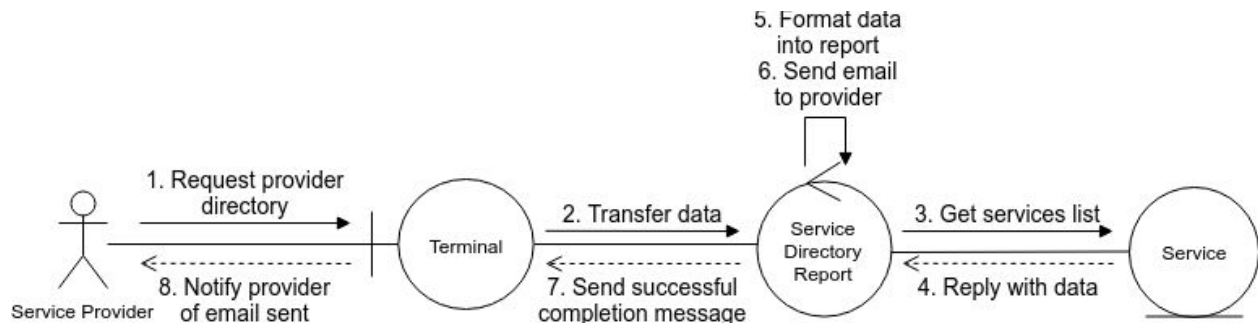
Use case 5



Use Case 6



Use Case 7



Used to model the message passing structure of the system functions. Do for only ONE use case. Each person must do a communication diagram.

5. Behavioral Model and Description

5.1. Description for Software Behavior

5.1.1. Events

Terminal:

- Switch on or off
- Dial ChocAn Data Center

Time:

- Friday at midnight
- Each evening at 9 PM

Service Provider:

- Request Provider Directory
- Bill Service
- Service Provider Login

ChocAn Data Center:

- Verify member number
- Receive Call

Member:

- Member Login

Operators:

- Add new member
- Delete member
- Modify member information
- Add new service provider
- Delete service provider
- Modify service provider information

ACME:

- Record Membership payments
- Suspend members
- Reinstate members

5.1.2. States

Terminal:

- On
- Off
- Dialing
- Idle

Time:

- Idle
- Send weekly member report
- Send weekly provider report
- Send manager summary report
- Update Membership status

Service Provider:

- Idle
- Totaled service amount
- Has Provider Directory
- Doesn't have provider directory
- Provider is valid
- Provider is invalid

ChocAn Data Center:

- Has yet to be dialed
- Searching for membership status
- Returns status to terminal

Member:

- Member is valid
- Member is invalid
- Member is suspended
- Member is denied service

Operator:

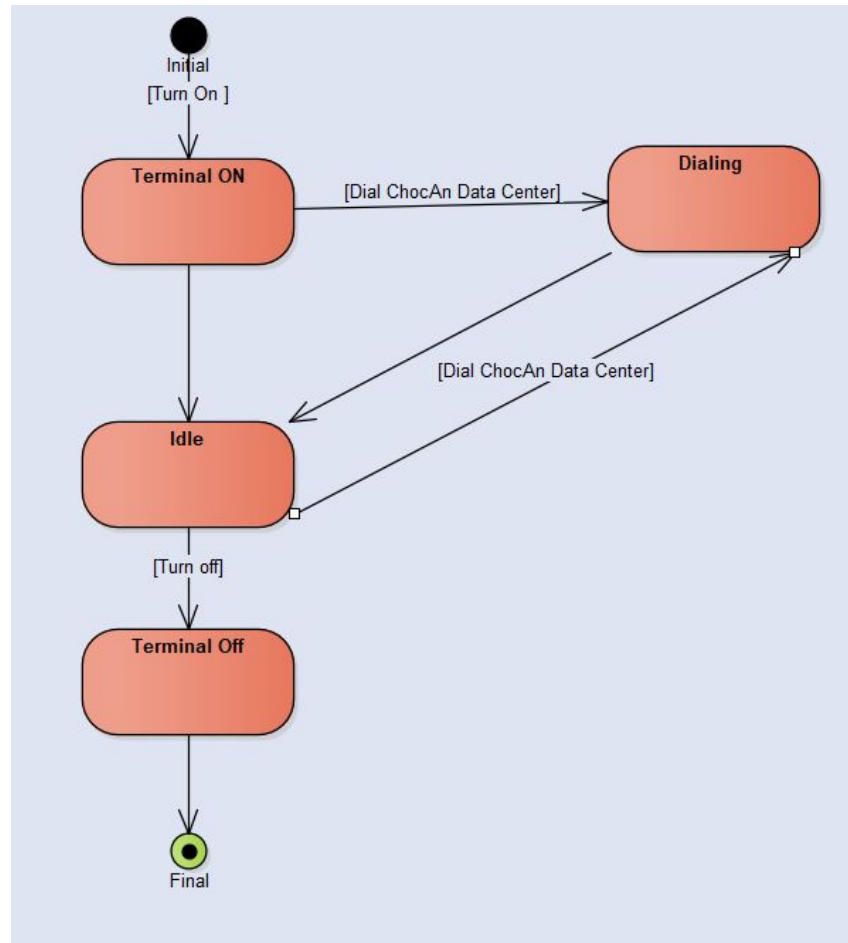
- Not editing information
- Editing information

