

Students' Auditorium Management Software (SAMS)

Software Analysis (SA) And Software Design (SD)

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# Chapter 1

## Introduction

### 1.1 Purpose

This SA/SD Document provides a complete description of all the functions and specifications of the Student's Auditorium Management Software(SAMS) developed for automating the management of events at auditorium. The expected users of this software are the customers, show manager, sales person and clerk.

### 1.2 References

1. SE Lecture SASD (Provided by Prof. Partha Pratim Das)
2. IEEE Std 830 1998 Recommended Practice for SA/SD

### 1.3 Overview

The below chapters and their contents are: Chapter 2 is the Feasibility study which helps us understand the problem by analyzing the stakeholders and their functions. Chapter 3 contains UML Diagrams for this software SAMS. Chapter 4 has System Parameters Analysis. Chapter 5 is the last section where Assumption and Dependencies are discussed. Basically, the System Design and Analysis Document describes the system requirements, operating environment, system and subsystem architecture, files and database design, input formats, output layouts, human-machine interfaces, detailed design, processing logic, and external interfaces

# Chapter 2

## Feasibility Study

### 2.1 Understanding the problem and the need of software

This system auditorium management software includes all the features and functions needed to efficiently manage an auditorium. It includes an administrator account which is used to handle/control all the system functionality. The system keeps track of auditorium status and advance bookings. The system keeps records of auditorium bookings along with associated event details and customer contacts in a well maintained database. The administrator can easily check the auditorium bookings and timings in the system GUI. The system also notifies when new event timing draws near.

### 2.2 Scope of the Problem

This software consists of following functions:

1. Adding new events as per availability of the Auditorium, and editing events which are already present.
2. Allocating Balcony and Ordinary Seats for sale or to offer as complementary gifts. Also fixing the price of different seats.
3. Booking and Cancellation of seats for an event.
4. Printing Ticket for booking and cancellation of a seat of an event.
5. Sending notification for booked and cancelled seats.
6. Querying the number of available seats of different classes for an event.
7. Querying the percentage of seats booked for various classes of seats and the amount collected in each case.
8. Booking available seat for a particular show.

9. Creating new authorized sales person's and clerk's log in accounts.
10. Recording all the transactions including the sales person ID.
11. Preparing balance sheets for each event and also for the entire year.

# Chapter 3

## UML Diagrams

### 3.1 Use Case Diagram

1. The Following are the stakeholders/actors in the software's interface:



2. The Use Case diagram shows all the users and their respective cases of this software. Actor/stakeholder-wise description of Use Cases are as follows:

(a) Costumer Use Cases :

- i. Availability of Seats : Query about the availability of seats of different types for an event at the auditorium. It allows the Costumer to find the number of available different type of seats for each show.
- ii. Booking Request : The Costumer provides the sales person with the booking details like the show's name, date and time and the type of seats to be booked. The sales person then updates the transactions list and number of available seats for the show selected.
- iii. Cancellation Request : The Costumer provides the sales person with the booked ticket details like booking id and show details. It is then followed by changing the number of available seats for the selected show and update of transaction list.
- iv. Receives notification : The Costumer on successful booking and cancellation receives an e-mail notification or printed handout as confirmation which contains the transaction id, show details, sales person's name and amount taken or refunded.

