Lakehead
UNIVERSITY

ESOF 2670 - Mini Project 2

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Chocoholics Anonymous project

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This document includes the analysis and design workflow for the Chocoholics Anonymous project given in Appendix A.

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Here we have the use Case Diagram

a. Use case Scenarios for one of the use cases:

Use case name:	Maintain Member
Main Actor:	Provider
Scenario:	1. The provider adds a new member, and enters the details including: • Member name • Member street address • Member city • Member state • Member zip code 2. Now the system will Give a number to the new member. 3. System will record the his/her details. 4. System will activate the status of new member. 5. Member joins in the ChocAn Anonymous. **Updating or deleting the information for an existing member:** 6. Updating: i. Provider enters the existing member's number. ii. The details will be displayed by the information system. iii. Provider updates the detail and the system will update the member's details. 7. Deletion: i. Provider enters the existing member's number.

	ii. The details will be displayed by the information system. iii. Provider deletes the detail and the system will erase the member's details or inert the member's status.

b. Three Entity Classes:

1. **Provider:** Provider is the health-care professional who provides services to the members of ChocAn. Provider can be Dietician, Exercise Specialist or Internist.

   The provider can:

   - Ensure that the member has a valid membership card
   - Check the membership status (Active or Suspended) of the member.
   - Send an invoice to ChocAn submitting a claim subsequent to providing a service to a member.

The entity **Provider** has **ONE TO MANY** relationship with the entity **Claim.**

The provider can make several claims but a particular claim can only be claimed by one provider.

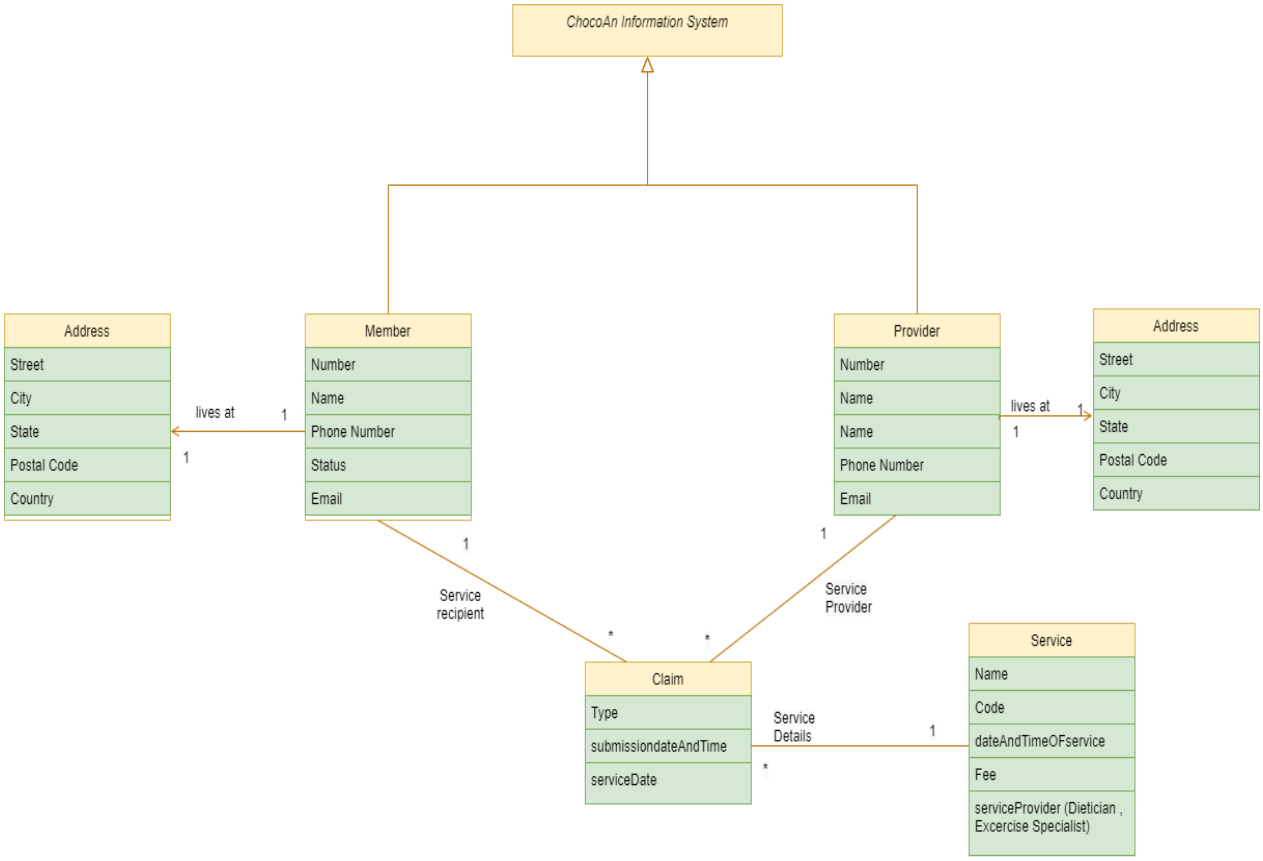
2. **Member:** A chocolate addicted person who has joined ChocAn to cure his/her addiction in exchange of a certain fees.

