

ChocAn Data Center

COMP 370
Software Engineering
Dr. Leon Pan
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Group 7

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Software Project Management Plan

1. Project Summary

a. Purpose:

To streamline and simplify the process of storing data about Chocoholics Anonymous (ChocAn) members and providers, and to make it easier for the providers to bill ChocAn for providing services to its members.

b. Scope:

The ChocAn Data Center software will be accessible by providers and managers, and will be operating within the confines of the physical location of the ChocAn organization.

c. Objectives:

To automate the following processes:

- Keeping records of the members of Chocoholics Anonymous and its health care professionals (providers),
- Keeping detailed records of service appointments of members with their providers, containing the date of the appointment, fees, etc.,
- Generating weekly member, provider and summary reports each week and on demand for the manager,

through the ChocAn Data Center software.

d. Deliverables:

Product:

The product will have the following major functionalities:

- Providing a login module to providers and managers (which uses a keyboard for input, instead of swiping a card, for the acceptance test)
- Validating provider and manager details and providing them access to the services they respectively need.
- Showing member and provider reports and a summarised report once a week.

Documentation:

- Use case diagram
- Description of all use cases
- Functional and non-functional requirements
- Software Project Management Plan
- Entity-Relationship diagram

- State chart
- Class-Responsibility-Collaborator cards
- Data flow analysis
- Class diagram
- Collaboration diagram
- Sequence diagram equivalent to collaboration diagram
- Black box test cases

e. Schedule:

Workflow	Start	27/2/2017							6/3/2017					13/3/2017							20/3/2017				
		M	T	W	T	F	S	S	M	T	W	T	F	M	T	W	T	F	S	S	M	T	W	T	F
Requirements	27/2/2017																								
Analysis	3/3/2017																								
Design	8/3/2017																								
Implementation	14/3/2017																								
Testing	19/3/2017																								

2. References:

Schach, Stephen R. *Object-Oriented and Classical Software Engineering 8th Ed.* 2011. McGraw Hill

Oracle. *DocumentSizeFilter*. 2008. Oracle:

<https://docs.oracle.com/javase/tutorial/uiswing/examples/components/TextComponentDemoProject/src/components/DocumentSizeFilter.java>

MigLayout: <http://www.miglayout.com>

Apache Derby: <http://db.apache.org/derby>

Apache POI: <http://poi.apache.org>

JCalendar: <http://toedter.com/jcalendar>

3. Primary roles and responsibilities:

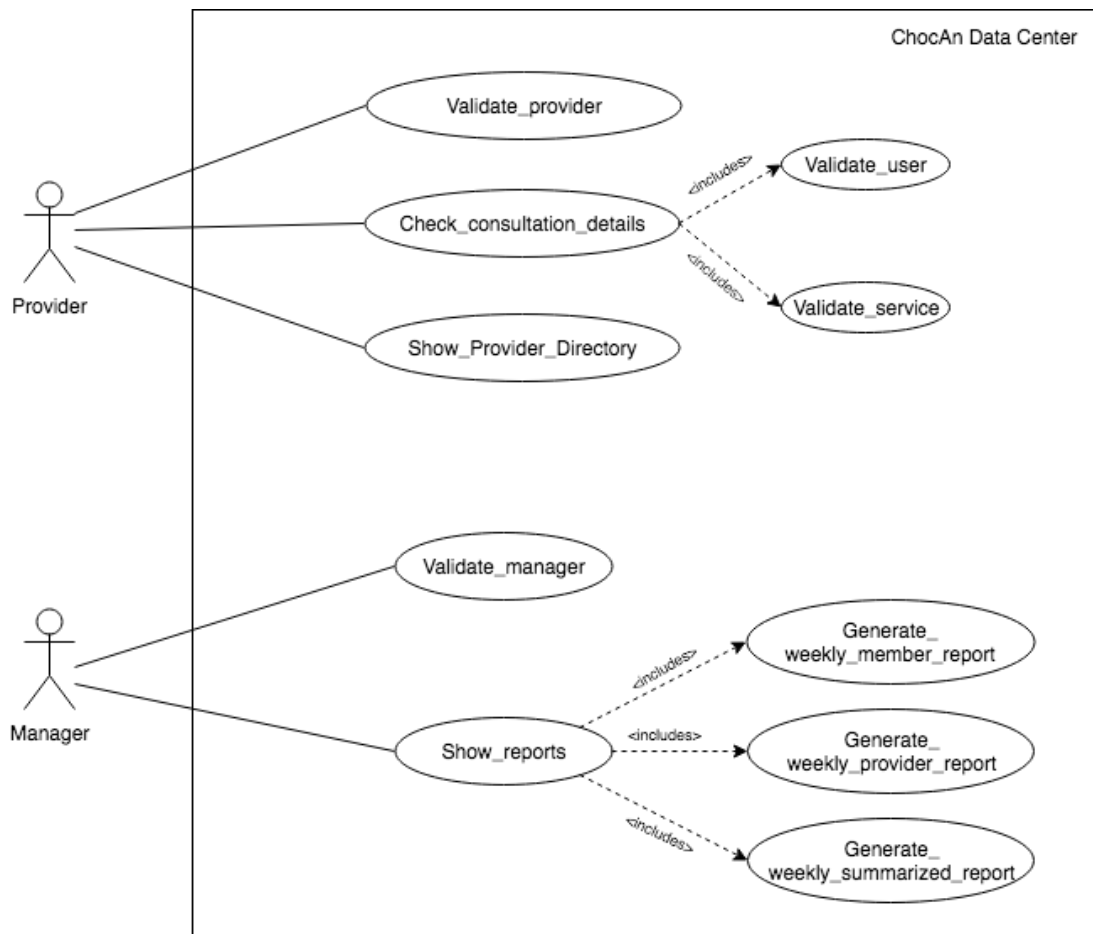
Requirements, Analysis, Design: Sufiyan Samnani, Mohamed Furqaan Attarwala

Implementation, Testing: Tanesh Manjrekar, Vishal Chandra

4. Process Model:

The waterfall software development model was used in the development of ChocAn Data Center.

