Software Design Coursework 1

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Introduction

This report is about a software-based Meeting Management System. This system supports employees to organize and schedule meetings with ease.

This system makes use of other external systems to operate. How the system functions is detailed in this report using diagrams. All diagrams are created by following UML syntax.

Abbreviations are used throughout the report. They are as follows:

- MMS – Meeting Management System
- RBS – Room Booking System
- MAS – Meeting Archive System
- HQS – Head Quarter Security
- SCS – Security Clearance System
- PIN – Private personnel-identification number
- NIC – Non-Private identification number
- HR – Human Resources

D1: Assumptions

- RBS can be accessed externally by MMS
- Both organizer and participants are employees of SPOOKS Inc.
- MMS authenticates employee's NIC and PIN correctly.
- MMS has access to SCS.
- The touch screen functions properly.
- MMS maintains a record of all ongoing meetings.
- MMS is connected to MAS
- MAS archives all recorded meetings.
- The organizer can request to update an employee's security clearance.
- All external systems(RBS,SCS,MAS) function properly

D2: Functional and Non-Functional Requirements

ID	Description	Priority
FR1	The meeting room does not exceed the maximum occupancy	M
FR2	Meeting should have an organizer	S
FR3	All attendees are SPOOKS INC employees	M
FR4	Organizer's security clearance is same or below the meeting's security level	M
FR5	Participant's security clearance is same or above the meeting's security level	M
FR6	MMS can authenticate an employee's NIC and PIN	M
FR7	Organizer must provide each participant with an NIC	M
FR8	MMS authenticates anyone entering or leaving a meeting room using a security airlock	M
FR9	MMS maintains a record of all ongoing meetings	S
FR10	MMS retains all meeting records for 30 days	S
FR11	After 30 days, MMS sends the meeting records to MAS	S
FR12	HR department can update an employee's security clearance at any time	S
FR13	Updates in an employee's security clearance system is supplied to MMS by the HR manager	M
FR14	All updates in security clearance are validated by the HQS	M

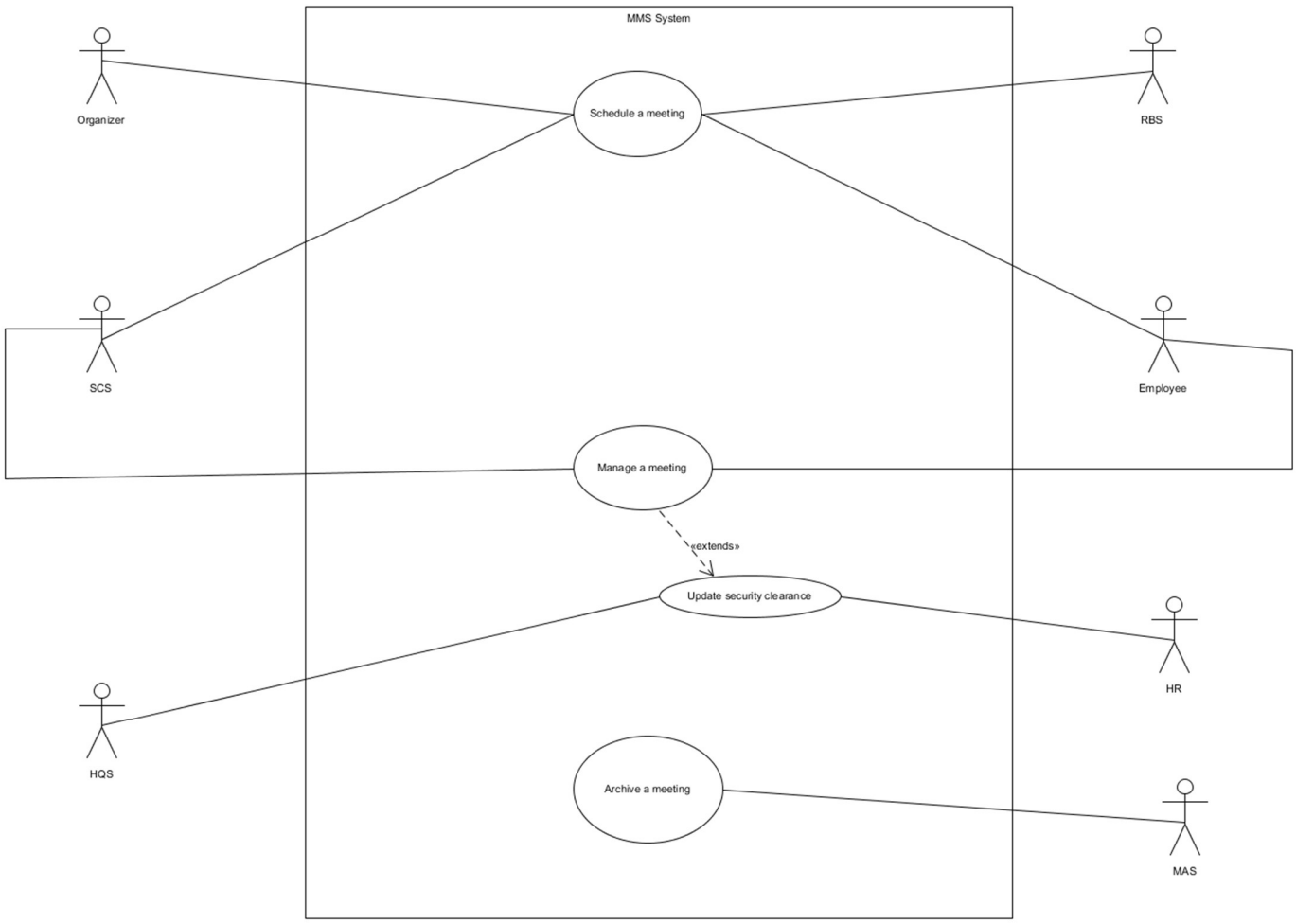
Functional requirements

ID	Description	Priority
NFR 1	RBS,SCS and MAS are accessible by MMS at any time	S
NFR 3	The touchscreen is charged and working	M

Non-Functional requirements

The prioritizing follows MoSCoW rule.

