

Library Seating Reservation System

—**Report II**

Team leader: William

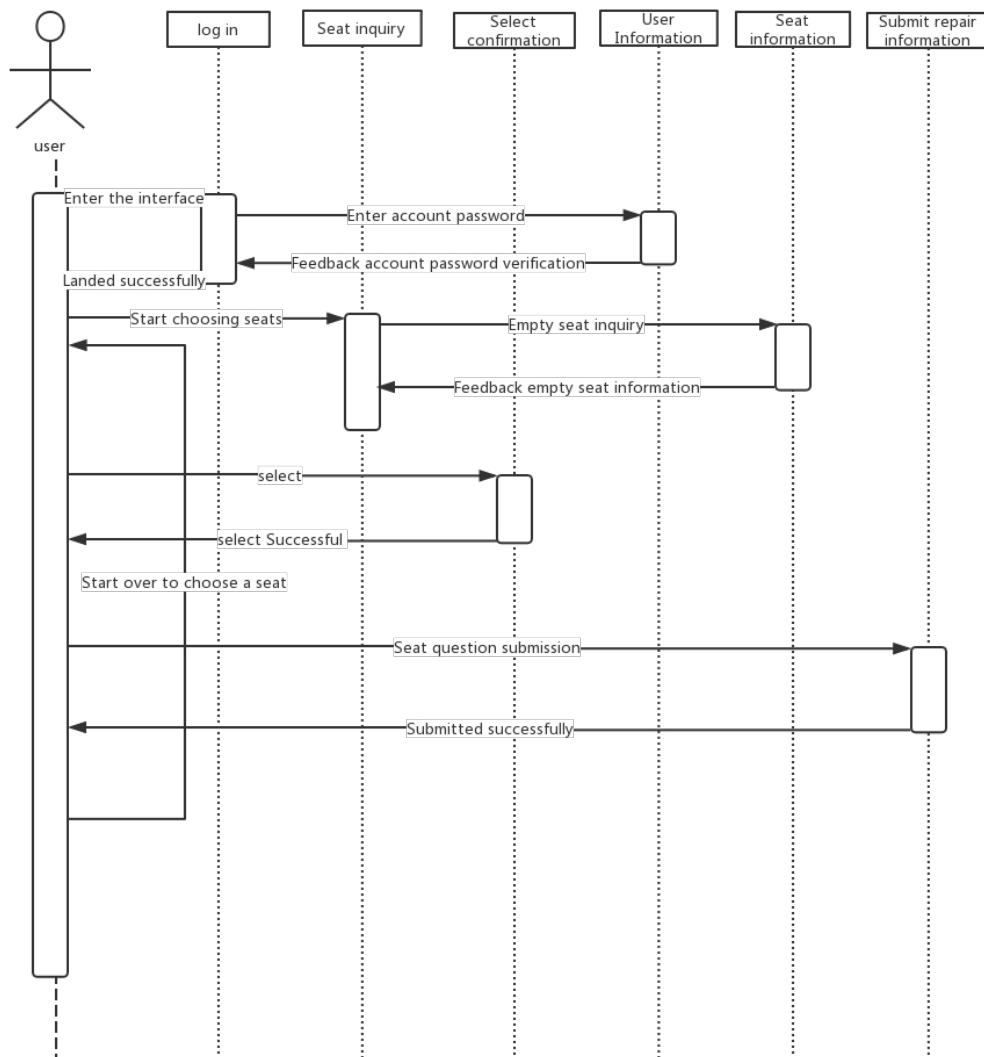
Member: Alan Scott Andy Abbot Mike

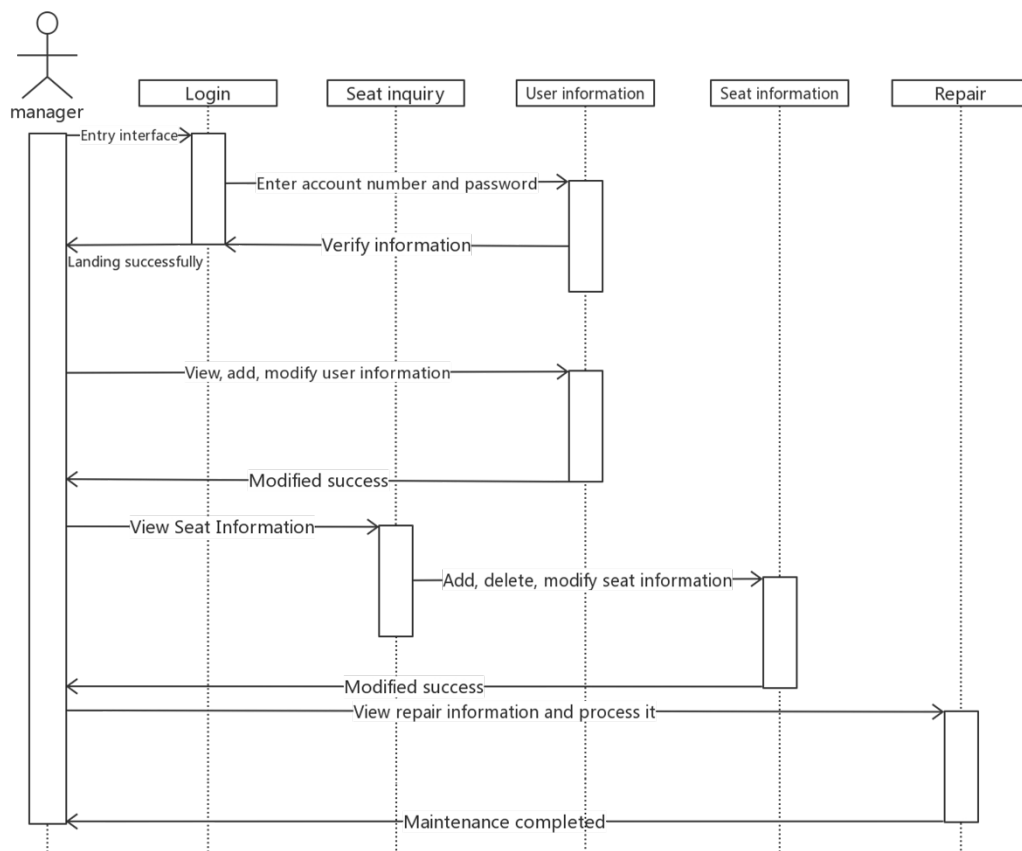
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Work breakdown form——Report two part one

		Open Fire					
Res pon sibil ity leve ls		William	Scott	Andy	Mike	Abbot	Alan
	Interaction Diagrams						100%