Use Case Diagram



Use Case Descriptions

Use case ID	Validate_provider
Use case name	Validate Provider Credentials
Actors	Provider
Brief description	The system asks the provider for his/her credentials and verifies it
Triggers	Provider terminal is switched on
Pre-conditions	Waiting for provider to input his/her credentials
Post-conditions	Provider logged in
Flow of events	<ul style="list-style-type: none"> Provider is asked to enter his/her provider number upon system start The system checks whether the provider credentials are valid or not If valid, then the provider is logged in

Use case ID	Check_consultation_details
Use case name	Check consultation details
Included use cases	<ul style="list-style-type: none"> Validate_user Validate_service
Actors	Provider
Brief description	The system verifies the member number and the service code
Triggers	Provider inputs consultation details
Pre-conditions	Waiting for provider to input details
Post-conditions	<ul style="list-style-type: none"> Validated Invalid credentials/Member suspended
Flow of events	<ul style="list-style-type: none"> Provider needs to input the ChocAn member's number and the service code The system will validate these details against the credentials stored in the database The provider verifies that the correct service code has been input If the verification is successful, then "Validated" is displayed on the screen

Use case ID	Show_Provider_Directory
Use case name	Show Provider Directory
Actors	Provider
Brief description	The system displays the Provider Directory to the provider
Triggers	Provider requests for Provider Directory
Flow of events	<ul style="list-style-type: none"> Provider requests the system to show the Provider Directory to look up the service code Upon receiving this request, the system displays the Provider Directory

Use case ID	Validate_manager
Use case name	Validate Manager Credentials
Actors	Provider
Brief description	The system asks the manager for his/her credentials and verifies it
Triggers	Provider terminal is switched on
Pre-conditions	Waiting for manager to input his/her number
Post-conditions	Manager logged in
Flow of events	<ul style="list-style-type: none"> Manager is asked to enter his/her credentials upon system start The system checks whether the credentials are valid or not If valid, then the provider is logged in

Use case ID	Show_reports
Use case name	Show generated reports
Included use cases	<ul style="list-style-type: none"> Generate_weekly_member_report Generate_weekly_provider_report Generate_weekly_summarized_report
Actors	Manager
Brief description	The system generates reports and shows them to the manager
Triggers	The manager requests for reports
Flow of events	<ul style="list-style-type: none"> The manager requests for either weekly member, provider or summary report The system generates the respective report The report is then shown to the manager

Use case ID	Add_update_delete_members
Use case name	Add, update or delete members
Actors	Operator
Brief description	The operator can add, update or delete ChocAn members
Triggers	When operator wants to add, update or delete information about members upon the following events: <ul style="list-style-type: none"> • New member signs up • Member resigns • Member details change
Pre-conditions	System is in interactive mode during the day
Post-conditions	Details added, deleted or updated
Flow of events	<ul style="list-style-type: none"> • System is in interactive mode during the day • The operator chooses to add, update or delete members depending upon the trigger

Use case ID	Add_update_delete_providers
Use case name	Add, update or delete providers
Actors	Operator
Brief description	The operator can add, update or delete ChocAn health care professionals (providers)
Triggers	When operator wants to add, update or delete information about health care providers upon the following events: <ul style="list-style-type: none"> • New member signs up • Member resigns • Member details change
Pre-conditions	System is in interactive mode during the day
Post-conditions	Details added, deleted or updated
Flow of events	<ul style="list-style-type: none"> • System is in interactive mode during the day • The operator chooses to add, update or delete health care professionals depending upon the trigger

Functional and Non-functional Requirements

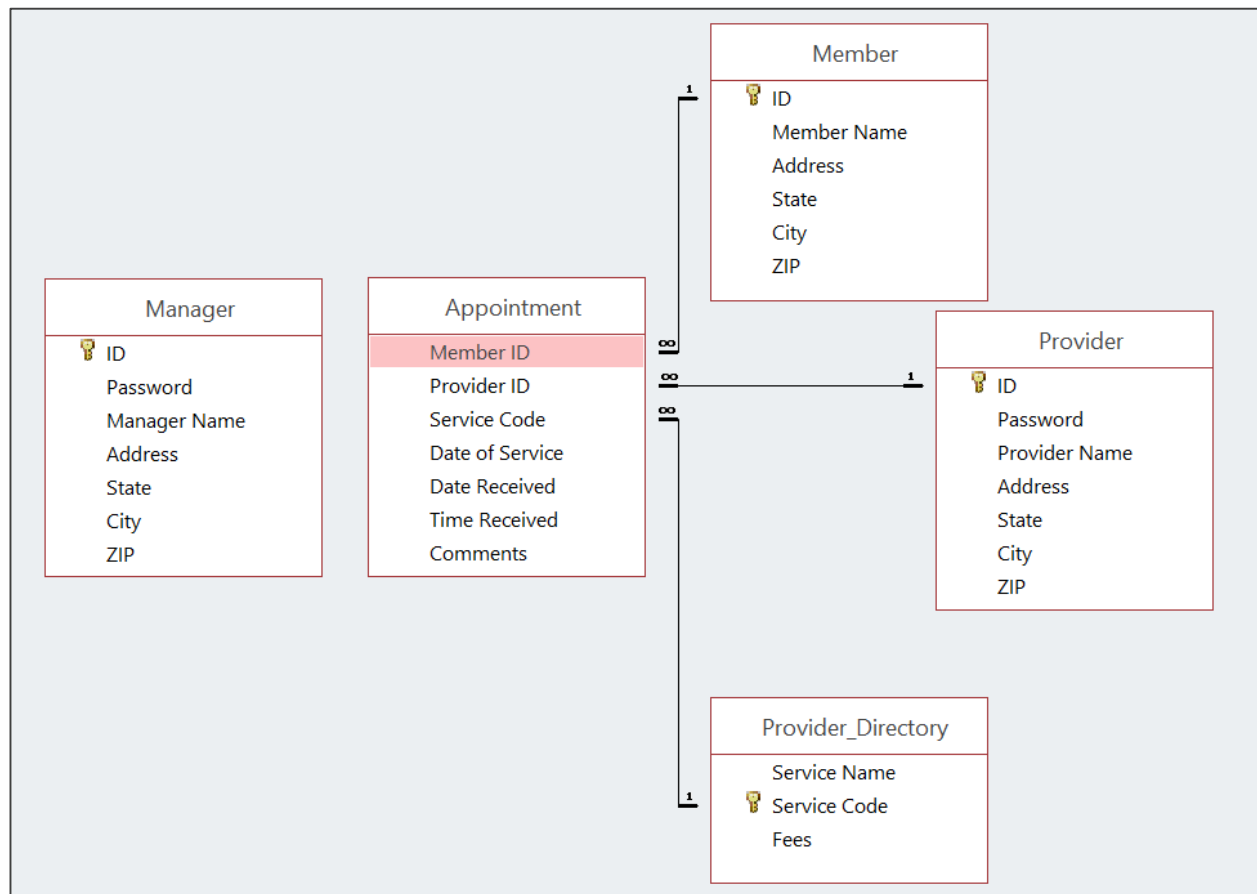
Functional requirements:

- The system shall validate a provider's credentials and allow him/her to login.
- The system shall allow the provider to input the member number and it will check whether the member number is valid or invalid and whether the member's status is active or suspended.
- The system shall allow the provider to input the service code and it will check whether the service code is valid or not.
- The system, upon request by a provider, shall generate a file called Provider Directory containing service codes, service names and fees.
- The system shall generate member and provider reports, and a summarized report of those reports, at midnight on every Friday. These reports are available to the manager upon request at any time.

