Systems Analysis & Testing Project

Media Equipment Management System

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Introduction

The media equipment management system is designed to streamline the process of reserving, checking out, and returning media equipment for various users such as lecturers, students, media equipment staff and administrators. This system addresses the needs of educational institutions where media equipment such as cameras, projectors, and microphones are integral to daily operations, particularly for teaching, presentations and projects. The platform offers essential features like equipment discoverability, reservation management, maintenance tracking, and access control, ensuring efficient and reasonable usage of resources while providing oversight for administrators and media equipment staff.

Summary

The system supports different user groups with distinct functionalities and privileges:

- **Lecturers and Students** can search, reserve, check out, and return equipment, with lecturers enjoying extended booking privileges.
- **Media Equipment Staff** oversee equipment reservations, manage check-out and return processes, and handle maintenance or repairs for damaged equipment.
- **Administrators** are responsible for managing the equipment inventory, setting user access levels, generating reports on equipment usage, maintenance needs and handling fines for overdue or damaged items.

Key features include a search and filter functionality for equipment, a system to prevent double-booking, and the ability to track fines for overdue or damaged equipment. Access control differentiates between lecturers, students, and staff, ensuring appropriate access and booking privileges. The system also integrates with campus authentication systems for seamless user verification and enhances equipment maintenance by flagging items for repair.

Overall, the project aims to improve the accessibility, management, and maintenance of media equipment while providing a robust framework for fine management and reporting.

User Stories

Lecturers and Students: (User is what a lecturer and student can do)

Functional

- **As a user**, I want to **search for available equipment** by type (e.g., projectors, cameras) so that I can find what I need for my lecture.
- **As a lecturer**, I want to **reserve equipment in advance** for a specific time, so that I can ensure I have the required media equipment for my lecture.
- **As a user**, I want to **check out the reserved equipment** easily when I arrive at the media centre, so that I can use it for my presentation.
- **As a user**, I want to **return equipment** once I've finished using it, so that others can access it afterward.
- **As a user**, I want to **cancel or modify a reservation**, so I can update my plans when necessary.

Non-Functional

- **As a lecturer**, I want to **extend the reservation time** if no one else has booked the equipment, so I can continue using it.
- **As a user**, I want to **view my equipment reservation history**, so I can keep track of what I've checked out and returned.

Media Equipment Staff:

Functional

- **As a media equipment staff member**, I want to **view all upcoming reservations**, so that I can prepare the equipment ahead of time.
- **As a media equipment staff member**, I want to **check out and check in equipment for users** so that I can track its usage in the system.
- **As a media equipment staff member**, I want to **flag equipment for maintenance or repair** if it's damaged or faulty, so it can be temporarily unavailable for reservations.

Non-Functional

- **As a media equipment staff member**, I want to **view equipment availability**, so that I can assist users with their reservations and handle walk-in requests.
- **As a media equipment staff member**, I want to **generate reports** on equipment usage, so I can track which equipment is used most frequently.

Administrators:

Functional

- **As an administrator**, I want to **manage the equipment inventory** (e.g., adding, removing, or updating equipment details), so that the system stays up to date with the latest resources.
- **As an administrator**, I want to **approve or deny equipment reservation requests** for certain types of equipment (e.g., high-cost or limited-availability items), so that we can control access.
- **As an administrator**, I want to **set different access levels** for lecturers, students, and staff, so that I can ensure proper usage of media equipment.
- **As an administrator**, I want to **view and manage fines** for overdue or damaged equipment, so that the fines can be processed through the system.

Non-Functional

- **As an administrator**, I want to **generate reports** on equipment that's overdue, damaged, or in need of repair, so that I can manage the process of equipment maintenance.
- **As an administrator**, I want to **track equipment repair history**, so I can monitor equipment performance and make informed decisions about future purchases or replacements.

Use Cases

Actors:

- **Lecturers and students**: Need to reserve, check out, and return media equipment.
- **Media equipment staff and administrators**: Oversee equipment availability, maintenance, and reservations.

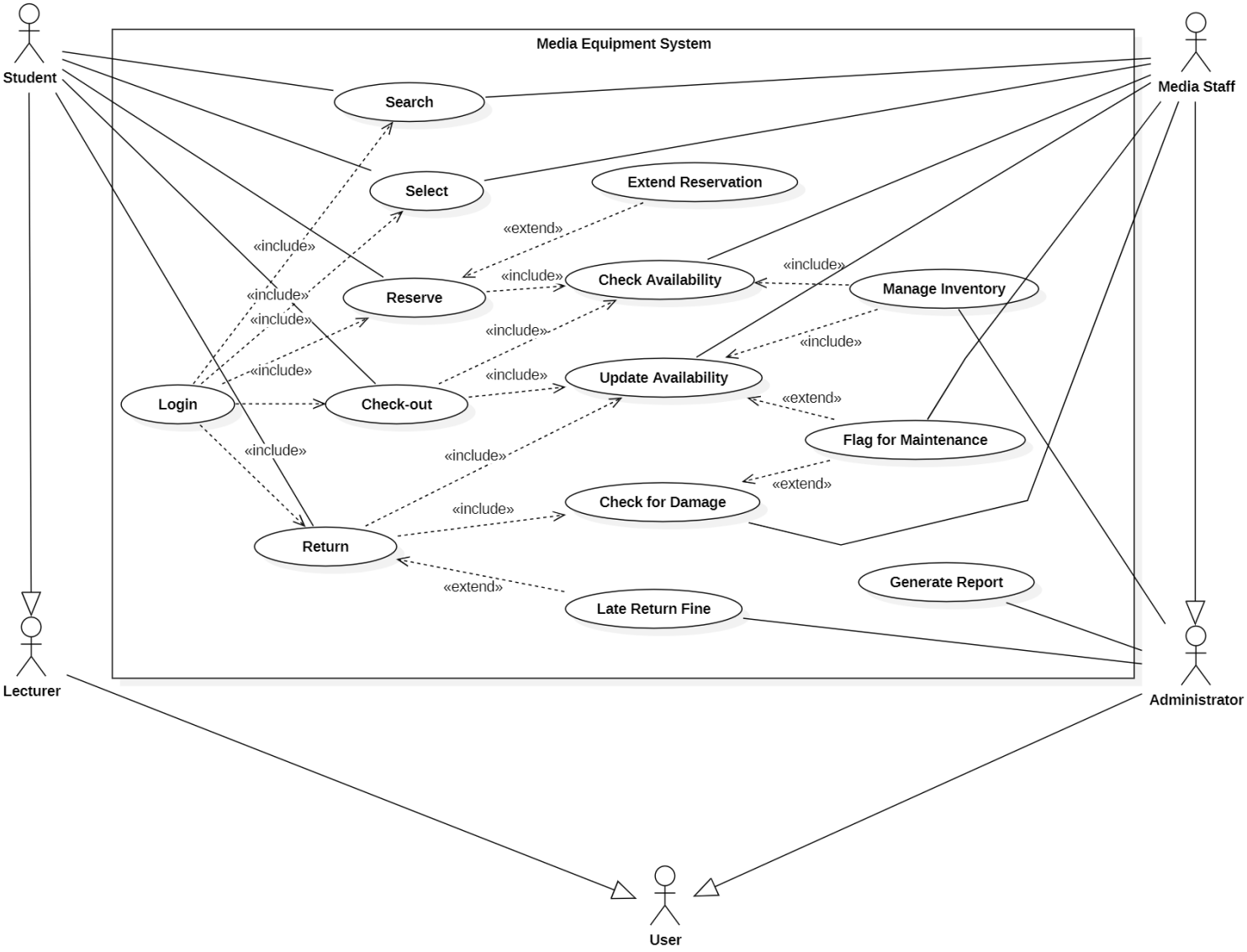
Requirements:

- **Equipment discoverability**: Filter and search equipment based on **availability**, **type** (e.g., cameras, projectors, microphones, speakers, etc.).
- **Reservation, check-out, and return functionality**:
    - Users must be able to **reserve** equipment for specific time slots.
    - Equipment must be available for **check-out** and must be **returned** at designated times.
    - System should ensure **overdue tracking** and **fine calculations** for late returns or damaged equipment.
- **Access control**:
    - **Lecturers and students** should have distinct privileges, where:
        - Lecturers might get longer reservation periods or priority access.
        - Students might face more restricted booking times.
    - **Administrators** should have full access to manage inventory, add/remove equipment, and handle maintenance or reports.
    - **Media Staff** should be able to handle maintenance or reservations depending on role.
- **Maintenance and repair management**:
    - Keep track of **maintenance schedules** for equipment.
    - Flag equipment for **repairs** and temporarily make it unavailable for reservations.
- **Double-booking prevention**: Implement a feature that prevents multiple users from reserving the same piece of equipment simultaneously.
- **Reporting**: Generate reports on equipment usage by user type, the condition of equipment (e.g., damages), and **maintenance history**.