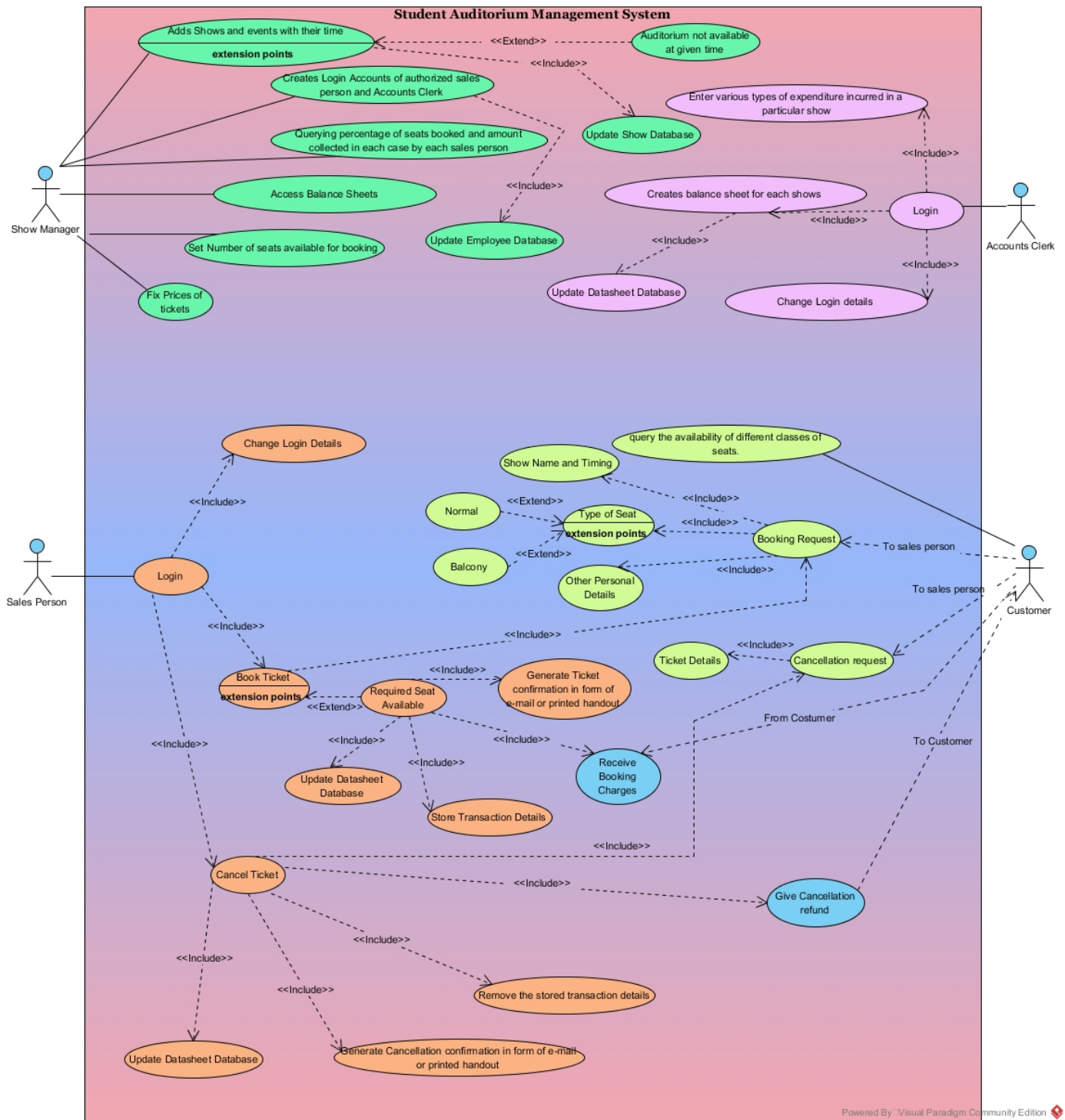


Figure 3.1: Use Case Diagram



(b) Sales Person Use Case:

- i. Change Login Details : Clerk after logging in into his/her can change the login details like username and password.
- ii. Book Seat : SP can book seats if available for a Costumer after receiving the booking details from the costumer. The process is completed by a confirmation email or printed handout and the updated transactions and show database.
- iii. Cancel Booking : SP can cancel booking for a seat if ask by Costumer after receiving the cancellation request from the costumer. The process is completed by a confirmation email or printed handout and the updated transactions and show database.

(c) Accountant Clerk Use Cases :

- i. Change Login Details : Clerk after logging in into his/her can change the login details like username and password.
- ii. Prepare Balance Sheet : Clerk makes yearly balance sheet for every show hosted by auditorium that includes all the expenditure and income from sales for that show and the show dates. The Datasheet database is updated in the end.
- iii. Add Expenditure : The Clerk adds expenditures for each shows containing the expenditure type and amount for each expenditure type. The show database is updated in the end.