Non-functional requirements:

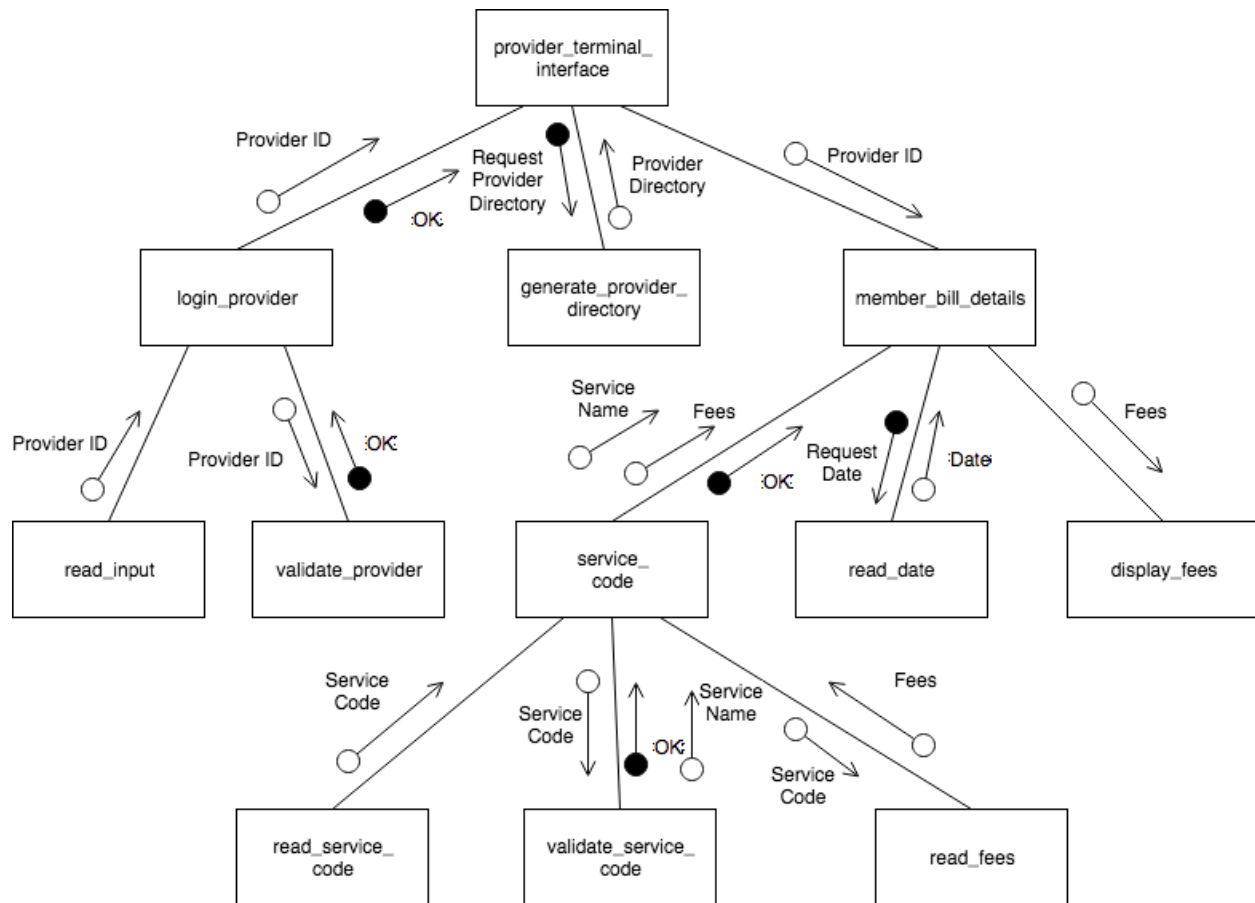
- Performance: The system software should be fairly responsive.
- Availability: The system software should be available at all times, and even during the day, it should be in an interactive mode.
- Recoverability: The system software should be able to recover (commit and rollback) stored data in case of failure.
- Security: Since the system deals with sensitive information of members, providers and managers, the system should be secure enough to withstand any unauthorised attempts to access the system.
- Usability: The system software should be convenient enough to be used by both, tech-savvy and comparatively inexperienced consultants and managers.

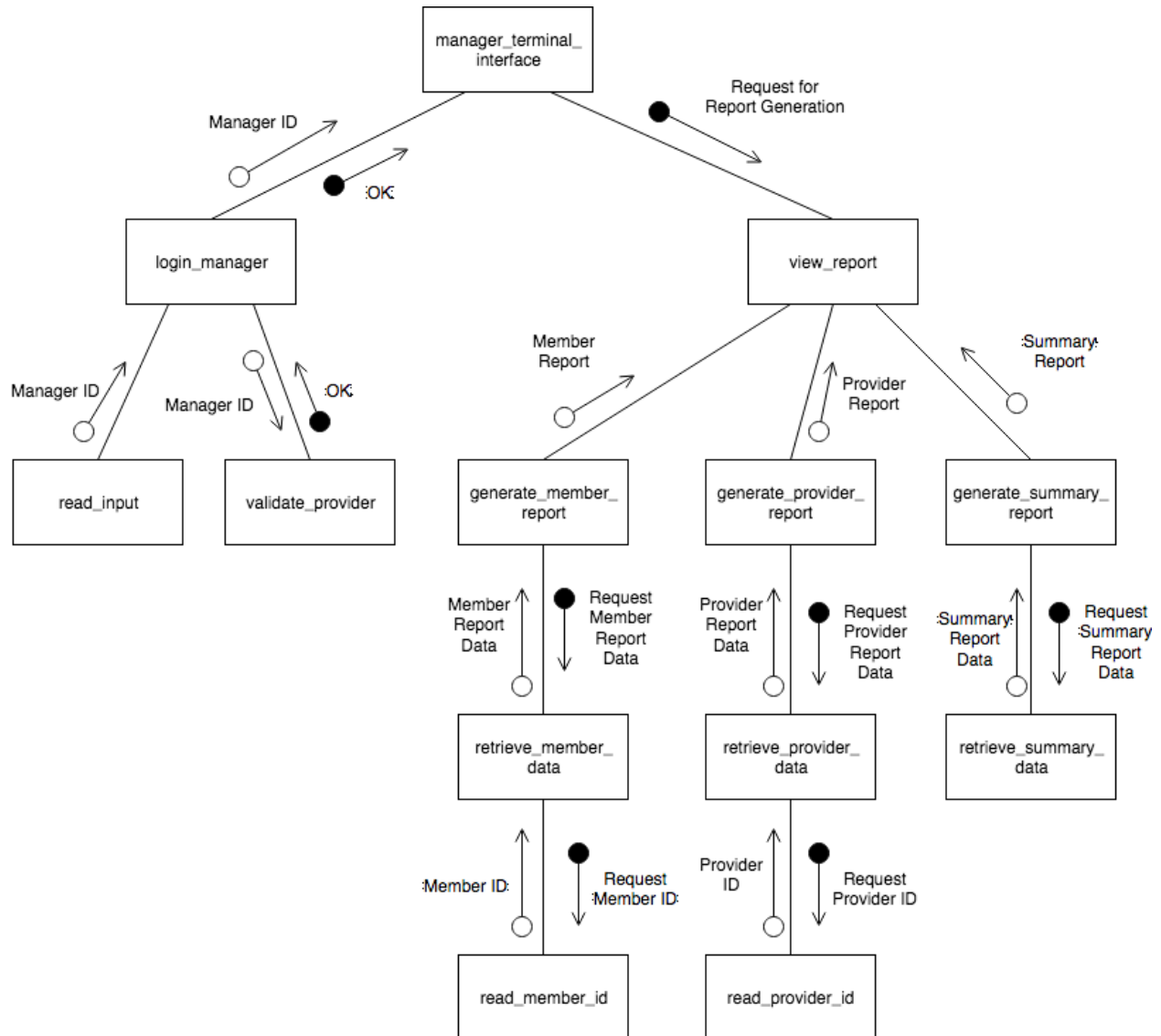
Entity-Relationship Diagram (ERD)