	Class Diagram	50%					50%
	Data Types and Operation Signatures						100%
	Traceability Matrix	100%					
	Architectural Styles				100%		
	Mapping Subsystems to Hardware					100%	
	Persistent Data		50%	50%			

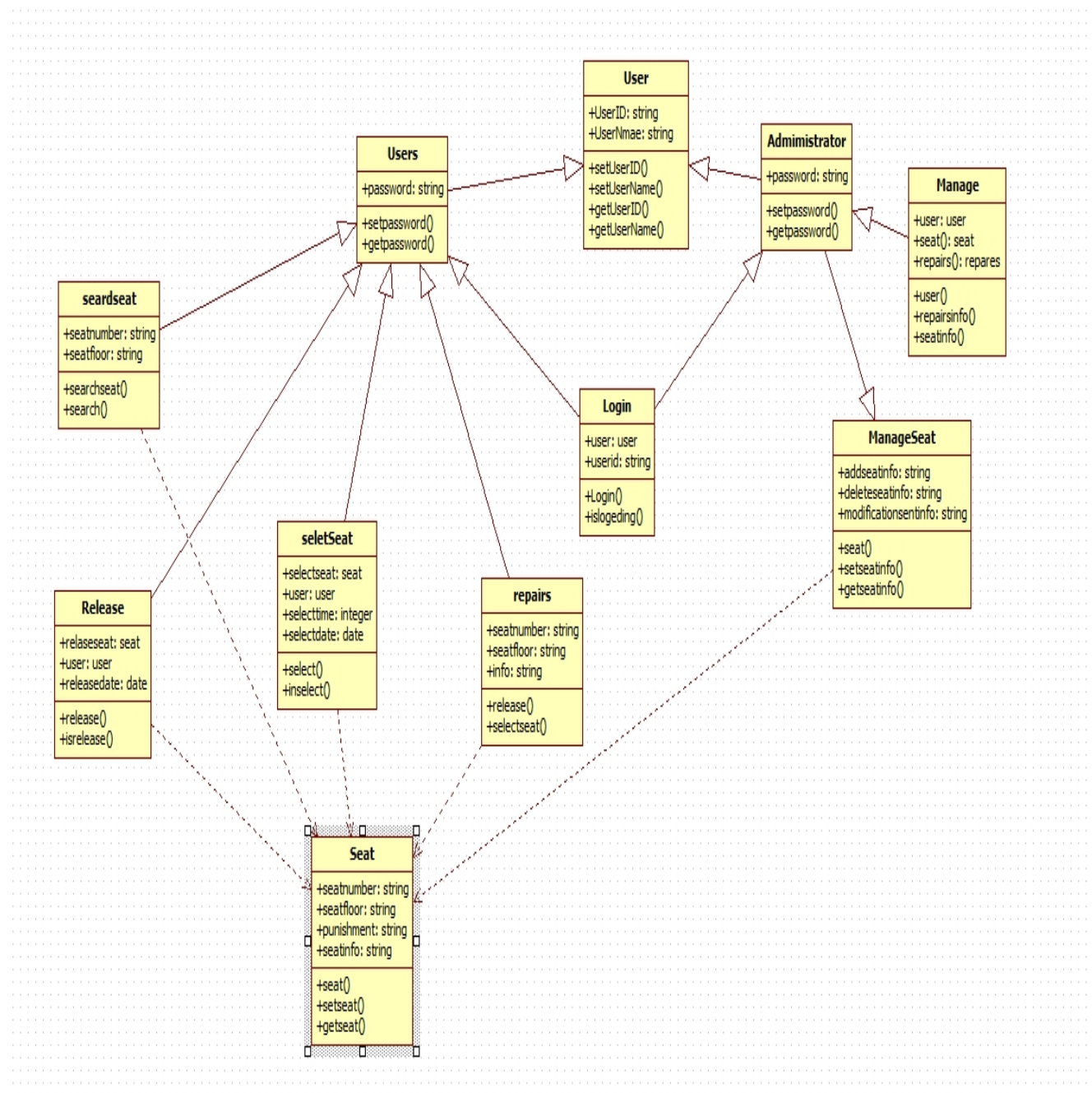
	Storage						
	Network Protocol		50%	50%			
	Global Control Flow		50%	50%			
	Hardware Requirements				100%		
	Identifying subsystems					100%	