(d) Show Manager Use Cases :

- i. Add new Show : SM can add new event if auditorium is available for that time. It includes allocating Balcony and Ordinary Seats for sale or to offer as complementary gifts for functionaries of the students' society or to VIPs for that event. It also includes fixing the price of different seats for that event.
- ii. Edit Show : SM can edit existing show's information.
- iii. Checking Show Status : SM can check the number of available and booked seats for an event and also balance sheet for each show.
- iv. Create new Personal : SM can create new authorized sales person's and clerk's log in accounts.
- v. View Transaction Detail : SM can view transactions done by each Sales Person like seat booking or seat cancellation details. This can be later used for determining their promotions, gifts or fines.
- vi. View Balance Sheet : SM can view the balance sheet that includes various types of expenditure for each event. It can also view a balance sheet that has all the booking and expenditure data of entire year.

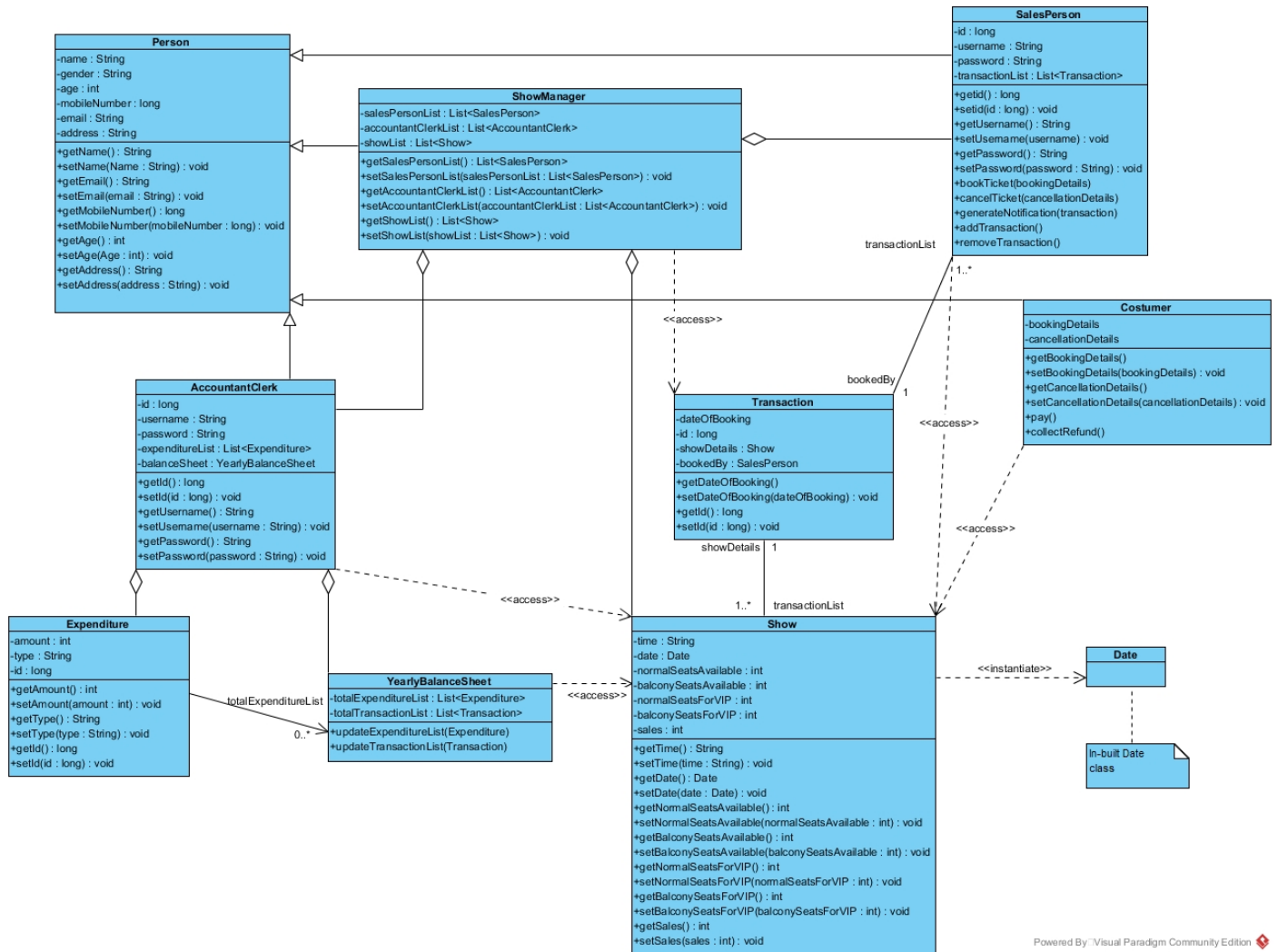


Figure 3.2: Class Diagram

## 3.2 Class Diagram

1. There are 9 main classes used in the software.
2. The relationships between the classes are shown in the above diagram.
3. The ShowManager is the main class, it can create new objects for SalesPerson, AccountantClerks and Shows.
4. The Sales Person can access a particular SalesPerson object after successful login and can access Transaction List and can also edit all of the Show objects. The SalesPerson class is an extension of the Person class.
5. The Person class stores basic personal information about each person like email, mobile number, name etc and acts as an abstract class here.
6. The Accountant Clerk can access a particular AccountantClerks object after successful login. It can create new Expenditure objects and has access to the Expenditures