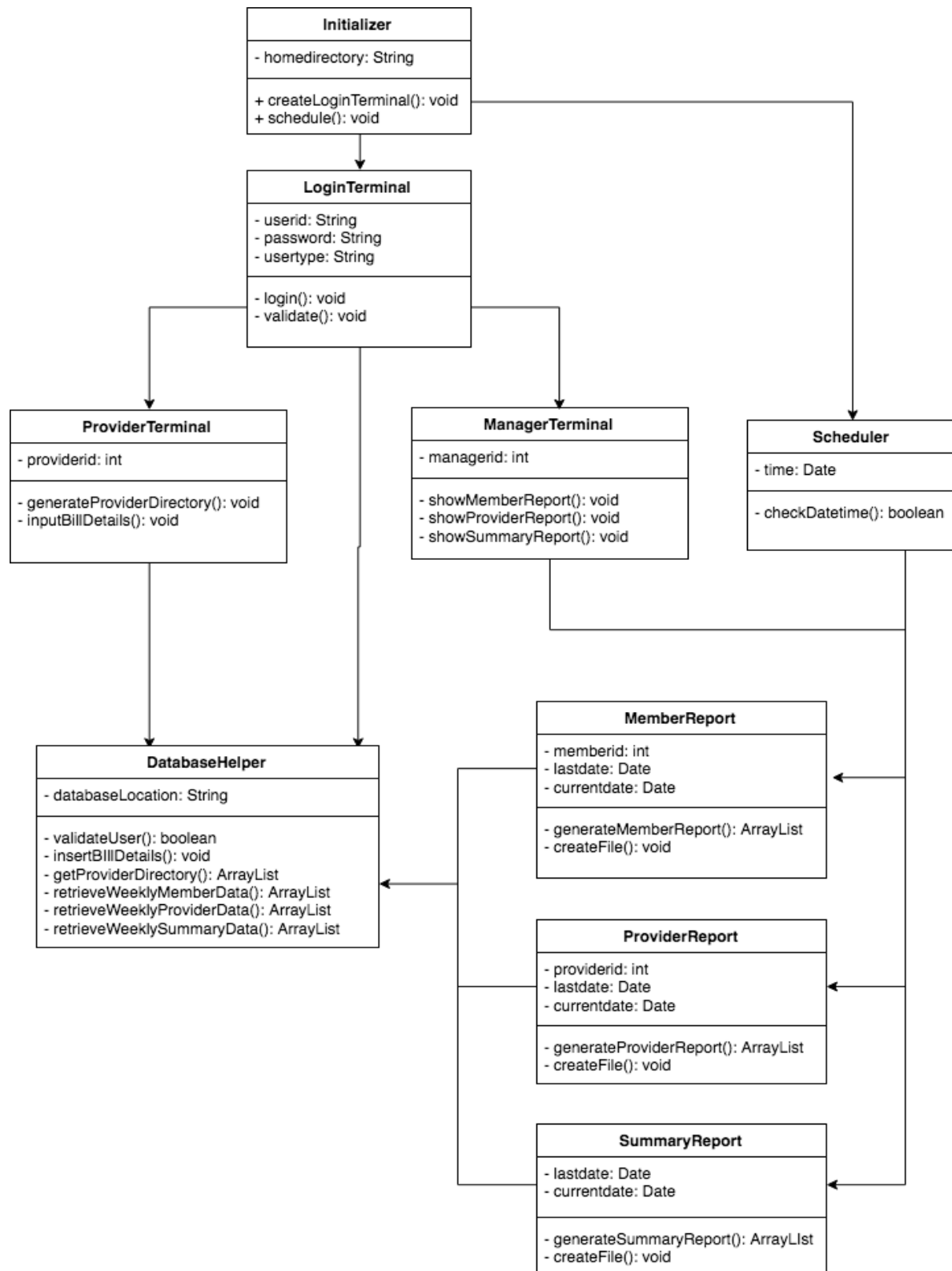
Data Flow Analysis

Provider data flow analysis:



Manager data flow analysis:

Class Diagram



Class-Responsibility-Class Cards

CLASS Initializer Class	
RESPONSIBILITY	
<ol style="list-style-type: none"> 1. Start LoginTerminal class 2. Start Scheduler class 3. Provide default font 4. Provide home directory 	
COLLABORATION	
<ol style="list-style-type: none"> 1. LoginTerminal class 2. Scheduler class 	

CLASS LoginTerminal Class	
RESPONSIBILITY	
<ol style="list-style-type: none"> 1. Validates credentials 2. Start ProviderTerminal/ManagerTerminal class 	
COLLABORATION	
<ol style="list-style-type: none"> 1. Initializer class 2. ProviderTerminal class 3. ManagerTerminal class 4. DatabaseHelper class 	

CLASS ProviderTerminal Class	
RESPONSIBILITY	
<ol style="list-style-type: none"> 1. Validate input 2. Send billing details to DatabaseHelper class 3. Display fees 4. Generate Provider Directory 	
COLLABORATION	
<ol style="list-style-type: none"> 1. DatabaseHelper class 2. LoginTerminal class 	

CLASS ManagerTerminal Class
RESPONSIBILITY <ol style="list-style-type: none"> 1. Validate member/provider ID 2. Display member/provider/summary report
COLLABORATION <ol style="list-style-type: none"> 1. DatabaseHelper class 2. LoginTerminal class 3. MemberReport class 4. ProviderReport class 5. SummaryReport class

CLASS Scheduler Class
RESPONSIBILITY <ol style="list-style-type: none"> 1. Generate weekly member/provider/summary reports
COLLABORATION <ol style="list-style-type: none"> 1. Initializer class 2. MemberReport class 3. ProviderReport class 4. SummaryReport class

CLASS MemberReport Class
RESPONSIBILITY <ol style="list-style-type: none"> 1. Generate member report
COLLABORATION <ol style="list-style-type: none"> 1. DatabaseHelper class 2. ManagerTerminal class 3. Scheduler class