Additional Context:

- **Integration with campus systems**: Leverage existing **user authentication systems** to avoid duplicate credentials (e.g., using campus logins such as student/staff number or email to verify users).
- **Fines and penalties**: Track late returns and damages and calculate corresponding **fines**.

Use Case Diagram



Scenario Specifications

Use case name: Search/Select Equipment	**UniqueID:** MES01
Area: Equipment System	
Actor(s): Lecturers, Students	
Description: Users search for and select equipment.	
Triggering Event: User accesses the system to search for available equipment.	
Trigger type: ☒**External** ☐**Temporal**	
Steps Performed (Main Path)	**Information for Steps**
1. User logs into the system.	User DB
2. User navigates to the equipment search page.	Item DB
3. User enters search criteria.	Item DB
4. System displays search results.	Item DB
5. User selects equipment for detailed view.	Item DB
6. User selects equipment for reservation.	Item DB
Preconditions: User is logged into the system and the system's inventory is up to date with availability data.	
Postconditions: Equipment is added to the reservation list.	
Assumptions: Equipment availability data is accurate.	
Requirements met: Equipment is searchable and selectable.	
Outstanding issues: Managing equipment whose status changes while a user is browsing.	
Priority: High	
Risk: Low	

Use case name: Reserve Equipment	**UniqueID:** MES02
Area: Equipment System	
Actor(s): Lecturers, Students	
Description: Users reserve equipment for specific time slots.	
Triggering Event: User selects equipment to reserve.	
Trigger type: ☒**External** ☐**Temporal**	
Steps Performed (Main Path)	**Information for Steps**
1. User navigates to equipment reservation page.	Item DB
2. System displays available time slots.	Item DB
3. User selects an appropriate time slot.	Item DB
4. User confirms the reservation.	Item DB
5. System checks for conflicts or double-booking issues.	Item DB
6. System records the reservation	Item DB
Preconditions: Equipment is available for the reservation.	
Postconditions: Reservation is confirmed and item DB updated.	
Assumptions: Equipment is available and item DB updated to show item reserved.	
Requirements met: Equipment is available and reservable.	
Outstanding issues: Handling last-minute cancellations or modifications.	
Priority: High	
Risk: Medium	

Use case name: Check-out Equipment	**UniqueID:** MES03
Area: Equipment Handling	
Actor(s): Lecturers, Students, Media Equipment Staff	
Description: Users check out reserved equipment, and media staff ensure proper check-out tracking.	
Triggering Event: User arrives to check out reserved equipment.	
Trigger type: ☒**External** ☐**Temporal**	
Steps Performed (Main Path)	**Information for Steps**
1. User arrives to collect equipment.	User ID
2. Staff verifies the reservation.	Item DB
3. Staff prepares equipment for check-out.	Item
4. Staff records the check-out in the system.	User ID, Item, Item DB
Preconditions: User has a valid reservation and equipment is available at collection area.	
Postconditions: Equipment is checked out and staff updated system/DB.	
Assumptions: Equipment is available and item DB updated to show item reserved.	
Requirements met: Equipment is checked out.	
Outstanding issues: Handling unavailable equipment when user shows up.	
Priority: High	
Risk: Low	

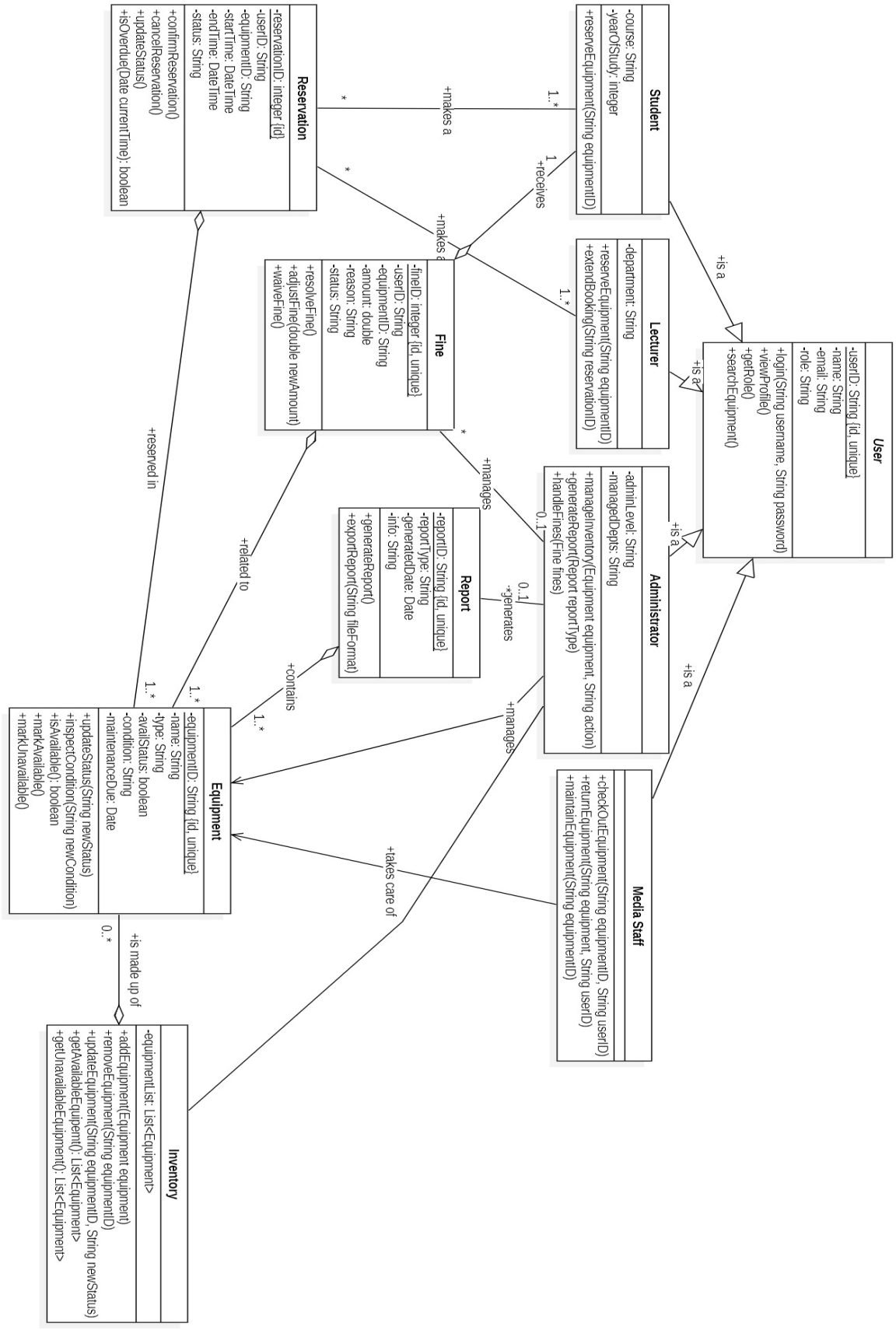
Use case name: Return Equipment	**UniqueID:** MES04
Area: Equipment Handling	
Actor(s): Lecturers, Students, Media Equipment Staff	
Description: Users return checked-out equipment, and media staff ensure proper return tracking and inspection.	
Triggering Event: User arrives to return previously checked-out equipment.	
Trigger type: ☒**External** ☐**Temporal**	
Steps Performed (Main Path)	**Information for Steps**
1. User arrives to return equipment.	User ID, Item
2. Staff verifies the check-out record.	User ID, Item DB
3. Staff inspects the equipment for damages or issues.	Report, Item DB
4. Staff records the return in the system.	User ID, Item, Item DB
5. Staff updates the equipment status to "available."	Item DB
6. User receives a confirmation of return.	
7. User leaves after successfully returning the equipment.	
Preconditions: User has a valid check-out record and equipment returned within time frame.	
Postconditions: Equipment is marked as returned and available. Also condition logged in system.	
Assumptions: Correct equipment is returned in ideal condition.	
Requirements met: Equipment is returned.	
Outstanding issues: Managing returns during peak times when multiple users are present.	
Priority: High	
Risk: Medium	