ACME:

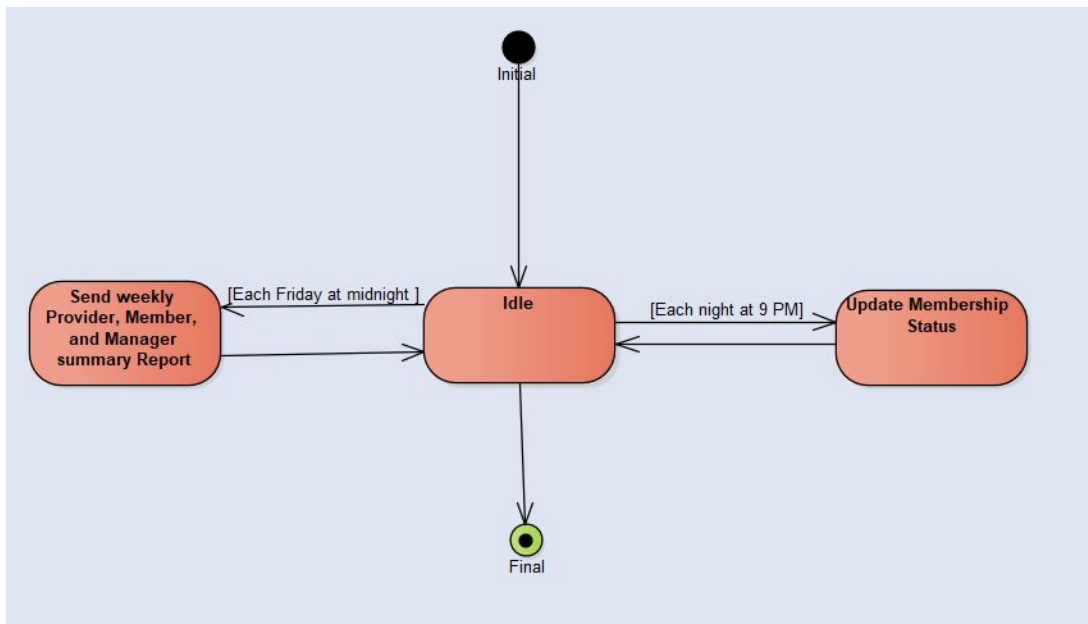
- Membership marked as valid
- Membership marked as suspended

5.2. State Transition Diagrams

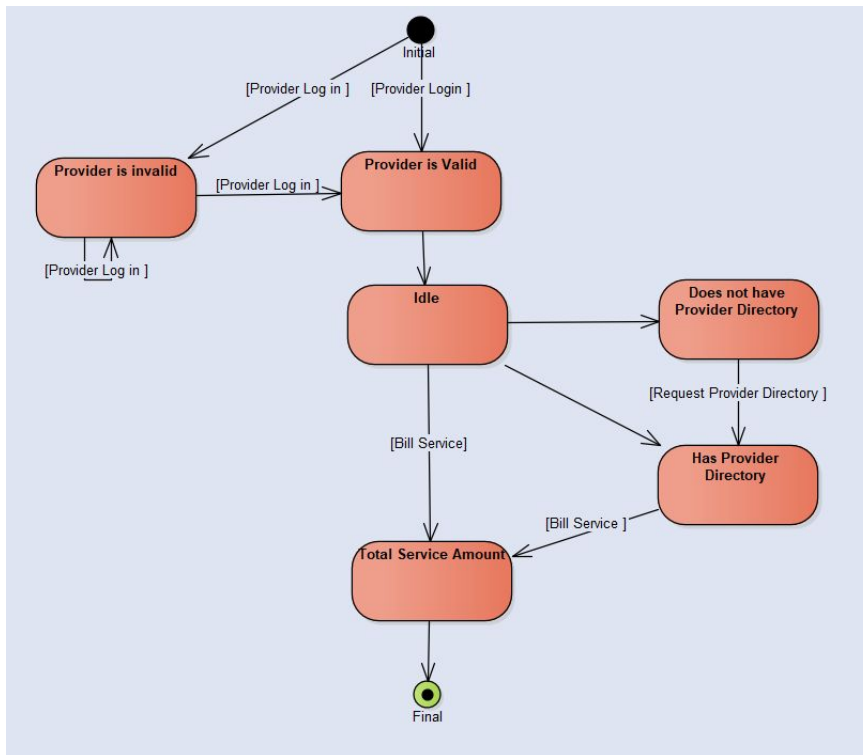
Terminal:



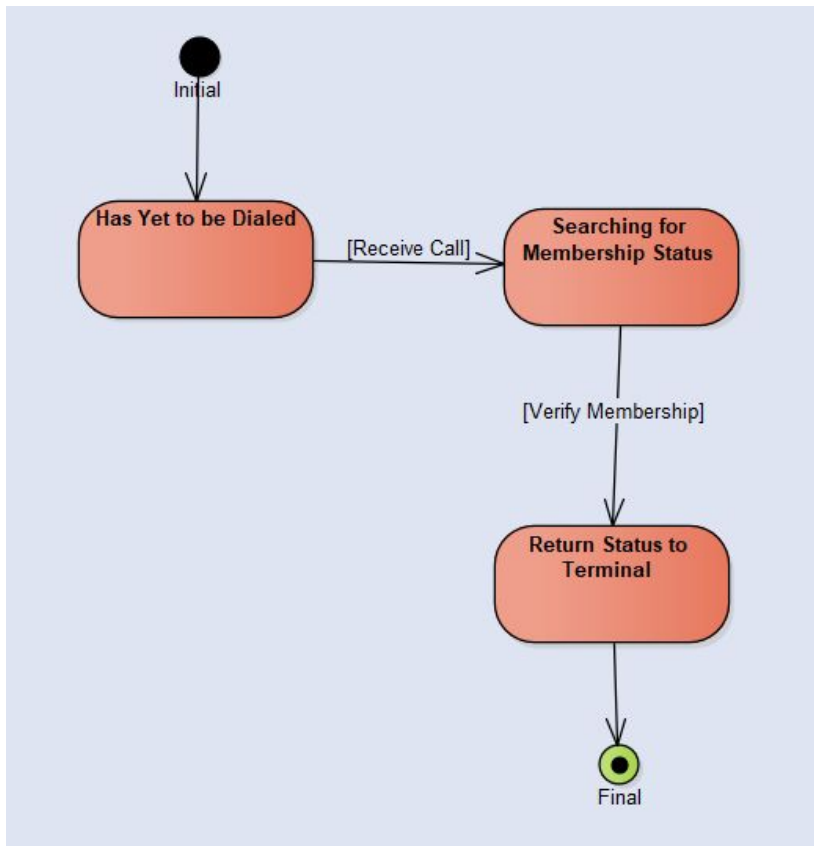
Time:



