Use Case 1: Detect Fire
Scope: Fire Alarm System
Primary Actor: Fire Sensor (Smoke, Heat, CO)
Intention: Detect a fire and trigger the alarm system.
Level: User Goal
Multiplicity: Any number of sensors can detect fire simultaneously.
Main Success Scenario:
1. Fire Sensor detects signs of fire (smoke, heat, CO).
2. Fire Sensor sends a detection signal to the System.
3. System validates the signal and triggers the "Sound Alarm and Notify" use case.

Use Case 2: Sound Alarm and Notify
Scope: Fire Alarm System
Primary Actor: Fire Alarm System
Secondary Actor: User, Fire Department, Emergency Contact
Intention: Sound the alarm and notify the user and local fire department.
Level: Summary
Multiplicity: Only one instance of the alarm system should sound at a time.
Main Success Scenario:
1. System sounds the local alarm.
2. System sends notification to the User through an app.
3. System attempts to contact the local Fire Department.
4. System validates receipt from Fire Department.
5. If Fire Department is not reachable, System notifies the User.
6. If User does not acknowledge the alarm, System alerts the Emergency Contact.
Extensions:
3a. Fire Department is unreachable: System executes Step 5 and 6.

Use Case 3: Initial Response
Scope: Fire Alarm System
Primary Actor: Fire Alarm System
Intention: Minimize fire damage and protect lives.
Level: User Goal
Multiplicity: One instance per detection.

Main Success Scenario:
1. System triggers the connected Sprinkler System.
2. System communicates to lower the temperature threshold.

Use Case 4: Notify Sprinkler System
Scope: Fire Alarm System
Primary Actor: Fire Alarm System
Secondary Actor: Sprinkler System
Intention: Notify the sprinkler system to trigger at a lowered temperature threshold.
Level: Subfunction
Main Success Scenario:
1. System sends a signal to the Sprinkler System.
2. Sprinkler System lowers the threshold temperature.
Extensions:
1a. Sprinkler System fails to respond: System retries the signal.

Use Case 5: Sensor Health Check
Scope: Fire Alarm System
Primary Actor: Fire Sensors
Intention: Ensure all sensors are functional and have adequate battery.
Level: Summary
Multiplicity: Multiple sensors.
Main Success Scenario:
1. System periodically checks each sensor for functionality and battery status.
2. If System detects a low battery or sensor failure, execute "Notify Sensor Issue" use case.

Use Case 6: Notify Sensor Issue
Scope: Fire Alarm System
Primary Actor: Fire Alarm System
Secondary Actor: User
Intention: Notify the user about fire sensor issues.
Level: Subfunction
Main Success Scenario:
1. System sends notification to the User about the issue.

2. System logs the issue for maintenance records.

Use Case 7: Configure Alarm Settings
Scope: Fire Alarm System
Primary Actor: User
Intention: Allow User to configure alarm and notification settings.
Level: User Goal
Multiplicity: One configuration per setup session.
Main Success Scenario:
1. User accesses the alarm settings through the app.
2. User modifies settings (e.g., notification preferences, contact info).
3. System validates and saves the new settings.

Use Case 8: Manually Turn Off Alarm
Scope: Fire Alarm System
Primary Actor: User
Intention: Allow User to manually turn off the alarm if the alarm was falsely triggered.
Level: User Goal
Multiplicity: One control per alarm instance.
Main Success Scenario:
1. User receives fire notification and identifies false alarm.
2. User manually sends a request to turn off the alarm through the app.
3. System validates User's authorization.
4. System turns off the alarm.