list and YearlyBalancesheet objects. It can also edit show details like its expenditure. It also extends from the Person class.

7. The YearlyBalancesheet objects contain the yearly expenditure and transaction objects and also the year.
8. The Transaction object stores the booking and cancellation details like the show details, sales person's details and the transaction ID for future use.
9. The expenditure object stores the expenditure type and the amount. It also stores the expenditure ID.
10. Show object stores show's timings, show's name and number of available tickets for different type of seats. It also stores total sales and expenditure details for that particular show. It stores a 2-d array of seats and a 2-d array of Transaction objects.

### 3.3 Sequence Diagram

1. The sequence diagram below shows the time flow of the software.
2. The Program starts with an instance of ShowManager class.
3. The Manager then adds instances of Show, AccountantClerks, SalesPerson.
4. Sales Person object then creates Transaction objects depending upon the feedbacks and messages from the costumer.
5. The Accountant Clerk object then creates instances of Expenditure object and Yearly-BalanceSheet objects and also edits Show objects.
6. The messages from the costumer leads to creation of Transaction objects. If the costumer wants to book a ticket, the sales person creates new instance of the Transaction Object. If the costumer wants cancellation of already booked ticket, the sales person searches the Transactions List for the required transactions and calculates the refund to be given to the costumer.
7. On successful Booking and Cancellation of Tickets, an email notification or a printed confirmatory handout is given to the costumer for future reference.
8. The program then proceeds by message communication between objects as shown in the below diagram.
9. The Complete Sequence Diagram is given in the image below.