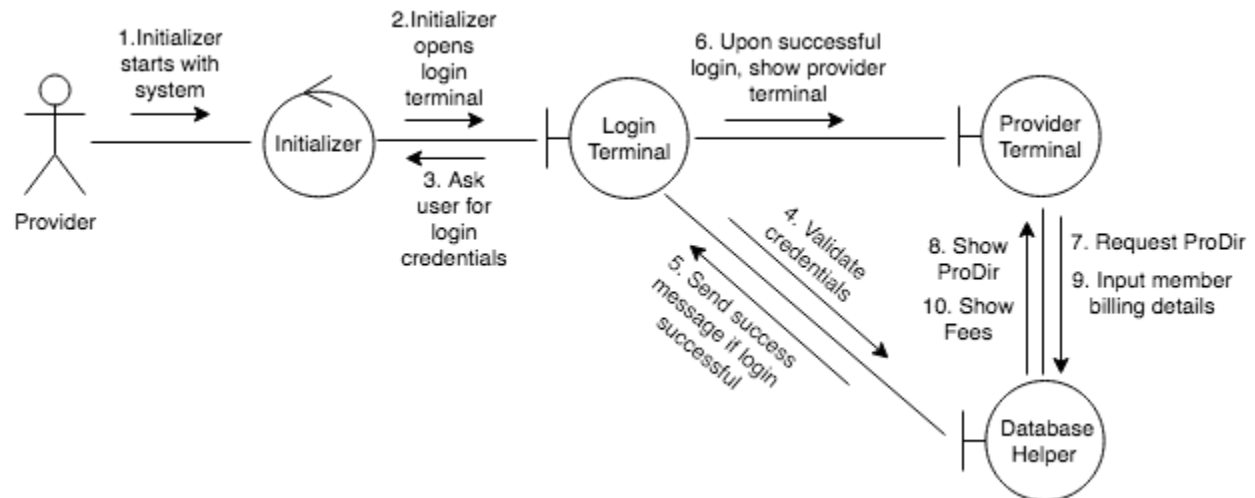
CLASS ProviderReport Class
RESPONSIBILITY <ol style="list-style-type: none"> 1. Generate provider report
COLLABORATION <ol style="list-style-type: none"> 1. DatabaseHelper class 2. ManagerTerminal class 3. Scheduler class

CLASS SummaryReport Class	
RESPONSIBILITY	
1. Generate summary report	
COLLABORATION	
1. DatabaseHelper class 2. ManagerTerminal class 3. Scheduler class	

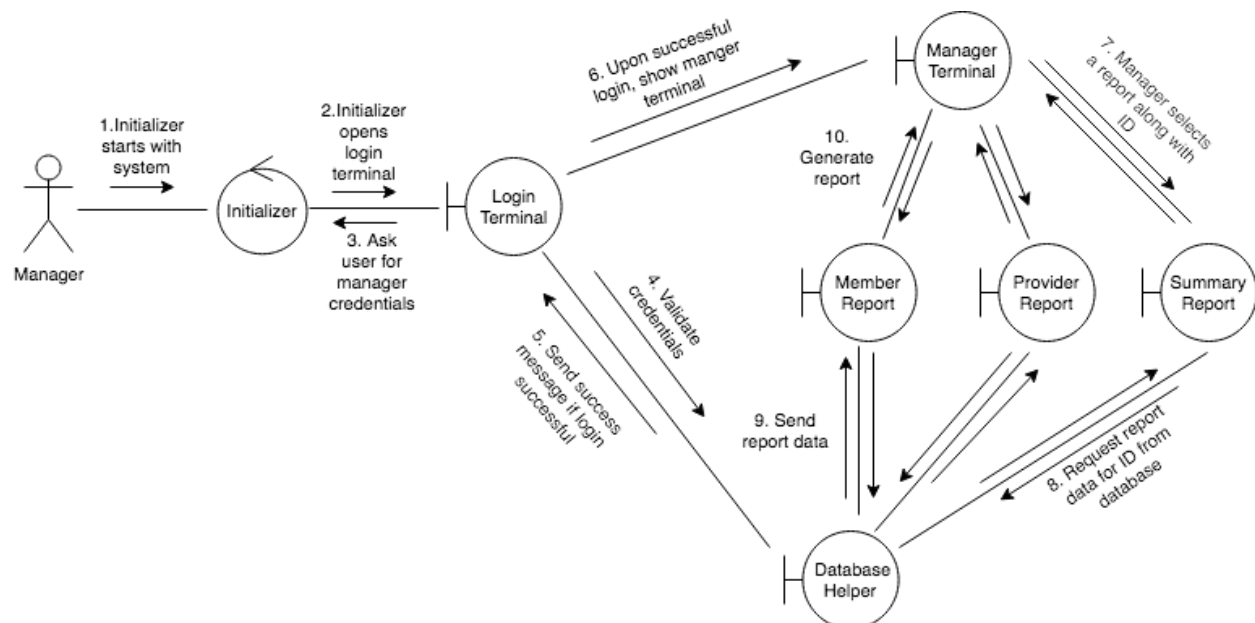
CLASS DatabaseHelper Class	
RESPONSIBILITY	
1. Validation of details 2. Input billing details 3. Fetch appointment details	
COLLABORATION	
1. LoginTerminal class 2. ProviderTerminal class 3. ManagerTerminal class 4. MemberReport class 5. ProviderReport class 6. SummaryReport class	

Collaboration Diagrams

Provider collaboration diagram:

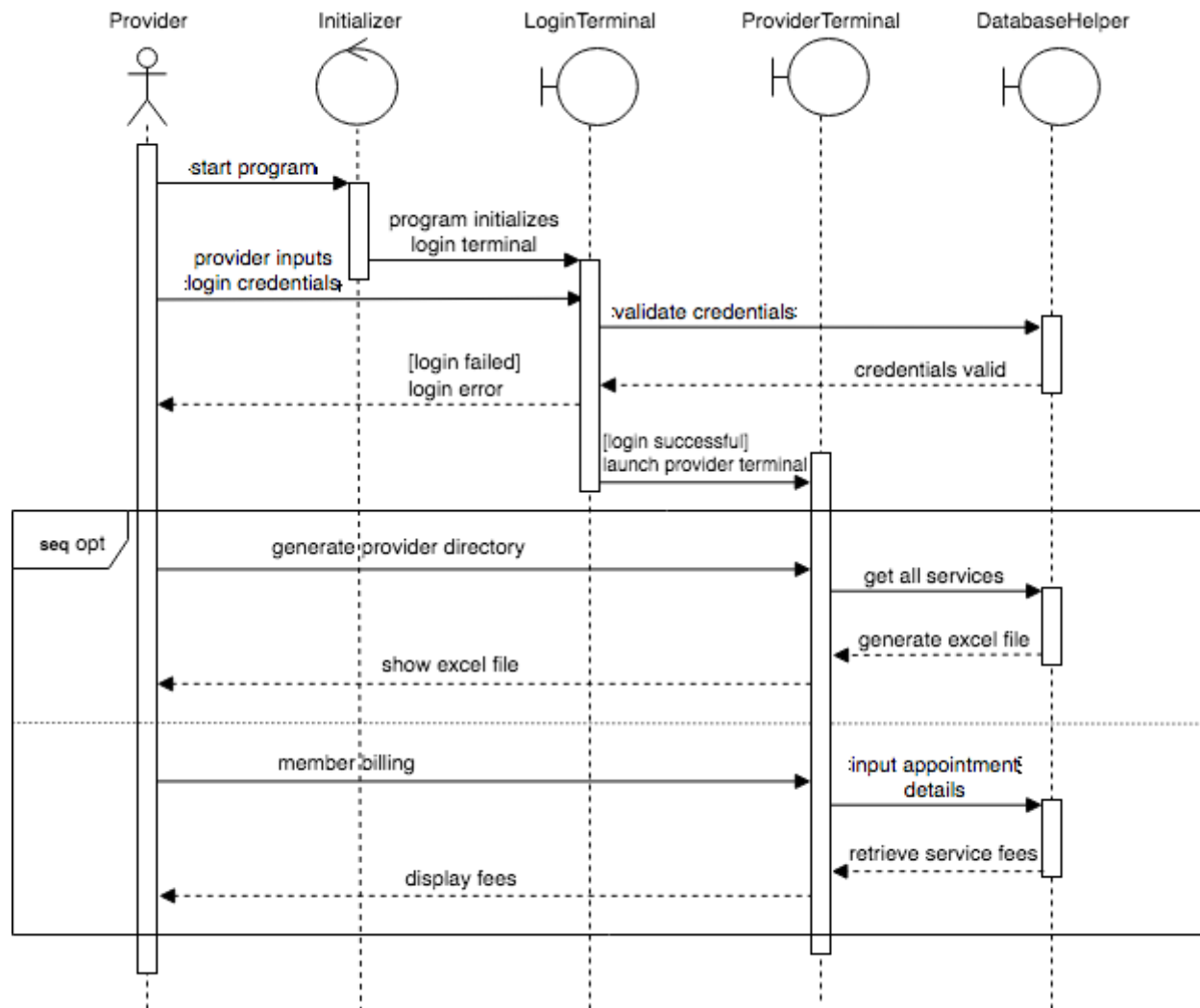


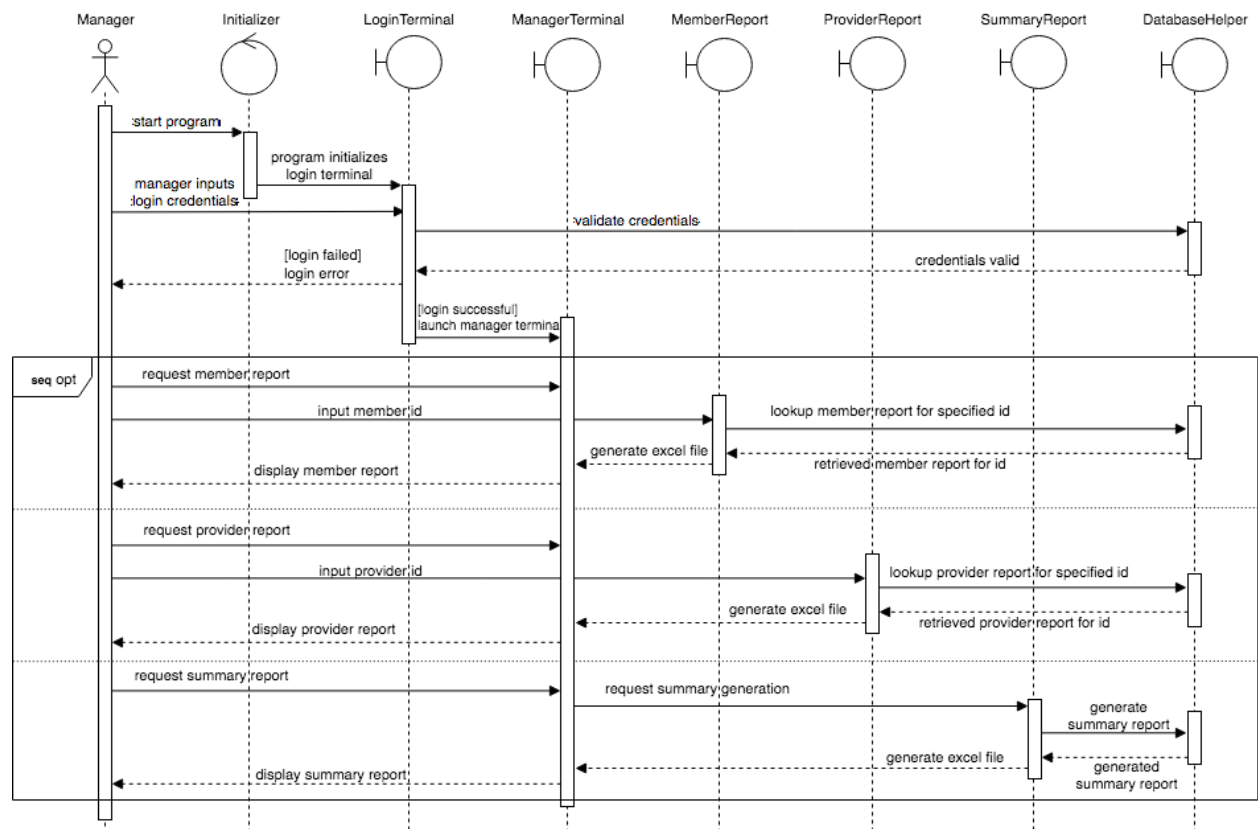
Manager collaboration diagram:



Sequence Diagrams (equivalent to collaboration diagrams)

Provider sequence diagram:



Manager sequence diagram:

Black box test Cases

Test case 1:

Component	LoginTerminal
Input	ID: 111111111 Password: FNKMKC
Output	Invalid credentials

Test case 2:

Component	ProviderTerminal
Input	Member ID: 111111111 Date of service: 2017-03-29 Service code: 123456 Comments: <blank>
Output	Fees due are 999

Test case 3:

Component	ProviderTerminal
Input	<"Generate Provider Directory" button clicked>
Output	<Provider Directory>

Test case 4:

Component	ManagerTerminal
Input	Member ID: 111111111
Output	<Member report>

Test case 5:

Component	ManagerTerminal
Input	Provider ID: 111111111
Output	<Provider report>

Test case 6:

Component	SummaryTerminal
Input	<"Generate Summary Report" button clicked>
Output	<Summary report>

Screenshots

Database:

Member ID	Provider ID	Service Code	Date of Service	Current Date	Comments	Time of Service
100000001	111111111	123456	2017-03-27	2017-03-27	Patient eats too much chocolate	12:34:12
100000002	222222222	234567	2017-03-27	2017-03-27	Patient is Harambe	14:37:52
100000003	333333333	345678	2017-03-28	2017-03-28	Patient is recovering	14:37:52
100000001	444444444	456789	2017-03-28	2017-03-28	Patient is ill	17:41:52
100000002	111111111	456789	2017-03-29	2017-03-29	Patient is Cecil	11:13:25
100000003	222222222	345678	2017-03-29	2017-03-29	Patient is dead	15:27:42
100000001	333333333	234567	2017-03-30	2017-03-30	Patient is Paul Walker	10:21:34
100000002	444444444	123456	2017-03-30	2017-03-30	Patient needs more chocolate	12:59:59