Class Diagram and Interface Specification

Class Diagram



Data Types

Data Types	Function
Int	32-bit, the maximum data storage capacity is 2 to the 32th power minus 1, and the data range is negative 2 to 31 power to positive 2 to 31 power minus one.
float	32-bit, the data range is 3.4e-45~1.4e38. When directly assigning, you must add f or F after the number.
char	16-bit, storing Unicode code, assigned with single quotes.
byte	8 bits, the maximum amount of stored data is 255, and the stored data range is between -128 and 127.
short	16 bits, the maximum data storage is 65536, and the data range is between -32768 and 32767.

long	64-bit, the maximum data storage capacity is 2^{64} minus 1, and the data range is negative from 2^{63} to the positive 2^{63} to minus 1.
double	64-bit, the data range is $4.9\text{e-}324 \sim 1.8\text{e}308$, you can add d or D or not.
boolean	There are only two values for true and false.

Operation Signatures

class	Function
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User	Get the value of the user attribute name by the method getName(), and set the value of the user attribute name by the method setName()
Login	By verifying the user account password, it is determined whether the login can be successful.
Student	Read student information.
SearchSeat	Query the database seat information to display the available seats.
Repairs	Create repair information and confirm seat information.
Aministrator	Read administrator information.
ManageSeat	The administrator adds, deletes, and modifies seat information.
Seat	Store seat information and record seat number, floor, and information.

Traceability Matrix

Login	Accessing databases with different priorities	Determine the permissions of the consumer to distinguish different
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		priorities
User seat operation	Accessing databases with different priorities	The logon user data is divided by priority to avoid program deadlock.
	Submit query	Upload input instructions to the server for further action
	Monitoring system	Global monitoring to avoid delays in database docking or management problems caused by system vulnerabilities
	Modify user and seat information from the database	According to the instructions yong entered, the data will be called
Report repair	Submit query	Upload input instructions to the server for further action
	Monitoring system	Global monitoring to avoid delays in database docking