Use case name: Late Return Fines	**UniqueID:** MES05
Area: Equipment System	
Actor(s): Administrators	
Description: Administrators view and manage fines.	
Triggering Event: Administrator accesses the fines management section of the system.	
Trigger type: ☒**External** ☐**Temporal**	
Steps Performed (Main Path)	**Information for Steps**
1. Administrator logs into the system.	User ID
2. Administrator navigates to the fines overview page.	Item DB
3. System displays list of overdue/damaged equipment with related fines	Item DB, User DB
4. Administrator selects an item to view fine details.	Item DB, User DB
5. Administrator modifies fine amounts or waives fines if necessary.	Item DB, User DB
6. Administrator updates the status of fines as resolved or pending.	Item DB, User DB
7. System logs the changes made to fines for auditing.	Item DB
Preconditions: Fines data is available and up to date in the system.	
Postconditions: Fines are updated and processed accurately in the system.	
Assumptions: The fines management function operates correctly and data is accurate.	
Requirements met: Management of fines for overdue or damaged equipment.	
Outstanding issues: Discrepancies in fine amounts and user disputes.	
Priority: Low	
Risk: Medium	

Use case name: Manage Equipment Inventory	**UniqueID:** MES06
Area: Equipment System	
Actor(s): Media Equipment Staff, Administrators	
Description: Media staff and administrators manage the equipment inventory	
Triggering Event: New equipment is added or existing equipment requires updates.	
Trigger type: ☒**External** ☐**Temporal**	
Steps Performed (Main Path)	**Information for Steps**
1. Staff logs into the inventory management system.	User ID
2. Staff adds new equipment details.	Item, Item DB
3. Staff updates availability and maintenance status for existing equipment.	Item, Item DB
4. Staff removes obsolete or damaged equipment from the system.	Item, Item DB
5. System reflects changes to the equipment inventory.	Item DB
6. Staff can view a real-time equipment inventory status.	Item DB
Preconditions: Staff has access to the inventory system and system is up to date with inventory status.	
Postconditions: Inventory is accurately updated with additions, removals, or changes.	
Assumptions: Inventory updates are made regularly and accurately.	
Requirements met: Equipment inventory updated	
Outstanding issues: Tracking lost or stolen equipment.	
Priority: Medium	
Risk: High	

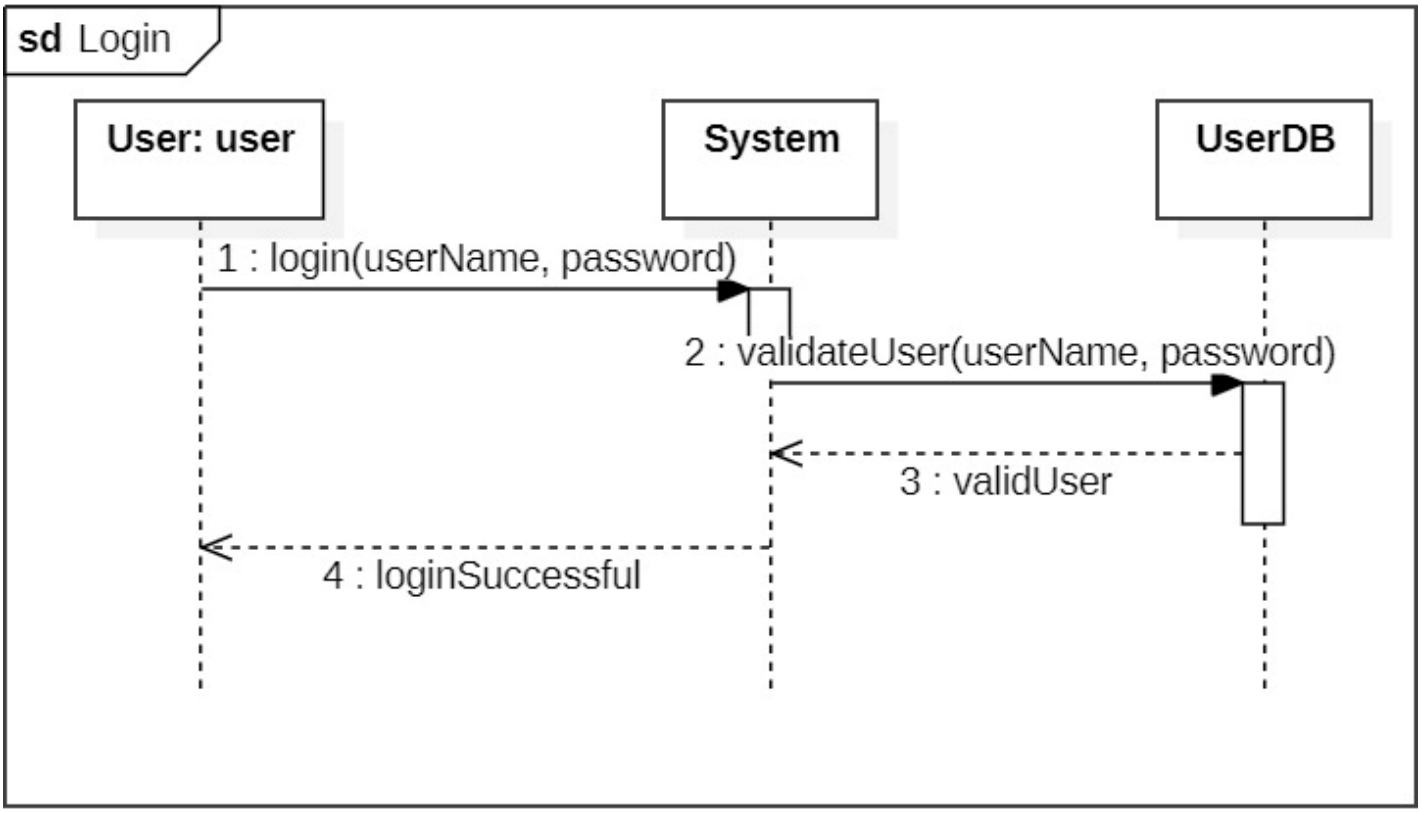
Use case name: Generate Reports	**UniqueID:** MES07
Area: Equipment System	
Actor(s): Administrators	
Description: Administrators generate equipment reports.	
Triggering Event: Administrator initiates the report generation process.	
Trigger type: ☒**External** ☐**Temporal**	
Steps Performed (Main Path)	**Information for Steps**
1. Administrator logs into the system.	User ID
2. Administrator selects report type (overdue, damaged, or repair needed).	Item DB
3. System retrieves relevant data based on selection.	Item DB
4. Administrator reviews the generated report.	Item DB
5. Administrator exports or prints the report as needed.	Item DB
6. System logs the report generation activity.	Item DB
Preconditions: Administrator has appropriate access to the reporting system.	
Postconditions: Report is generated and available for review and action.	
Assumptions: Reporting system functions correctly and data is accurate.	
Requirements met: Report generation for equipment status.	
Outstanding issues: None	
Priority: Low	
Risk: Low	