Figure 1 Appointment table

ID	PASS	NAME	ADDRESS	STATE	CITY	ZIP
200000001	manager	Martin	2010 Oak St	BC	Abbotsford	V1A5R2

Figure 2 Manager table

ID	NAME	ADDRESS	ST...	CITY	ZIP
100000001	Alice	6666 Lucifer St	BC	Abbotsford	V6X6K6
100000002	Bob	1234 Sal Dr	BC	Abbotsford	V3E1Q5
100000003	Charlie	32681 Paddy Lane	BC	Abbotsford	V4R7J1

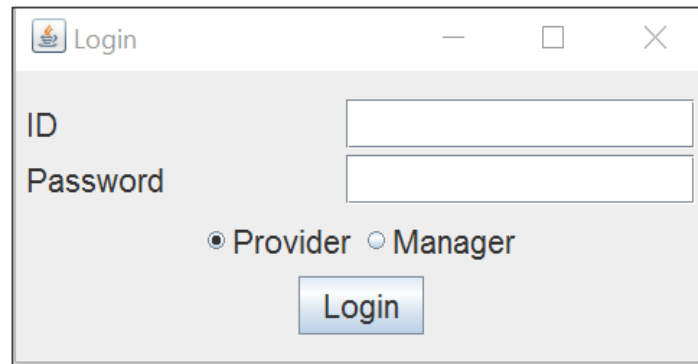
Figure 3 Member table

ID	PASS	NAME	ADDRESS	ST...	CITY	ZIP
111111111	chocoboy	Jake	9876 J St	BC	Abbotsford	V1W2R5
222222222	chocoman	Chuck	8765 K Pl	BC	Abbotsford	V2E3V7
333333333	chocogirl	Anna	7654 L Mt	BC	Abbotsford	V3C1G4
444444444	chocowo...	Sarah	6543 M Ave	BC	Abbotsford	V8Q2F5

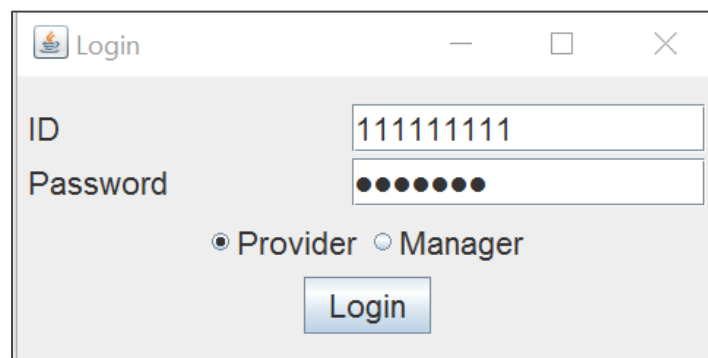
Figure 4 Provider table

Service Name	Service Code	FEES
Consultation	123456	200
Choco Test	234567	350
Choco Flush	345678	900
Rejuvenation	456789	600

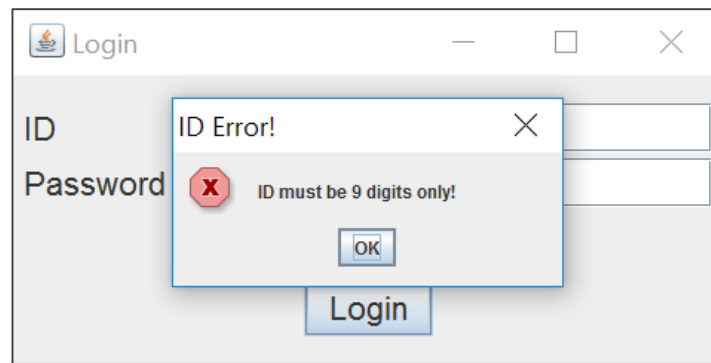
Figure 5 Provider Directory table

Login Terminal:

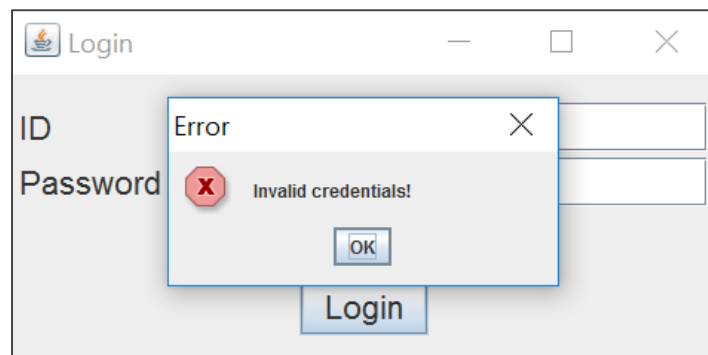
A screenshot of a 'Login' window. It has a title bar with a flame icon and the text 'Login'. Inside, there are two input fields: 'ID' and 'Password'. Below the fields are two radio buttons: 'Provider' (selected) and 'Manager'. At the bottom is a 'Login' button.



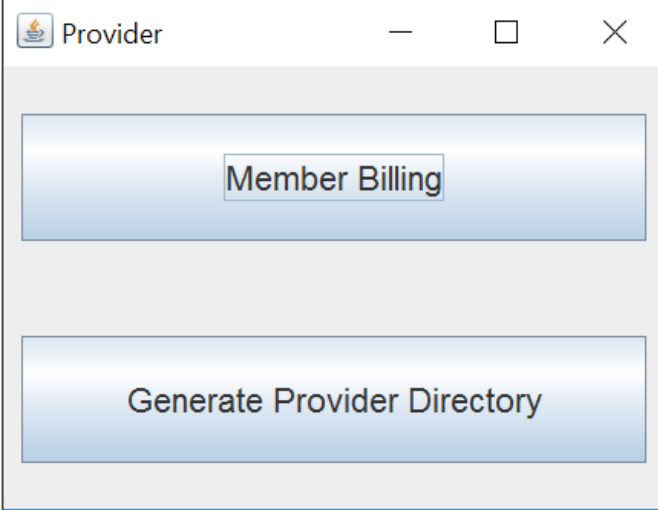
A screenshot of the 'Login' window. The 'ID' field now contains the text '111111111'. The 'Password' field is filled with ten black dots. The 'Provider' radio button remains selected, and the 'Login' button is still at the bottom.