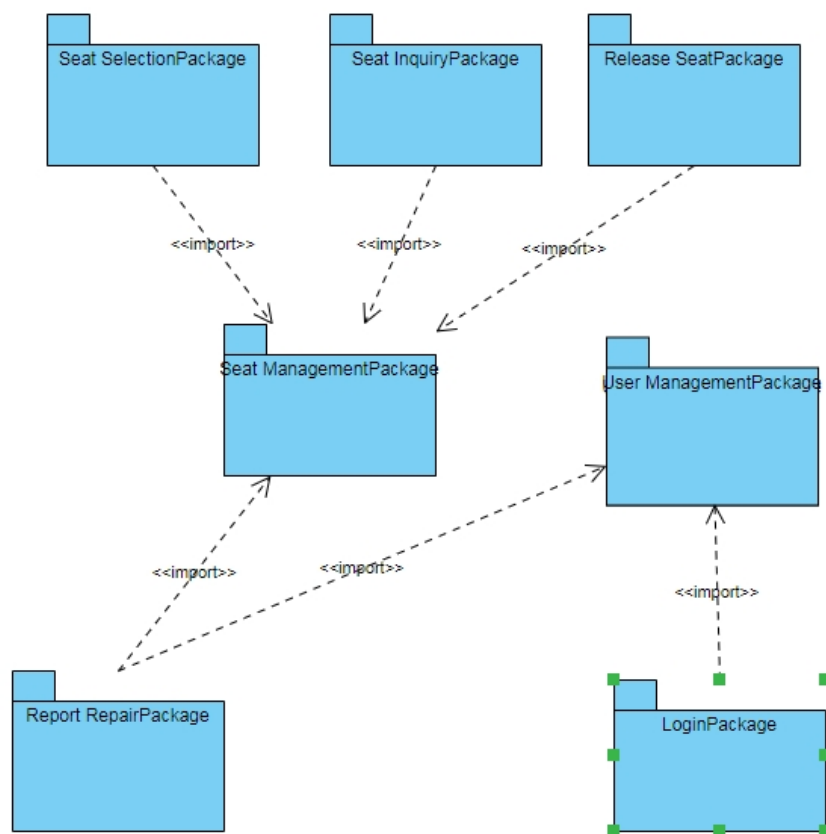
		or management problems caused by system vulnerabilities
User and Seat management	Accessing databases with different priorities	Modify information with administrator privileges
	Modify user and seat information form the database	The administrator operates on the information and usage information
	Query information through the background	Hierarchical partitioning
	Monitoring system	Monitor inappropriate operations

System Architecture and System Design

Architectural Styles

Class driver architecture - the architectural style is mainly depends on the class to manipulate data call, reaction, as well as to the changes in the database data, as a result of our system is an interactive system, mainly depends on the user to the operation of the database, and call the database data, the system must be able to make a timely response to the operation of the user.

Identifying Subsystems



Mapping Subsystems to Hardware

Need to run on at least two computers, seat selection, seat inquiry, release seat, report repair running on one computer, user management and seat management running on another computer

Persistent Data Storage

The library reservation seat system requires documents to have a long save time, so the group decided to adopt the relational database model. The suffix used in this mode is named **.mdf** as the main file, which is used to save the main data in the database. Another subfile is a log file with a suffix of **.ldf**, which records the database log and the database's operation record. The combination of the two will perfectly run the persistent data storage of the library management system.

Network Protocol

The network protocol used by the library seat reservation system is JDBC. The Java database connection architecture is the standard way for Java applications to connect to databases. With the JDBC API, team members don't have to write a program for accessing the Sybase database, write a program for accessing the Oracle database, or write another program for accessing the Informix database. Team members simply need to write a program using the JDBC API, which can send SQL calls to the appropriate database. At the same time, the combination of the Java language and JDBC makes it easy to write different applications for different platforms. It can be run on any platform by writing a program. As an API, JDBC provides a standard interface for program development. JDBC uses existing SQL standards and supports standards for connecting to other databases. JDBC implements all of these standards-oriented targets and interfaces with simple, strict type definitions and high performance implementations.

Once the JDBC connection is established, it can be used to transfer SQL statements to the database it is involved in. JDBC does not impose any restrictions on the type of SQL statement being sent. This provides a great deal of flexibility in allowing the use of specific database statements or even non-SQL statements. The method that executes the SQL statement is `executeQuery`. This method is used to execute a SELECT statement.

Global Control Flow

The library seating reservation system is executed in a "linear" manner, and each user needs to perform the same operation, waiting for the next user or step in the loop.

The library reservation seat system is a real-time system, which is periodic. It can start to enter the system login interface at 6 o'clock every morning, and end all user operations as of 10 o'clock in the evening. Then organize the data for all the operations that took place today.

Our system uses single-process multi-thread mode. The objects with independent control threads are only administrators. The synchronization between threads can query all the information in the database at the same time. The information is correctly carried out in the next step, and the information error returns to the first step. You need to do the previous work again. After the step is over, the next user needs to operate the same steps. Data synchronization between threads.

Hardware Requirements

Hardware requirements: 2 GM for 2.4 GHz dual core processor or higher processor
RAM

LAN connection Windows operating system 7 screen Minimum 720P Minimum hard
disk space: 128MB

URL

<https://github.com/orgs/library-seating-reservation-system/projects/1>