D3: Diagrammatic Use-Cases



The organizer schedules a meeting using MMS. MMS then accesses RBS, which allots a room to the organizer based on date and time. Then the organizer is authenticated for security clearance by SCS. After authentication, the organizer invites participants and supplies each participant with an NIC.

Before entering the meeting room, the participants are asked to authenticate themselves on a touch screen, which is connected to MMS and SCS. SCS then checks for each participant's security clearance based on the NIC provided. If any participant does not meet the criteria, the organizer can request the HR dept. to update the participant's security level, which is supplied to HQS by MMS for validation. The participants also have to authenticate themselves before leaving the meeting room.

MMS records all ongoing meetings. Once a meeting has ended, MMS keeps the record for 30 days. After this period, MMS sends the record to MAS to archive it, while deleting its own record.

D4: Textual Use-Cases

Case 1: Schedule Meeting

Use Case: Schedule Meeting
ID: *1*
Goal*: Schedule Meeting*
Primary actor: *Organizer*
Secondary actor(s): *MMS,RBS,SCS,Participant*
Preconditions: 1. *Organizer has access to MMS.* 2. *Organizer and participants are employees of SPOOKS INC.* 3. *Organizer's security level is the same or below the meeting's security level.* 4. *Participant's security level is the same or above the meetings' security level.* 5. *Organizer supplies each participant with a NIC*
Postconditions: 1. *A meeting is scheduled* 2. *Meeting is recorded on the MMS system*
Main flow: 1. *Organizer opens MMS* 2. *Organizer schedules a meeting* 3. *SCS checks if the organizer has security clearance to organize the meeting* 4. *RBS allots a room for the meeting based on date and time* 5. *Organizer invites participants to the meeting* 6. *Organizer supplies NIC to each participant*
Alternate flow: *3a. Organizer does not have security clearance to organize the meeting* 1. *SCS reports error.* 2. *Return to step 2 in main flow* *4a. The requested room is already booked* 1. *RBS reports error* 2. *Return to step 3 in main flow* *5a. Maximum room occupancy exceeded* 1. *RBS reports error* 2. *Return to step 5 in main flow*

Case 2: Manage Meeting

Use Case: Manage Meeting
***ID**: 2*
***Goal:** Manage Meeting*
***Primary actor**: MMS*
***Secondary actor(s):** Participant, SCS*
Preconditions: 1. *MMS has a meeting scheduled* 2. *All participants are authenticated before entering the room*
Postconditions: 1. *All participants are authenticated before leaving the room* 2. *MMS maintains a record of the meeting*
Main flow: 1. *Participants use the touch screen to authenticate themselves before entering* 2. *SCS authenticates each participant's NIC to check for security clearance* 3. *Participants enter the room* 4. *MMS records the meeting* 5. *Participants use the touch screen to authenticate themselves before leaving* 6. *Participants leave the meeting room*
Alternate flow: *2a. Error in authenticating participant when entering the room* 1. *SCS reports error* 2. *Organizer told to either remove the employee or request HR to promote his/her security clearance* ***Extension point : UpdateSecurity*** 3. *Return to step 1 in main flow* *5a. Error in authenticating participant when leaving the room* 4. *MMS reports the error* 5. *Return to step 4 in main flow*

Case 3: Archive Meeting

Use Case: Archive Meeting
ID: *3*
Goal: *Archive Meeting*
Primary actor: *MMS*
Secondary actor(s): *MAS*
Preconditions: 1. *MMS maintains record of the meeting for 30 days*
Postconditions: 1. *After 30 days, MMS sends the record to MAS* 2. *MMS deletes its own record*
Main flow: 1. *MMS stores the record* 2. *30 days later, record is sent to MAS* 3. *MMS deletes record*
Alternate flow: ***None***

Case 4: Employee security clearance is to be updated

Extension Use Case: Update Employee Security Clearance
ID: *4*
Goal: *Employee's security clearance is to be updated to enter a meeting*
Primary actor: *MMS*
Secondary actor(s): *Employee, HR, HQS*
Segment Preconditions: 1. *Employee does not have security clearance to attend meeting*
Segment Postconditions: 1. *Employee's security clearance has been updated* 2. *Employee attends the meeting*
Segment flow: ***UpdateSecurity*** 1. *Organizer requests HR department to update an employee's security clearance* 2. *HR department updates the employee's security clearance* 3. *Senior HR manager supplies MMS with updates on an employee's security clearance* 4. *MMS checks for violations in the update* 5. *MMS updates its system*
Alternate Segment flow: *4a. Update violates the security policy* 1. *MMS alerts HQS of the violation* 2. *Return to step 2 in main flow*

D5: Traceability Matrix

UC/FR	FR1	FR2	FR3	FR4	FR5	FR6	FR7	FR8	FR9	FR10	FR11	FR12	FR13	FR14
UC1	×	×	×	×	×	×	×							
UC2						×		×						
UC3									×	×	×			
UC4												×	×	×