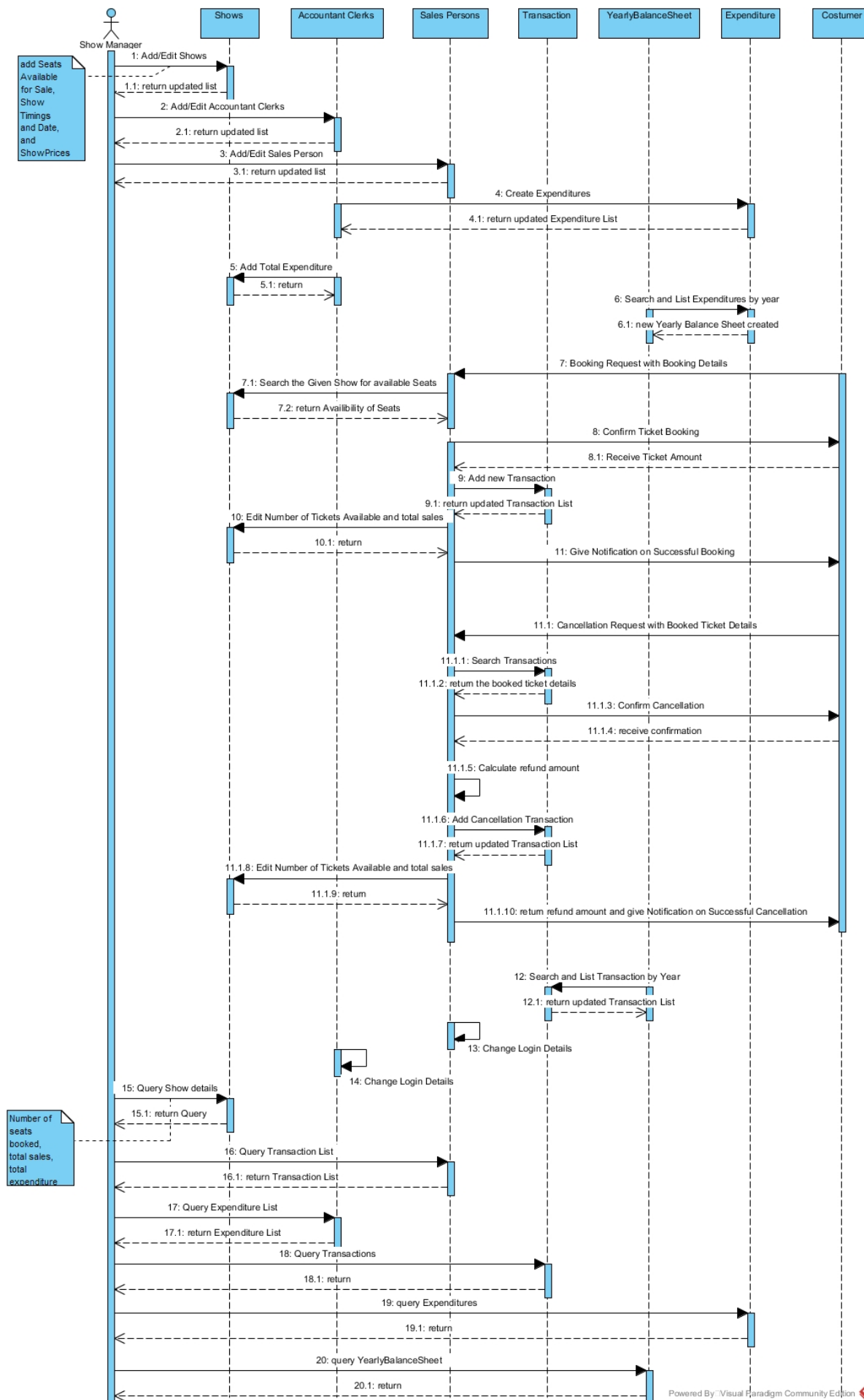


Figure 3.3: Sequence Diagram

## 3.4 Communication Diagram

1. The figure below shows the communication between instances of different classes of the software.
2. The program starts with ShowManager class object.
3. The Communication Diagram is just like a sequence diagram, except the fact that it describes the interrelation between various components, actors and objects rather than timeflow of the program.
4. The Manager then adds instances of Show, AccountantClerks, SalesPerson.
5. Sales Person object then creates Transaction objects depending upon the feedbacks and messages from the costumer.