Class Diagram

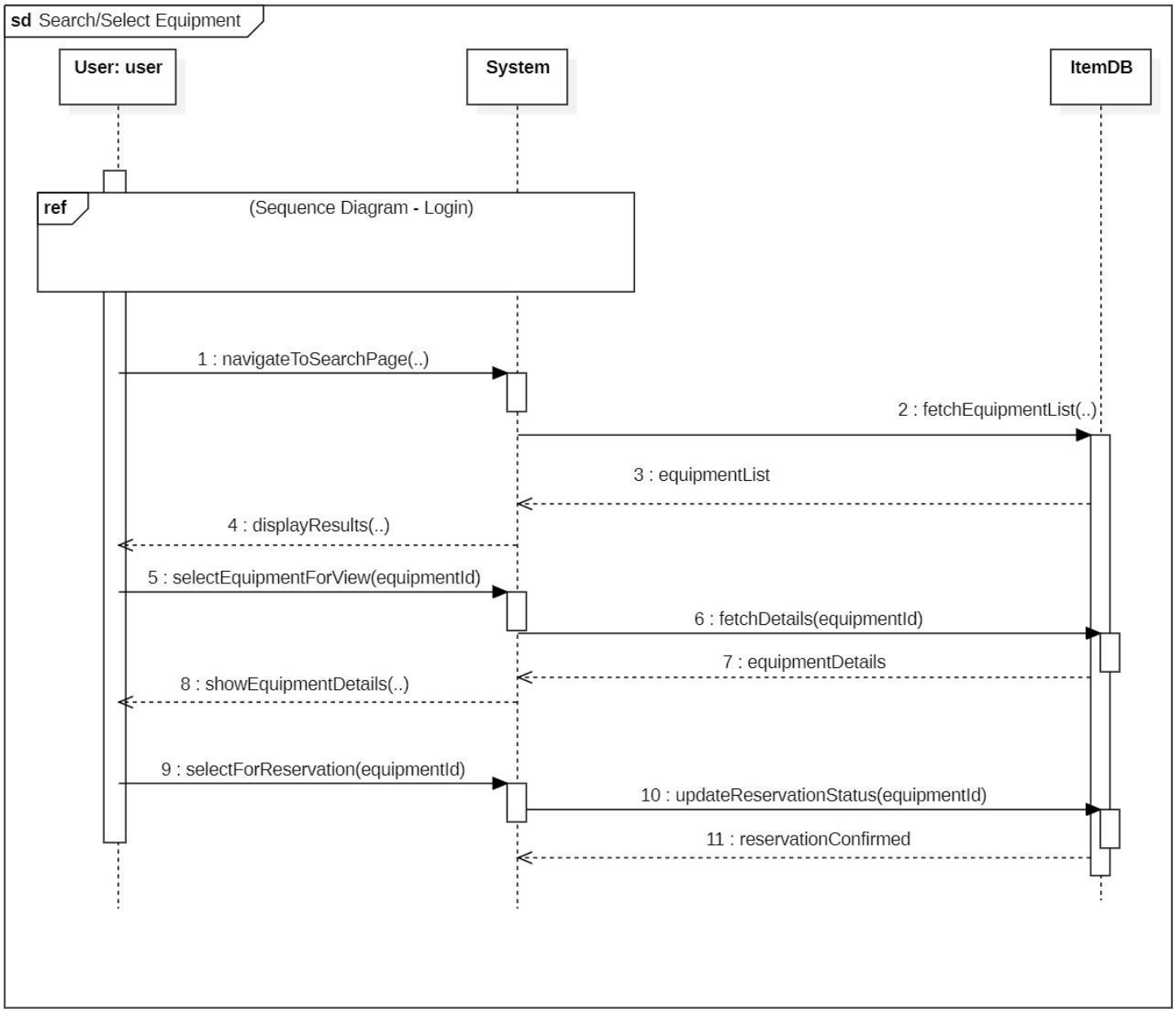


Sequence Diagrams

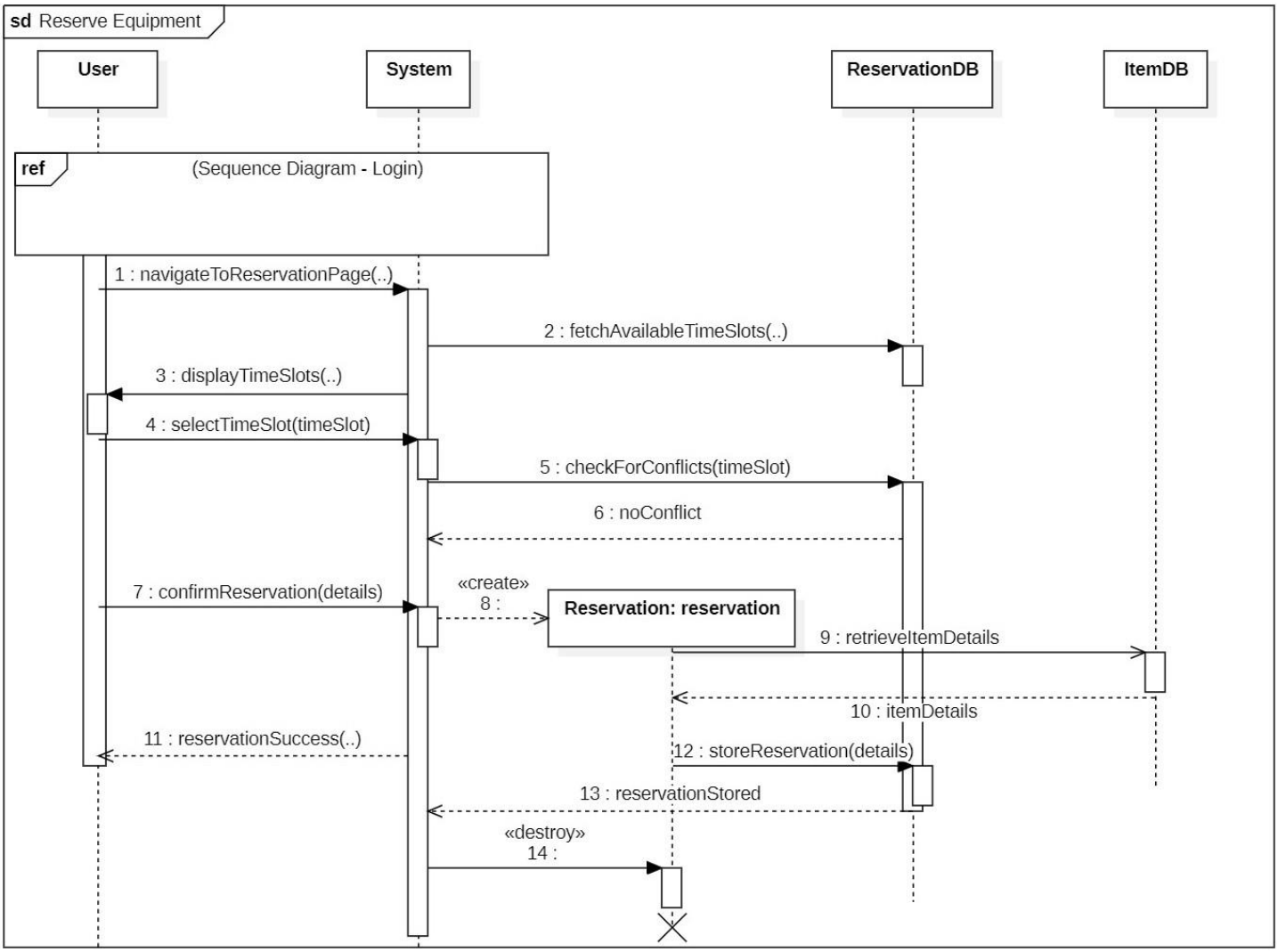
User Login



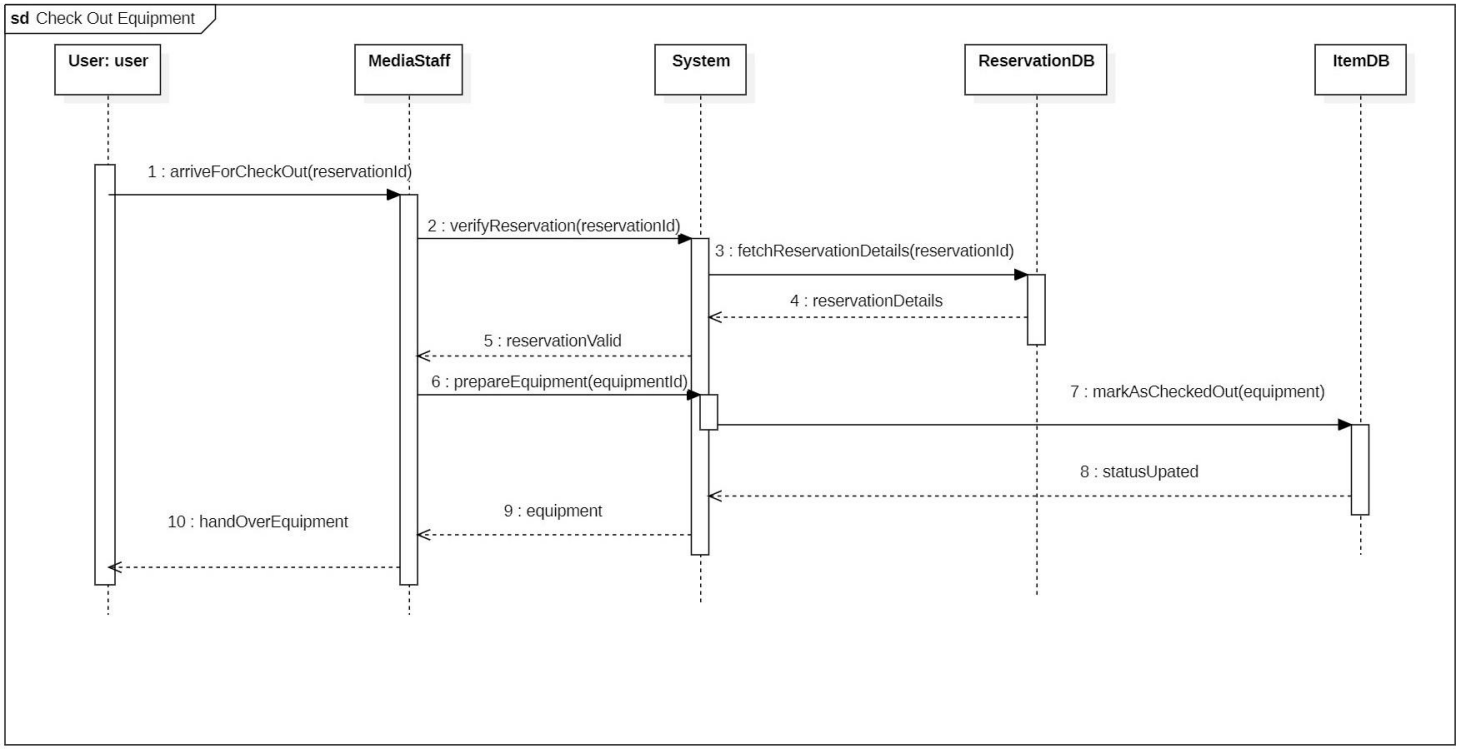
1. Search/Select Equipment



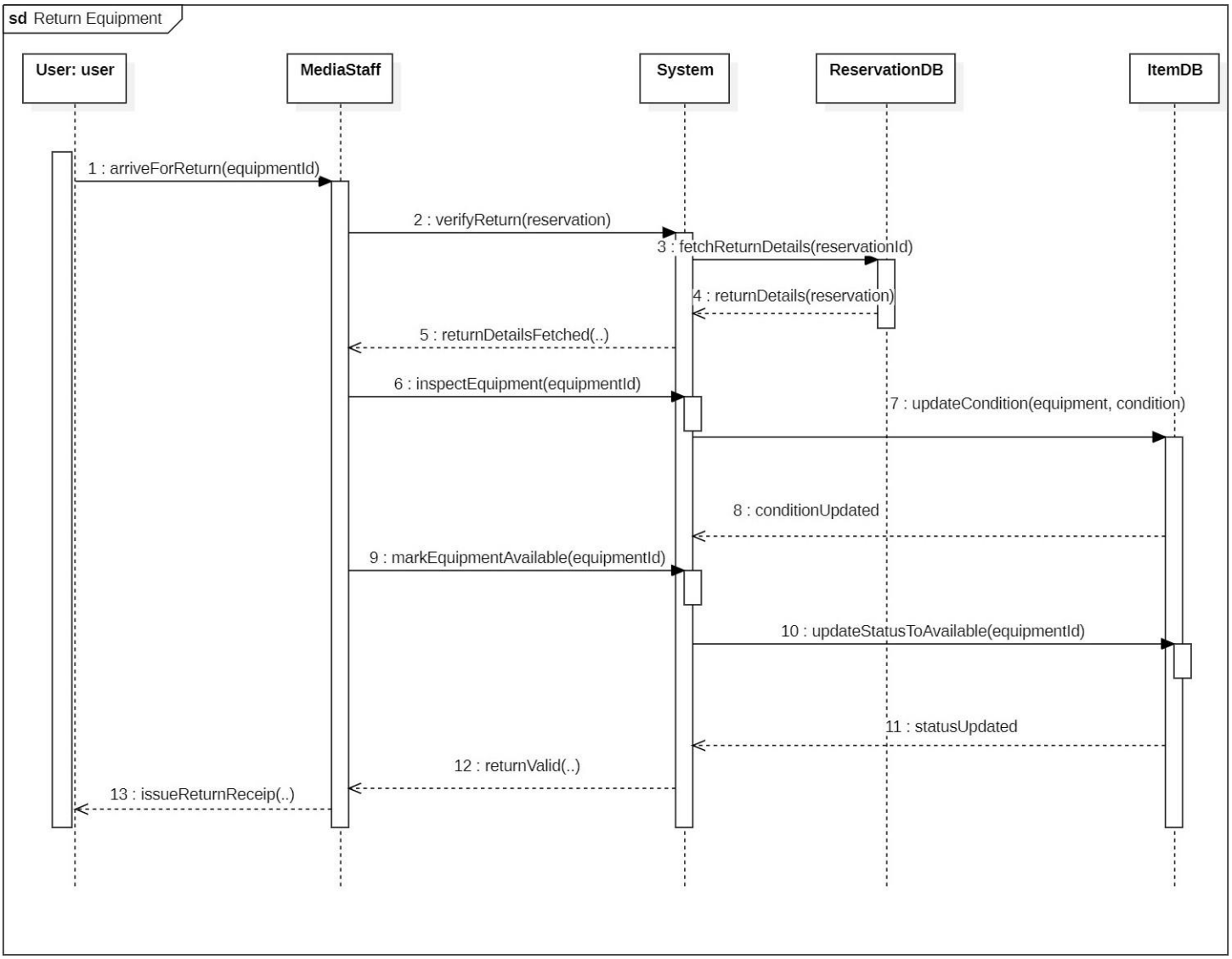
2. Reserve Equipment



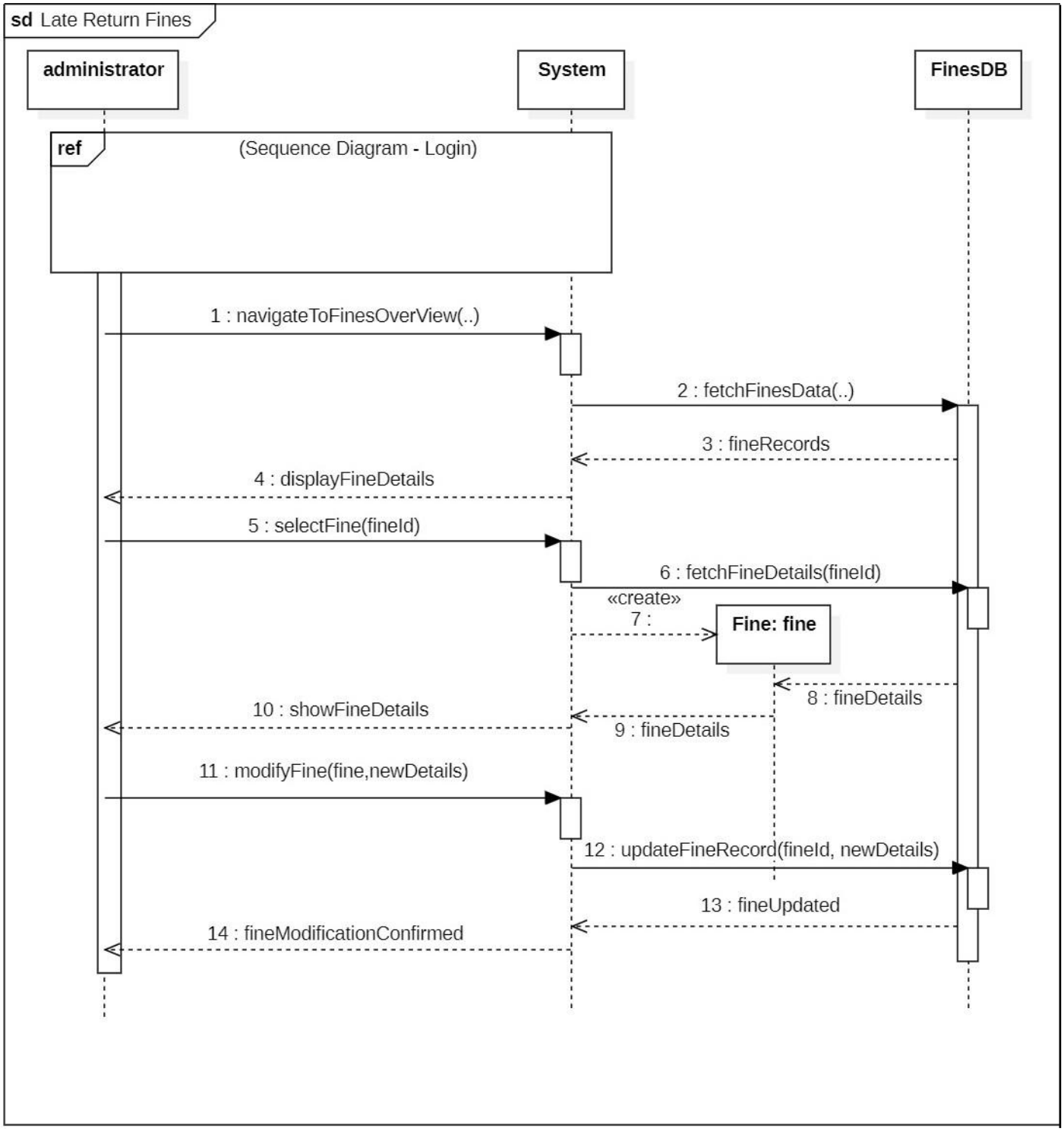
3. Check Out Equipment



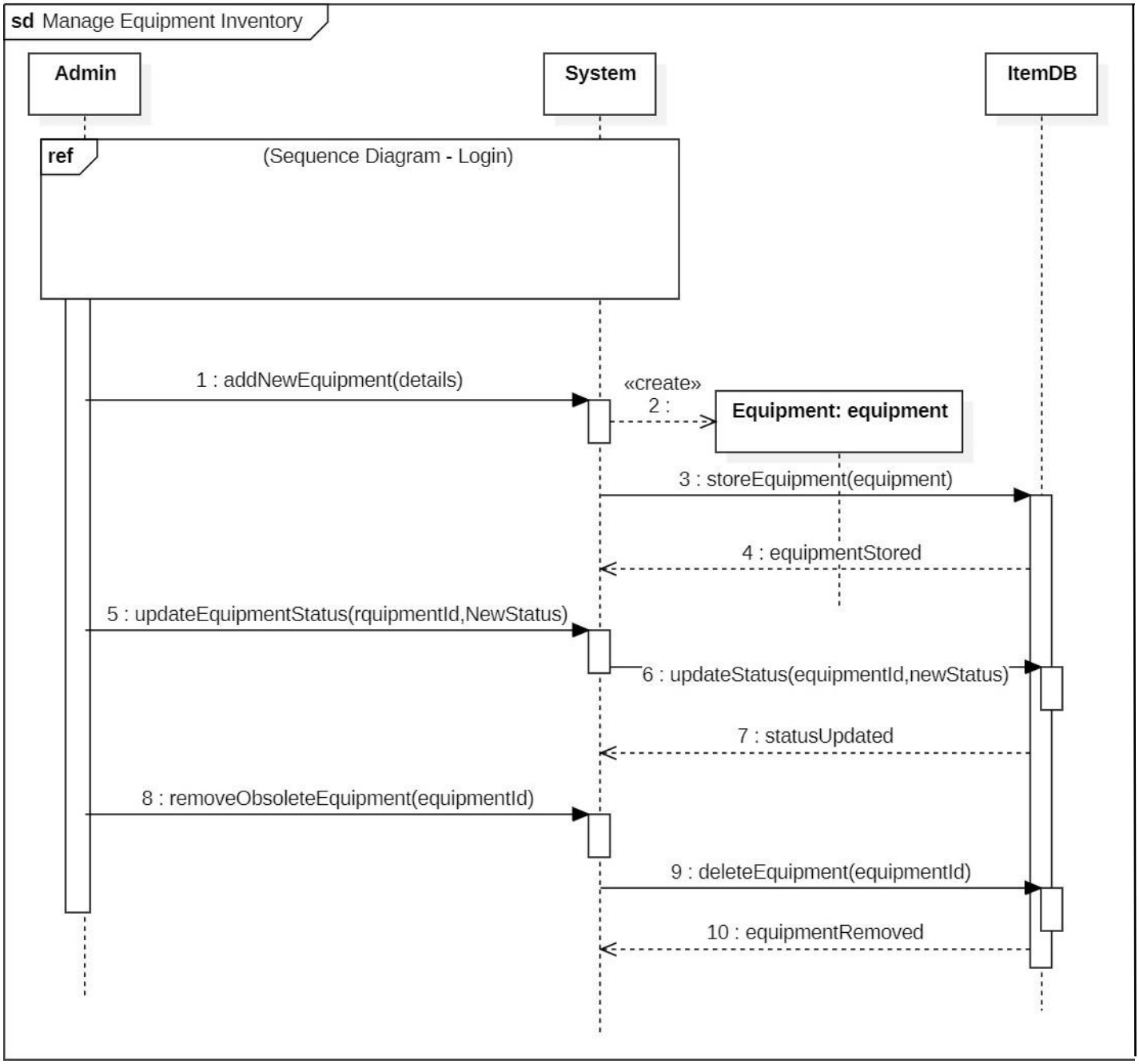
4. Return Equipment



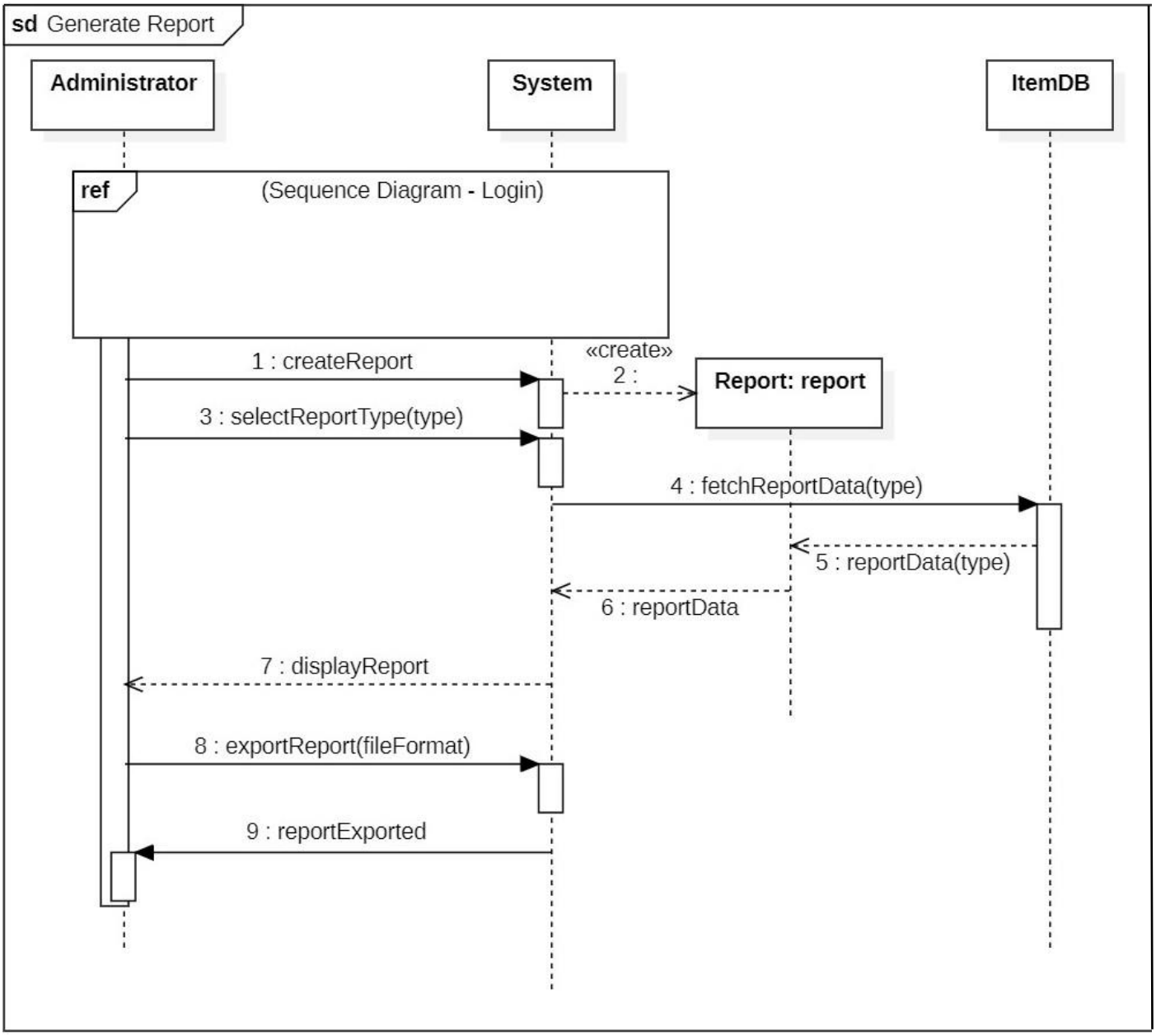
5. Late Return Fines



6. Manage Equipment Inventory



2. Generate Report



Message Analysis Tables for Sequence Diagrams

1. Search/Select Equipment

Sequence Num	Caller	Callee	Msg Name	Msg Type	Msg Param	Msg Constrain
1	User	System	login	Sync	username, password	User must exist in UserDB
2	System	UserDB	validateUser	Sync	username, password	Valid credentials
3	UserDB	System	loginSuccess	Sync	None	Successful validation
4	User	System	navigateToSearchPage	Sync	None	None
5	System	ItemDB	fetchEquipmentList	Sync	None	Inventory must be available
6	ItemDB	System	equipmentList	Sync	EquipmentList	Equipment exists in database
7	System	User	displayResults	Sync	EquipmentList	Valid equipment data
8	User	System	selectEquipmentForView	Sync	equipmentId	Equipment must exist
9	System	ItemDB	fetchDetails	Sync	equipmentId	Equipment details accessible
10	ItemDB	System	equipmentDetails	Sync	EquipmentDetails	Valid equipment details
11	System	User	showEquipmentDetails	Sync	EquipmentDetails	Valid data for UI display
12	User	System	selectForReservation	Sync	equipmentId	Equipment must be available
13	System	ItemDB	updateReservationStatus	Sync	equipmentId	Update reservation status
14	ItemDB	System	reservationConfirmed	Sync	None	Successfully updated