The entity class **Member** has **ONE TO MANY** relationship with the entity class **Claim.** The member can make several claims but a unique claim can only be claimed by one member.

3. **Claim:** It is the appeal for the amount due to a provider for a service provided.

The entity class **Claim** has **ONE TO MANY** relationship with the entity class **Provider and Member.**

Here is the Entity- Class relationship diagram: This entity class relationship shows the association between the entity classes **Member, Provider, Claim and Service.**



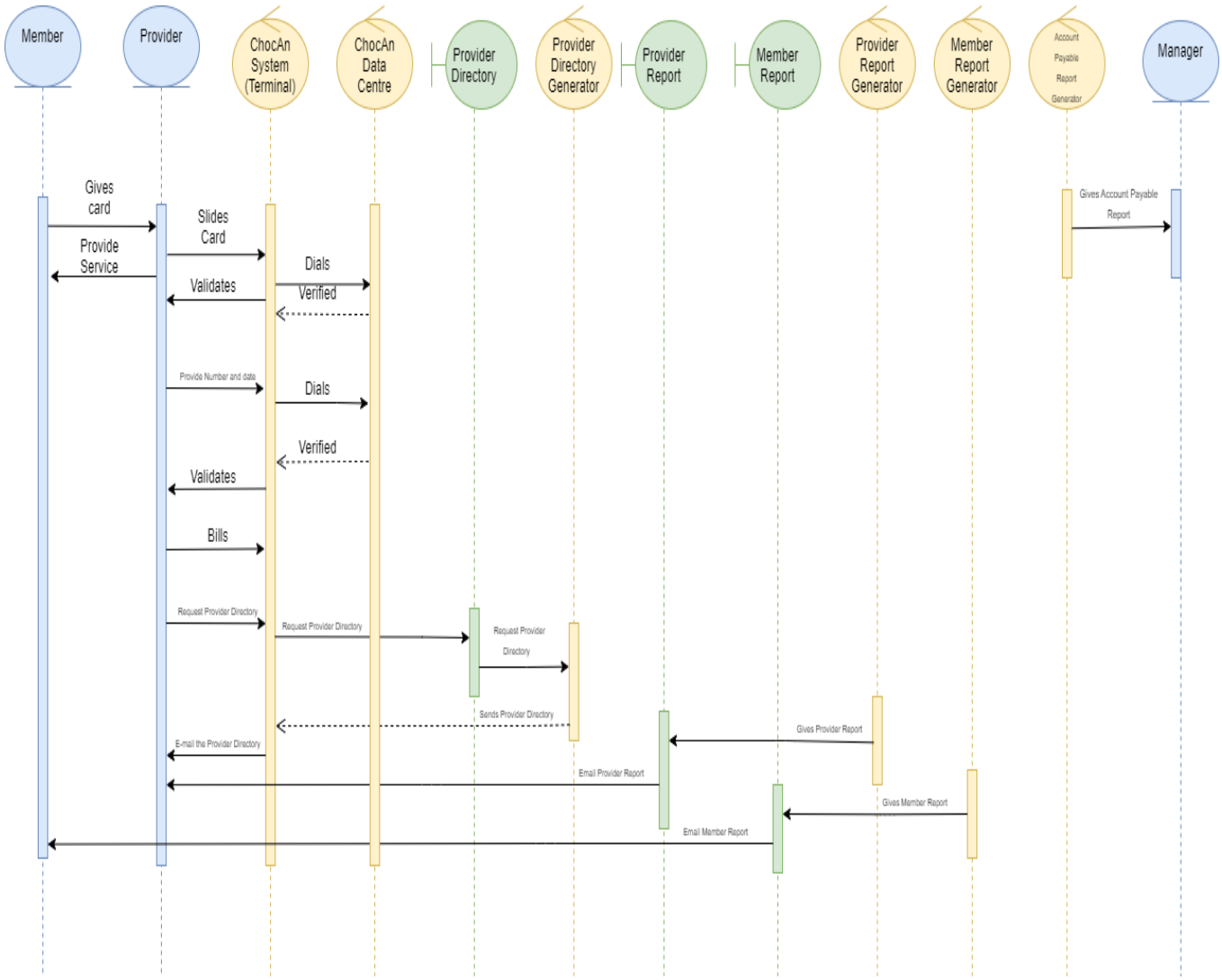
One Boundary Class:

1. **Provider Report:** Each provider report must be written own file; the name of the file should begin with the provider name, followed by the date of the report. For example: Abhinav_21_Nov_2020

One Control Class:

1. **Provider Report Generator:** Each provider who has billed ChocAn during a certain week will receive a report. This report will be sent as an e-mail attachment and it will have the description of all services, he or she provided to the members. This report will also include the data about the number of consultations with the members and the total fee for the week. To request a provider report, provider number is mandatory.

c. Sequence Diagram:



d. Class, Attributes and Method:

Name of the class:	Member
Attributes of the class:	name number street address city state ZIP code Email address status
Methods of the class: For member to receive the services	1. The member chooses the type of provider (Dietician, Internist, Exercise Specialist) 2. The member gives his or her card to the provider. 3. Provider slides the card through the card reader on the provider terminal. 4. The terminal then dials the ChocAn Data Center, and the ChocAn Data Center system authenticate the member number. 5. If the number is valid, the word “Validated” appears on the screen. 6. If the number is not valid, the following reasons may be displayed on screen: • Invalid number • Member suspended 7. After the status and member number confirmation, member then continues to receive the needed service

e. Pseudocode for the autheticateMember method:

```
void ( authenticateMember )

{

while (TRUE)

{


if ( memberStatus is Active )

{

display :: Validated;

}

else if ( memberStatus is Suspended )

{

display :: Suspended;

else ( numberIsNotValid )

{

display :: Invalid Number ;

}
```

}

}

f. Techniques for software cost estimation are:

1. Analytical estimation:

It is a type of technique that is used to analyse task. In this technique, the task is divided into small operations. The sources are applied to each element or component of work. This method is based on some scientific calculations and the results are drawn by making some analytical assumptions about the project. This method is also cross Applicable and broader in the estimation approach.

Since CochoAn Project is a big project. We can use Analytical estimation technique for cost estimation. We can break down the project into small pieces. the sources can be applied to each broken component of the project to draw out the cost estimations.

2. Empirical Estimation

In this technique the formulas for calculations are empirically derived which further predicts the data. This technique is based on the previously collected data from a project and prior experience with the development of similar types of projects. The estimation also depends on the size of the software. The formalisation of the Empirical formulas for calculations is necessary.

Empirical Estimation Technique can also be used for cost Estimation of ChocAn Project as it involves more formalised Calculations. Furthermore, experienced team can contribute to more precise and accurate estimation of the cost which will be an asset for the progress of the project. It involves estimation by expert groups.

Techniques for software cost and duration estimation are:

1. Bottom-up Estimating

In this technique the project is broken down into small set of activities and the then duration of all the activities' is calculated and later summed up to get the most precise estimation. It is the most accurate, most time-consuming, and the costliest technique. This technique is most definitive. This technique is best suited for the projects which have a lot of details to cover.

Since, ChocAn Project has a lot of minute details. Hence, this technique can be used for the calculations of duration of Project with the high level of precision.

2. Parametric Estimating

This technique uses historical records to compute the duration estimate. It is a statistical approach to reach the estimation.
This technique also uses historical data to find the estimate. For instance, if writing 100 lines of code take one day, then we can calculate the time duration to estimate the time to take to write a10000 lines of code. Just multiply the time taken to write 100 lines of code by 100.

Tool Used to draw Use case Diagram, Entity Relationship Diagram and Sequence Diagram: Drawio

Resources:

Schach, S.R. (July 19,2010). *Appendix A: Term Project: Chocoholics Anonymous.* In S, R, Schach (8th Ed.), *Object Oriented and Classical Software Engineering*, (8th Edition, 627-629). McGraw Hill.