6. The Accountant Clerk object then creates instances of Expenditure object and Yearly-BalanceSheet objects and also edits Show objects.
7. The messages from the costumer leads to creation of Transaction objects. If the costumer wants to book a ticket, the sales person creates new instance of the Transaction Object. If the costumer wants cancellation of already booked ticket, the sales person searches the Transactions List for the required transactions and calculates the refund to be given to the costumer.
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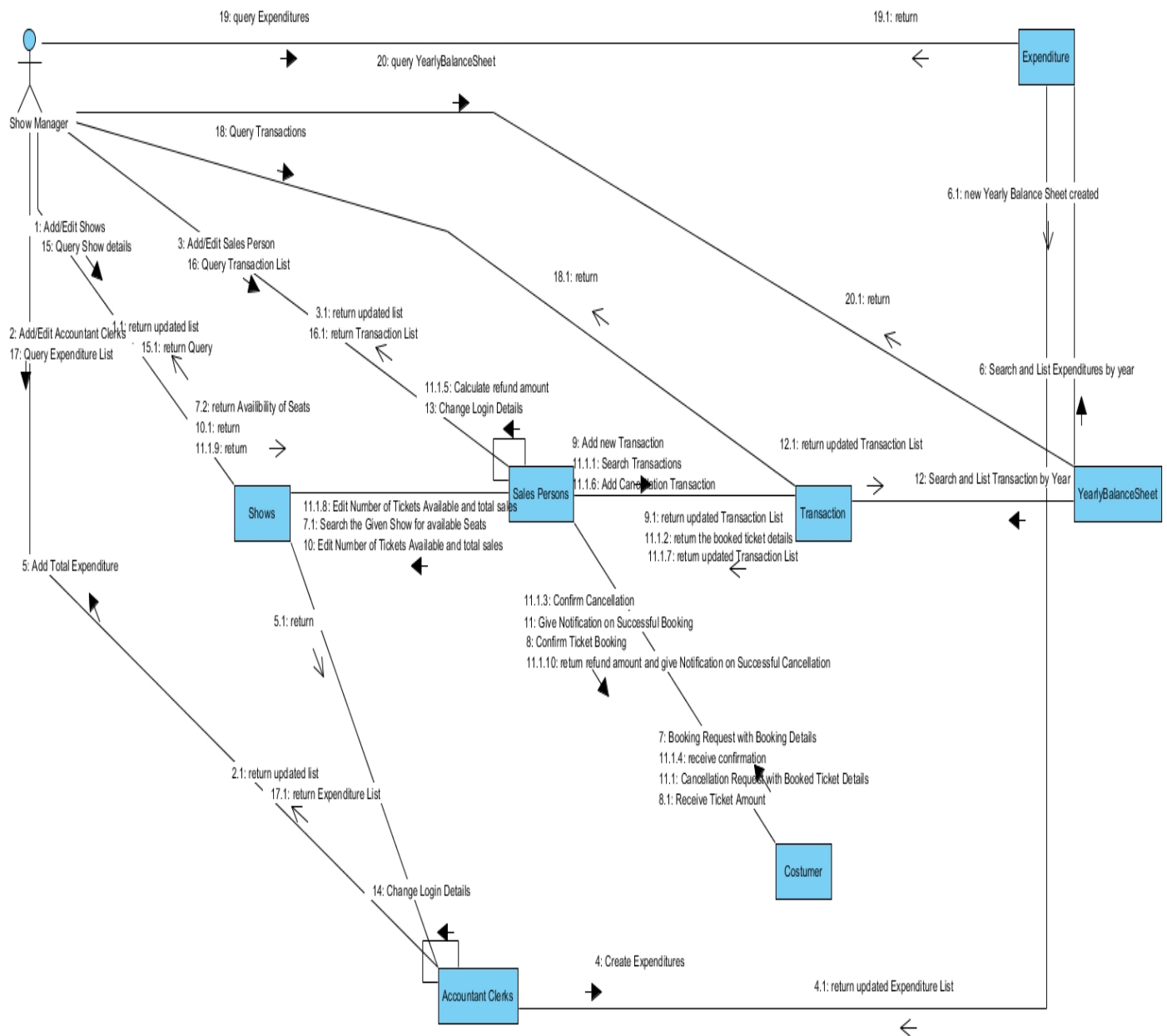