2. Reserve Equipment

Sequence Num	Caller	Callee	Msg Name	Msg Type	Msg Param	Msg Constrain
1	User	System	navigateToReservationPage	Sync	None	None
2	System	ItemDB	fetchAvailableTimeSlots	Sync	None	Time slots available
3	ItemDB	System	timeSlots	Sync	TimeSlotList	Valid time slots
4	System	User	displayTimeSlots	Sync	TimeSlotList	Valid data for UI display
5	User	System	selectTimeSlot	Sync	timeSlot	Slot must be available
6	System	ItemDB	checkForConflicts	Sync	timeSlot	Slot must be conflict-free
7	ItemDB	System	noConflict	Sync	None	Conflict-free slot
8	System	User	timeSlotValid	Sync	None	Slot is valid
9	User	System	confirmReservation	Sync	details	Reservation details complete
10	System	ItemDB	storeReservation	Sync	details	Valid reservation details
11	ItemDB	System	reservationStored	Sync	None	Reservation stored
12	System	User	reservationSuccess	Sync	None	Reservation completed

3. Check-Out Equipment

Sequence Num	Caller	Callee	Msg Name	Msg Type	Msg Param	Msg Constrain
1	User	MediaStaff	arriveForCheckOut	Sync	reservationId	Valid reservation ID
2	MediaStaff	System	verifyReservation	Sync	reservationId	Reservation must exist
3	System	ReservationDB	fetchReservationDetails	Sync	reservationId	Details must be accessible
4	Reservation DB	System	reservation Details	Sync	ReservationDetails	Valid reservation details
5	System	MediaStaff	reservation Valid	Sync	None	Reservation is valid
6	MediaStaff	System	prepareEquipment	Sync	equipmentId	Equipment must exist
7	System	ItemDB	markAsCheckedOut	Sync	equipmentId	Update status to checked out
8	ItemDB	System	statusUpdated	Sync	None	Successfully updated
9	System	MediaStaff	equipmentReady	Sync	None	Equipment is ready
10	MediaStaff	User	handOverEquipment	Sync	None	Equipment is handed over

4. Return Equipment

Sequence Num	Caller	Callee	Msg Name	Msg Type	Msg Param	Msg Constrain
1	User	MediaStaff	arriveForReturn	Sync	equipmentId	Valid equipment ID
2	MediaStaff	System	verifyReturn	Sync	reservationId	Valid reservation ID
3	System	Reservation DB	fetchReturnDetails	Sync	reservationId	Details must be accessible
4	Reservation DB	System	returnDetails	Sync	ReturnDetails	Valid return details
5	System	MediaStaff	returnDetailsFetched	Sync	None	Return details fetched
6	MediaStaff	System	inspectEquipment	Sync	equipmentId	Equipment must exist
7	System	ItemDB	updateCondition	Sync	equipmentId, condition	Equipment condition updated
8	ItemDB	System	conditionUpdated	Sync	None	Successfully updated
9	MediaStaff	System	markEquipmentAvailable	Sync	equipmentId	Valid equipment ID
10	System	ItemDB	updateStatusToAvailable	Sync	equipmentId	Update status to available
11	ItemDB	System	statusUpdated	Sync	None	Successfully updated
12	System	MediaStaff	returnValid	Sync	None	Return is valid
13	MediaStaff	User	issueReturnReceipt	Sync	None	Return receipt issued

5. Late Return Fines

Sequence Num	Caller	Callee	Msg Name	Msg Type	Msg Param	Msg Constrain
1	Admin	System	login	Sync	adminCredentials	Valid admin credentials
2	System	UserDB	validateUser	Sync	adminCredentials	Admin must exist
3	UserDB	System	userAuthenticated	Sync	None	Successful authentication
4	Admin	System	navigateToFines Overview	Sync	None	None
5	System	FinesDB	fetchFinesData	Sync	None	Fines data must exist
6	FinesDB	System	fineRecords	Sync	FineRecordList	Valid fine records
7	System	Admin	displayFineDetail s	Sync	FineRecordList	Valid data for UI display
8	Admin	System	selectFine	Sync	fineId	Valid fine ID
9	System	FinesDB	fetchFineDetails	Sync	fineId	Fine must exist in database
10	FinesDB	System	fineDetails	Sync	FineDetails	Valid fine details
11	System	Admin	showFineDetails	Sync	FineDetails	Valid data for UI display
12	Admin	System	modifyFine	Sync	fineId, newDetails	Fine must exist in database
13	System	FinesDB	updateFineRecord	Sync	fineId, newDetails	Valid fine details
14	FinesDB	System	fineUpdated	Sync	None	Fine updated successfully
15	System	Admin	fineModification Confirmed	Sync	None	Modification successful

6. Manage Equipment Inventory

Sequence Num	Caller	Callee	Msg Name	Msg Type	Msg Param	Msg Constrain
1	Admin	System	login	Sync	adminCredentials	Valid Admin credentials
2	System	UserDB	validateUser	Sync	adminCredentials	Admin must exist
3	UserDB	System	adminAuthenticated	Sync	None	Successful authentication
4	Admin	System	addNewEquipment	Sync	details	Valid equipment details
5	System	ItemDB	storeEquipment	Sync	details	Valid equipment data
6	ItemDB	System	equipmentStored	Sync	None	Successfully stored
7	Admin	System	updateEquipmentStatus	Sync	equipmentId, newStatus	Equipment must exist
8	System	ItemDB	updateStatus	Sync	equipmentId, newStatus	Valid status update
9	ItemDB	System	statusUpdated	Sync	None	Status updated successfully
10	Admin	System	removeObsoleteEquipment	Sync	equipmentId	Equipment must exist
11	System	ItemDB	deleteEquipment	Sync	equipmentId	Valid equipment ID
12	ItemDB	System	equipmentRemoved	Sync	None	Successfully removed
13	System	Admin	inventoryUpdated	Sync	None	Inventory updated successfully

7. Generate Reports

Sequence Num	Caller	Callee	Msg Name	Msg Type	Msg Param	Msg Constrain
1	Admin	System	login	Sync	adminCredentials	Valid Admin credentials
2	System	UserDB	validateUser	Sync	adminCredentials	Admin must exist
3	UserDB	System	adminAuthenticated	Sync	None	Successful authentication
4	Admin	System	selectReportType	Sync	type	Valid report type
5	System	ItemDB	fetchReportData	Sync	type	Report data must exist
6	ItemDB	System	reportData	Sync	ReportDetails	Valid report data
7	System	Admin	displayReport	Sync	ReportDetails	Valid data for UI display
8	Admin	System	exportReport	Sync	fileFormat	Valid file format
9	System	Admin	reportExported	Sync	None	Export successful

Test Cases

Test Case ID:	EQP-SEARCH-001
Description:	Verify that a user can successfully search for and select equipment.
Preconditions:	
	1. User is logged into the system.
	2. The equipment inventory is up to date.
Test Steps:	
	1. Navigate to the equipment search page.
	2. Enter valid search criteria (e.g. "Camera").
	3. Click on "Search."
	4. Verify that the system displays a list of available equipment.
	5. Select an item from the search results.
	6. View the detailed information of the selected equipment.
	7. Select the equipment for reservation.
Test Data:	Search criteria: "Camera"
Expected Result:	
	1. The system displays equipment that matches the search criteria.
	2. The equipment can be selected for reservation, and the detailed view is accessible.
Postconditions:	The selected equipment is added to the reservation list.
Pass/Fail Criteria:	***Pass:*** If the search results match the criteria and the equipment can be reserved.
	Fail: If the search results are incorrect or the reservation fails.
Comments:	Ensure the equipment database is up to date before testing.

Test Case ID:	EQP-SEARCH-002
Description:	Verify that the system handles searches with no matching equipment.
Preconditions:	
	1. User is logged into the system.
	2. The equipment database is up to date.
Test Steps:	
	1. Navigate to the equipment search page.
	2. Enter search criteria for unavailable equipment (e.g. "Drone").
	3. Click on "Search."
Test Data:	Search criteria: "Drone"
Expected Result:	
	1. The system displays a message indicating no equipment is available.
Postconditions:	The system remains on the search page, and no equipment is selected.
Pass/Fail Criteria:	***Pass:*** If the system displays "No equipment available" when criteria yield no results.
	Fail: If the system displays incorrect results or an error.
Comments:	Ensure the search is for something that doesn't exist.

Test Case ID:	EQP-RESERVE-001
Description:	Verify successful reservation of equipment.
Preconditions:	
	1. User is logged into the system.
	2. Equipment is available for the desired time slot.
Test Steps:	
	1. Navigate to the reservation page.
	2. Select equipment to reserve.
	3. Choose an available time slot.
	4. Confirm the reservation.
Test Data:	
	1. Equipment: “Projector”
	2. Time Slot: “10:00 AM - 12:00 PM”
Expected Result:	
	1. Reservation is successfully confirmed, and equipment is marked as reserved in the system.
Postconditions:	Equipment is reserved, and the reservation is reflected in the inventory system.
Pass/Fail Criteria:	
	Pass: Reservation confirmation received and equipment marked as reserved.
	Fail: Reservation fails or double-booking occurs.
Comments:	Ensure the time slot availability is checked before reserving.