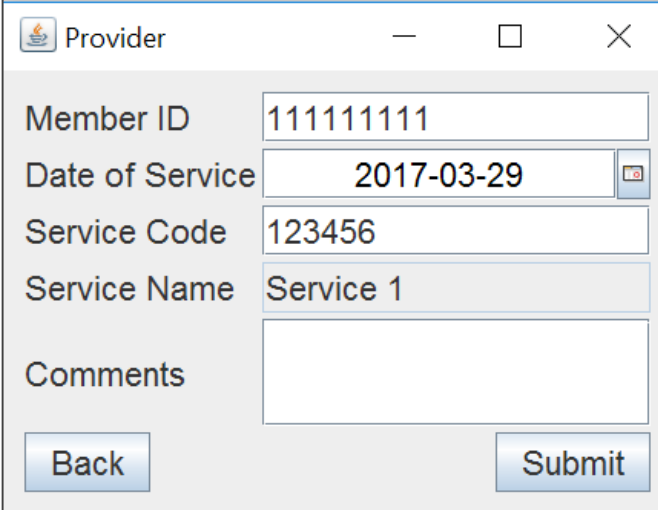
A screenshot of the 'Login' window with an error dialog box overlaid. The dialog box is titled 'ID Error!' and contains a red 'X' icon and the text 'ID must be 9 digits only!'. There is an 'OK' button at the bottom of the dialog. The 'ID' field in the background contains '111111111'.



A screenshot of the 'Login' window with an error dialog box overlaid. The dialog box is titled 'Error' and contains a red 'X' icon and the text 'Invalid credentials!'. There is an 'OK' button at the bottom of the dialog. The 'ID' field in the background contains '111111111'.

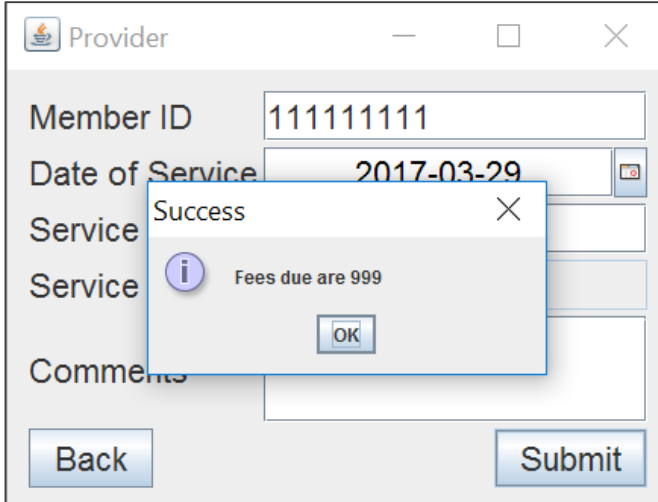
Provider Terminal:

The image shows a window titled "Provider" with a standard Windows-style title bar (minimize, maximize, close buttons). Inside the window, there are two large, light blue buttons with black text. The top button is labeled "Member Billing" and the bottom button is labeled "Generate Provider Directory".

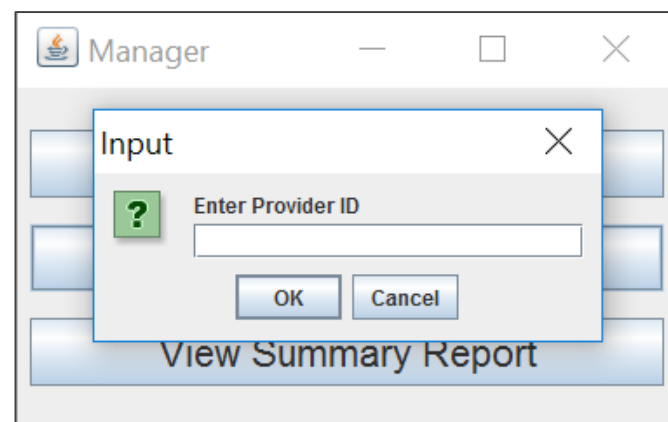
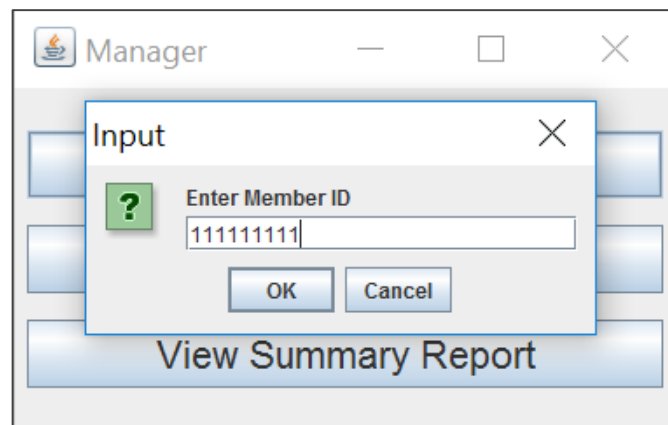
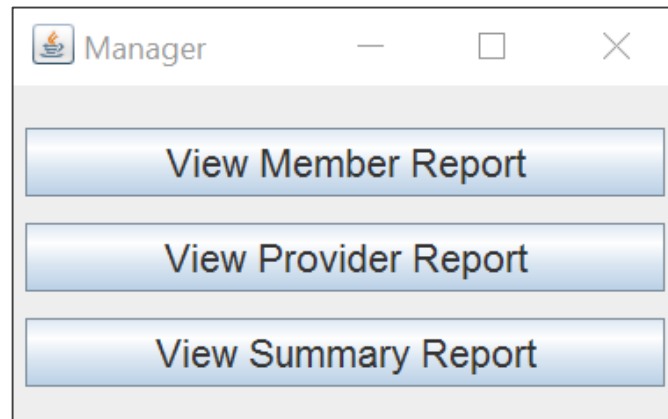


The image shows a window titled "Provider" with a standard Windows-style title bar. The main area contains a form with the following fields and controls:

- Member ID:** A text input field containing "111111111".
- Date of Service:** A date picker control showing "2017-03-29".
- Service Code:** A text input field containing "123456".
- Service Name:** A text input field containing "Service 1".
- Comments:** A large, empty text area.
- Buttons:** At the bottom, there are two buttons: "Back" on the left and "Submit" on the right.



The image shows the same "Provider" window as the previous one, but with a "Success" dialog box overlaid in the center. The dialog box has a title bar with "Success" and a close button (X). It contains an information icon (i) and the text "Fees due are 999". At the bottom of the dialog is an "OK" button. The background form fields are partially visible behind the dialog.

Manager Terminal:

Member Report:

ID	100000001	
Name	Alice	
Address	6666 Lucifer St	
State	BC	
City	Abbotsford	
ZIP	V6X6K6	
Date of Service	Provider Name	Service Name
03-27-2017	Jake	Consultation
03-28-2017	Sarah	Rejuvenation

Provider Report:

ID	111111111				
Name	Jake				
Address	9876 J St				
State	BC				
City	Abbotsford				
ZIP	V1W2R5				
Date of Service	Received	Member Name	Member ID	Service Code	Service Fee
03-27-2017	03-27-2017 12:34:12	Alice	100000001	123456	200
03-29-2017	03-29-2017 11:13:25	Bob	100000002	456789	600
Total		2			800

Summary Report:

Provider Name	Consultations	Fee
Jake	2	800
Chuck	2	1250
Anna	1	900
Sarah	1	600
Total = 4	6	3550