Figure 3.4: Communication Diagram

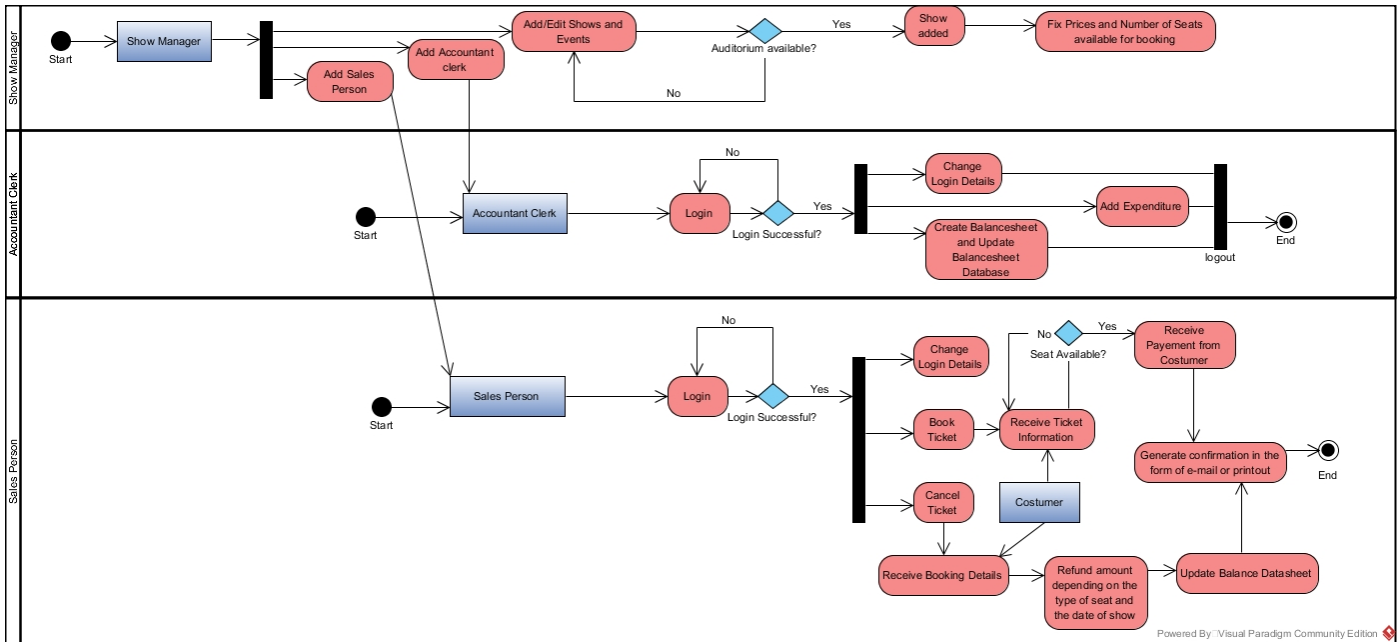


Figure 3.5: Activity Diagram

## 3.5 Activity Diagram

1. The diagram above shows the various activities involved in the execution of the software.
2. The software starts when the user log in as Show Manager.
3. Then the SM can create new authorized personals or new events.
4. Sales Person created by SM can log in to the software and start booking and cancellation of tickets for events if possible as per the desire of the costumer. They can also create Transaction objects.
5. Clerk can also log in to the software and prepare the balance sheets for events and creates expenditure objects.
6. Customer can also check different shows' status and provides the Sales Person with the Booking and Cancellation request and Details.
7. After these activities have finished, the Software proceeds towards it's finish. Also, after successful completion of booking and cancellation the, costumer receives email or printed handout notification/confirmation.



# Chapter 4

## System Parameters

### 4.1 Operating Environment

This software is developed in JAVA, running on Windows 10 x64 Architecture. It should also be compatible with 64-bit Operating Systems have JAVA installed and connected to the internet.

### 4.2 Assumption and Dependencies

This software has been targeted at Windows and Linux Operating System. It depends on online database and JAVA. This software requires an internet connection to use and store data in online database. Since it is developed using JAVA, it is platform independent.