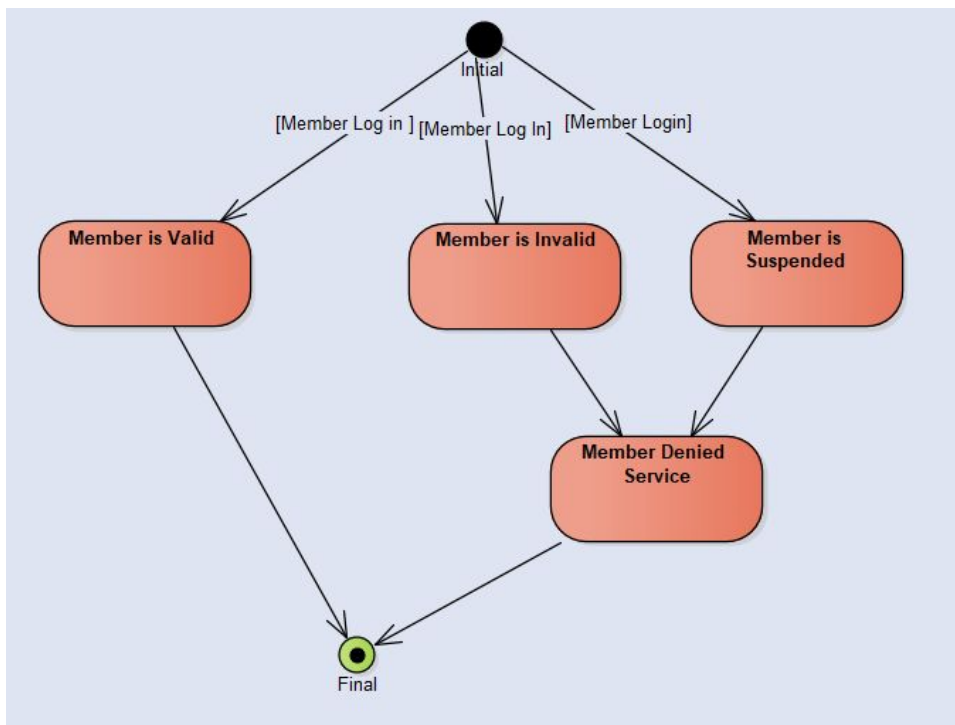
Service Provider:



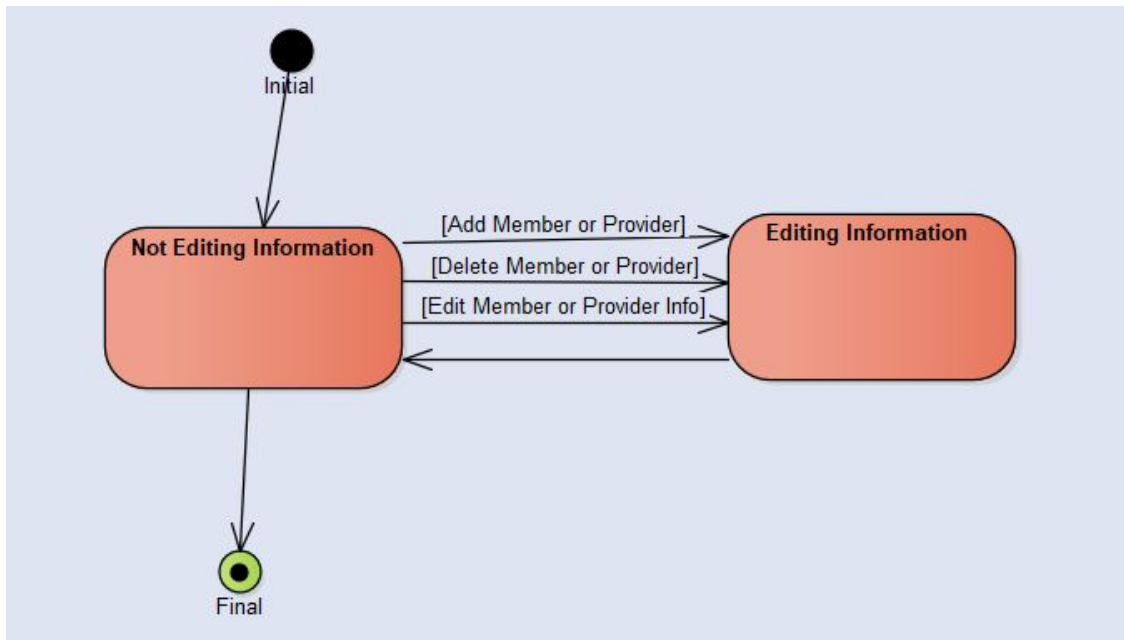
ChocAn Data Center:



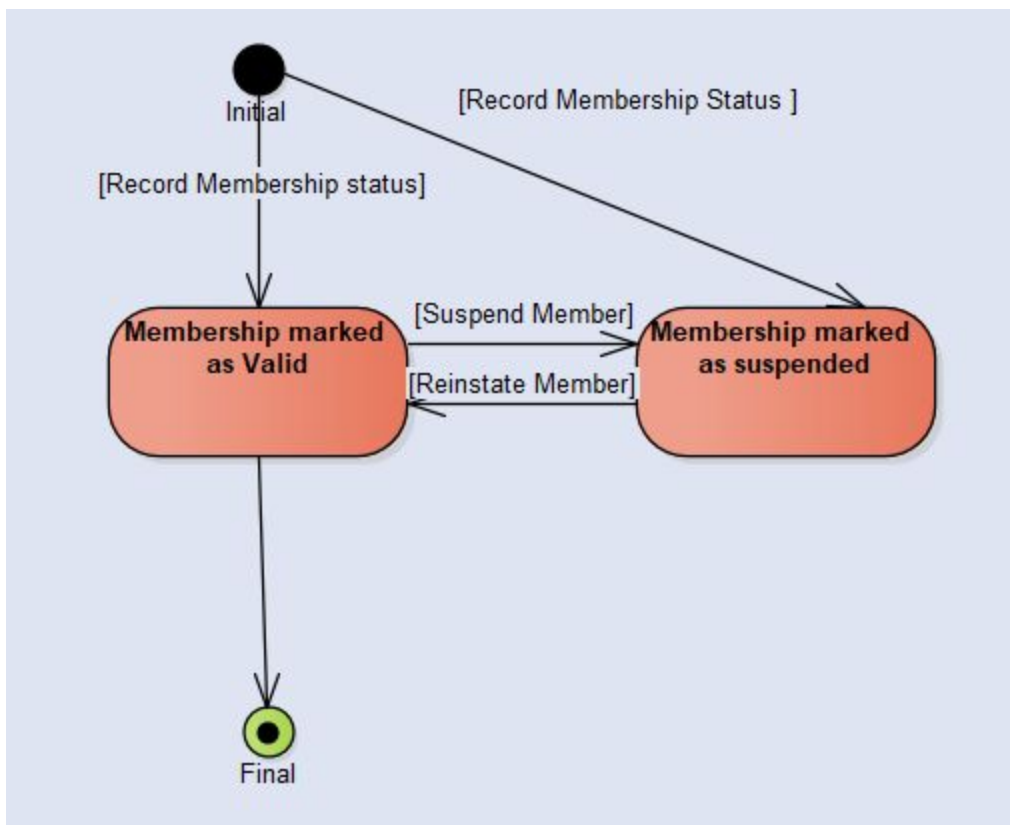
Member:



Operator:



ACME:



6. Restrictions, Limitations, and Constraints

6.1. Performance/Behavior Constraints

- Reports have to be sent on time each Friday evening at 9PM, to the correct email address.
- The membership status of each member must be updated every evening, Monday through Friday.
- The software must be accessible 24/7.

6.2. Management Constraints

- The project must be completed before August 20th.
- Team members have jobs and other classes they have to allocate time towards, limiting the amount of time that can be contributed to the project.
- Team members have limited experience with the usage of databases.

6.3. Technical Constraints

None.

7. Validation Criteria

The approach to testing our product will be black-box testing and unit testing.

7.1. Classes of Tests/Test Strategy

- **Black-Box Testing:** Black box testing is a testing method where we test the functionality of the software without looking at the internal code. This test is based off of the software requirements and specifications. Without the tester not knowing the internal code for the web app, the tester will be inputting data in the web app and will verify the output against the expected output. We are using black-box testing so that we can make improvements for the user so they have an easier time finishing their job.
- **Unit Testing:** This is a testing strategy where we test the individual function to make sure that the functionality of the each function is error free. Unit testing make sures that every component is working/functioning correctly.

7.2. Expected Software Response

The expected results from testing are specified.

<u>Purpose of Test</u>	<u>Input</u>	<u>Expected Output</u>
Make sure reports are sent Friday evenings.	Make a report and fill out everything inside to have a valid report to send.	Should receive a report Friday evening and should be able to read content inside of it.
Make sure that everything is generated in the report.	Generate the report.	Reports are generated.
Check to make sure that billing is working properly.	Select items that the member received.	System should output the balance due based off services given.
Forgot username.	No input, just being able to click forgot username.	Should receive email that gives you temporary username then forces you to make a new username.
Forgot password.	Multiple attempts or click on forgot password.	Should receive email that makes you reset password.
Logging into system.	Insert username and password.	Enter the system to put information.
If service was not given to in that week.	No input, just generate provider report.	Have special report stating that they did not come in a certain week.

7.3. Performance Bounds

- Have a max capacity of 100,000 reports stored into the database as well as space for chocAn workers to store username and password.
- Have the reports be sent on Friday evenings.

8. Appendices

8.1. System Traceability Matrix

See "Traceability Matrix.pdf".

8.2. Product Strategies

No product is being produced: this project is for ChocAn use only and does not need special considerations for this section.

8.3. Analysis Metrics to be Used

Number of sections/subsections completed for the SRAS

8.4. Supplementary information (As Required)

None.