Test Case ID:	EQP-RESERVE-002
Description:	Verify the system handles double-booking conflicts during reservation.
Preconditions:	
	1. Equipment is already reserved for the time slot.
Test Steps:	
	1. Navigate to the reservation page.
	2. Select equipment already reserved for a time slot.
	3. Choose the conflicting time slot.
	4. Confirm the reservation.
Test Data:	
	1. Equipment: “Camera”
	2. Time Slot: "2:00 PM - 4:00 PM" (already reserved)
Expected Result:	
	1. The system displays an error message indicating the equipment is already booked for the selected time slot.
Postconditions:	The reservation is not made, and the equipment remains reserved for the original user.
Pass/Fail Criteria:	
	Pass: Conflict detected, and an error message is displayed.
	Fail: Reservation succeeds despite the conflict.
Comments:	Test the system's conflict handling for high-demand equipment.

Test Case ID:	EQP-CHECKOUT-001
Description:	Verify successful check-out of reserved equipment.
Preconditions:	
	1. User has a valid reservation.
	2. Equipment is available for check-out.
Test Steps:	
	1. User arrives at the collection point.
	2. Staff verifies the reservation in the system.
	3. Staff prepares the equipment.
	4. Staff records the check-out in the system.
Test Data:	
	1. User ID: “C00”
	2. Equipment ID: “EQP-002”
Expected Result:	
	1. The equipment is successfully checked out, and the system is updated to reflect the change.
Postconditions:	Equipment is marked as checked out in the system.
Pass/Fail Criteria:	
	Pass: Equipment is checked out, and the system is updated correctly.
	Fail: Check-out fails or is not recorded.
Comments:	Test during different check-out times to ensure system load handling.

Test Case ID:	EQP-RETURN-001
Description:	Verify successful return of checked-out equipment.
Preconditions:	
	1. User has checked out the equipment.
	2. Equipment is returned within the due time.
Test Steps:	
	1. User arrives at the return point.
	2. Staff verifies the check-out record.
	3. Staff inspects the equipment for damages.
	4. Staff records the return in the system and updates status to “available.
Test Data:	
	1. User ID: “C00”
	2. Equipment ID: “EQP-001”
Expected Result:	
	1. The system records the return, and the equipment is marked as available for future use.
Postconditions:	Equipment is returned, and the system shows it as available.
Pass/Fail Criteria:	
	Pass: Return is successful, and equipment status is updated.
	Fail: Return fails or equipment remains marked as checked out.
Comments:	Ensure return process includes damage check.

Test Case ID:	EQP-FINE-001
Description:	Verify that overdue equipment generates a late return fine.
Preconditions:	
	1. Equipment is returned after the due date.
	2. Fines management system is enabled.
Test Steps:	
	1. User returns equipment past the due date.
	2. System calculates the fine for the late return.
	3. Staff confirms the fine in the system.
	4. System displays the fine amount to the user.
Test Data:	
	1. User ID: “C00”
	2. Equipment ID: “EQP-002”
	3. Equipment: “Camera”
	4. Due Date: “2024-10-15”
Expected Result:	
	1. A fine is calculated based on the overdue period and displayed to the user.
Postconditions:	Fine is applied, and the system reflects the fine.
Pass/Fail Criteria:	
	Pass: Fine is accurately calculated and applied.
	Fail: Fine is not generated or is calculated incorrectly.
Comments:	Test different overdue durations for accuracy.

Test Case ID:	EQP-FINE-002
Description:	Verify that administrators can view late return fines.
Preconditions:	
	1. Fines data is available.
Test Steps:	
	1. Log into the system as an administrator.
	2. Navigate to the fines overview page.
	3. Observe the displayed list of overdue equipment with related fines.
Test Data:	
	1. User ID: “C00”
	2. Equipment ID: “EQP-001”
	3. Due Date: “2024-10-01”
	4. Fine Amount: “€20”
Expected Result:	
	1. The system accurately displays fines for overdue equipment.
Postconditions:	The fines data remains unchanged after viewing.
Pass/Fail Criteria:	
	Pass: If the system correctly displays the fines for overdue equipment.
	Fail: If the fines data is missing, incorrect, or does not load.
Comments:	Ensure fines data is updated prior to testing.

Test Case ID:	EQP-FINE-003
Description:	Verify that administrators can waive a fine for overdue equipment.
Preconditions:	
	1. Administrator needs to waive a fine.
	Test Steps:
	1. Select an overdue item to view fine details.
	2. Modify the fine and choose to waive it.
	3. Check if the system logs the fine waiver action.
Test Data:	
	1. User ID: "C00"
	2. Equipment ID: "EQP-001"
	3. Equipment: "Projector"
	4. Original Fine Amount: "€20"
	5. Waived Fine Amount: "€0"
Expected Result:	
	1. The fine is successfully waived, and the system logs the change.
Postconditions:	The fine is marked as waived in the system logs.
Pass/Fail Criteria:	
	Pass: If the fine is waived and the system logs the action.
	Fail: If the fine is not waived or the system fails to log the change.
Comments:	Ensure the correct fine is selected for waiving before testing.

Test Case ID:	EQP-INVENTORY-001
Description:	Verify that administrator can add new equipment to the inventory system.
Preconditions:	
	1. Administrator needs to add new equipment to the system.
Test Steps:	
	1. Log into the inventory management system as a staff member.
	2. Enter the details for the new equipment.
	3. Verify that the system shows the newly added equipment in the inventory.
Test Data:	
	1. Equipment ID: "EQP-003"
	2. Equipment Name: "Tri-Pod"
	3. Quantity: 5
Expected Result:	
	1. New equipment is successfully added and is visible in the inventory.
Postconditions:	The inventory is updated with the new equipment.
Pass/Fail Criteria:	
	Pass: If the equipment is added and appears in the inventory.
	Fail: If the equipment is not added or does not appear in the inventory.
Comments:	Ensure correct equipment details are entered.

Test Case ID:	EQP-INVENTORY-002
Description:	Verify that administrator can remove damaged equipment from the inventory.
Preconditions:	
	1. Damaged equipment needs to be removed from the inventory.
Test Steps:	
	1. Log into the inventory management system as a staff member.
	2. Identify and select the damaged equipment to be removed.
	3. Confirm the removal of the damaged equipment.
	4. Check if the system updates the inventory to reflect the removal.
Test Data:	
	1. Equipment ID: "EQP-001"
	2. Equipment Name: "Projector"
	3. Reason for Removal: "Damaged beyond repair"
Expected Result:	
	1. Damaged equipment is successfully removed from the inventory.
Postconditions:	The inventory is updated, and the removed equipment is no longer visible.
Pass/Fail Criteria:	
	Pass: If the damaged equipment is removed and no longer visible in the inventory.
	Fail: If the equipment remains in the inventory or removal fails.
Comments:	Ensure the correct equipment is selected for removal.

Test Case ID:	EQP-REPORT-001
Description:	Verify that administrators can generate an overdue equipment report.
Preconditions:	
	1. Administrator has access to the report generation system.
Test Steps:	
	1. Log into the system as an administrator.
	2. Choose the option to generate an overdue report.
	3. Wait for the system to retrieve overdue equipment data.
	4. Review the generated report for accuracy.
Test Data:	
	1. Report Criteria: Overdue equipment
	2. Date Range: "2024-10-01 to 2024-10-19"
Expected Result:	
	1. Report is generated and reflects the overdue equipment.
Postconditions:	The report is available for review.
Pass/Fail Criteria:	
	Pass: If the overdue equipment report is generated successfully.
	Fail: If the report is incorrect or fails to generate.
Comments:	Ensure overdue data is available before testing.

Test Case ID:	EQP-REPORT-002
Description:	Verify that administrators can export a damaged equipment report.
Preconditions:	
	1. Damaged equipment data is available.
Test Steps:	
	1. Log into the system as an administrator.
	2. Select the option to generate a damaged report.
	3. Wait for the system to retrieve damaged equipment data.
	4. Choose the export option for the report.
Test Data:	
	1. Report Criteria: Damaged equipment
	2. Format: CSV/ PDF
Expected Result:	
	1. The report is successfully exported for external review.
Postconditions:	The report is available for external use.
Pass/Fail Criteria:	
	Pass: If the damaged equipment report is exported successfully.
	Fail: If the export process fails or the report is incorrect.
Comments:	Ensure damaged equipment data is up to date before testing.