CSE 471 - Lab 03

Use Case Diagram

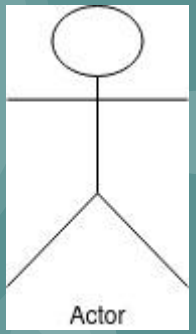
Use Case

- Describes user requirements
- Better understanding of users' interaction with the system
- Useful in cases where user interactions are key
- Actor, Function, Goal/Value
- Set of use cases and actors combined into Use Case Diagram
- Functional view of the system from user perspective

Use Case Diagram : Actors

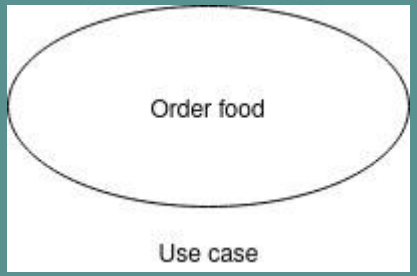
- Act on the system
- Execute system functionalities
- Provide information to system
- Receive information as output from system

- Types :
  - Primary : Initiate the use cases to achieve goal
  - Secondary : Support the system in achieving *Primary Actors'* goal
  - External Hardware : E.g. timer, remote data-centers
  - Another System



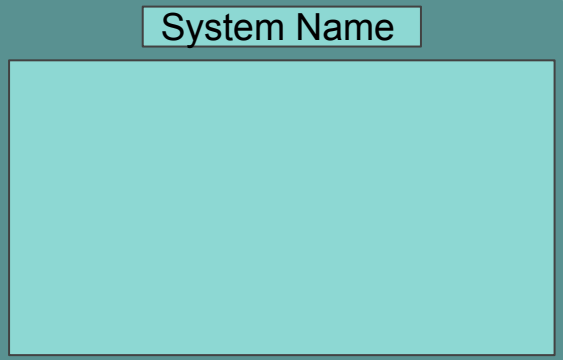
Use Case Diagram : Use Cases

- System functionalities that actors execute to achieve goal
- Part of the system



Use Case Diagram : System Boundary

- Defines scope of the system
- Separates internal components from external

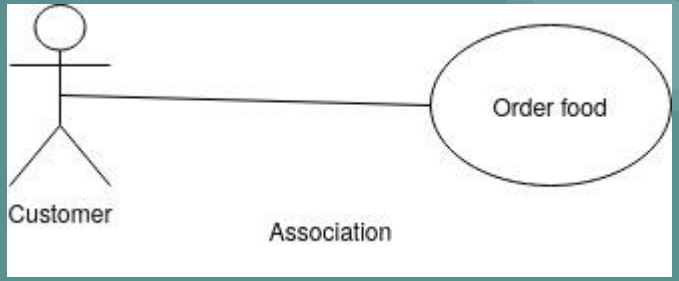


Use Case Diagram : Relations

- Represent interactions among components
- Types:
  - Association : Actor <-> Use case.
  - Generalization : Parent-Child relation. Actor <-> Actor or Use case <-> Use case
  - Dependency : Use case <-> Use case.

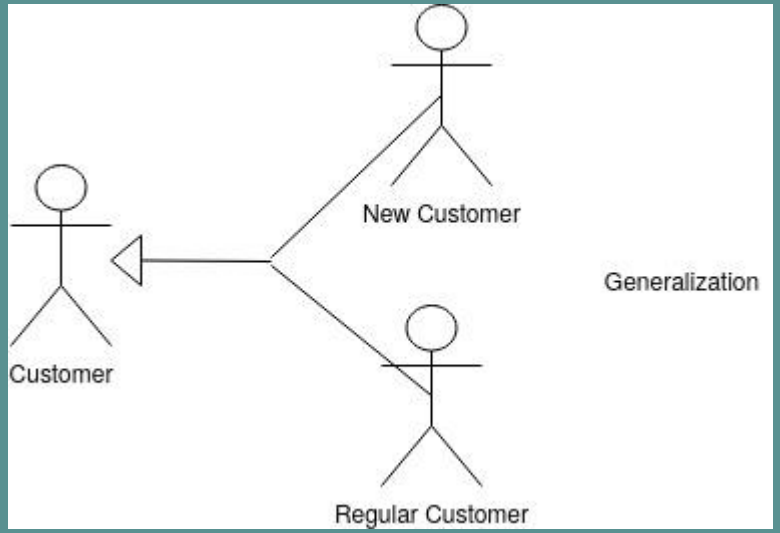
Use Case Diagram : Relations

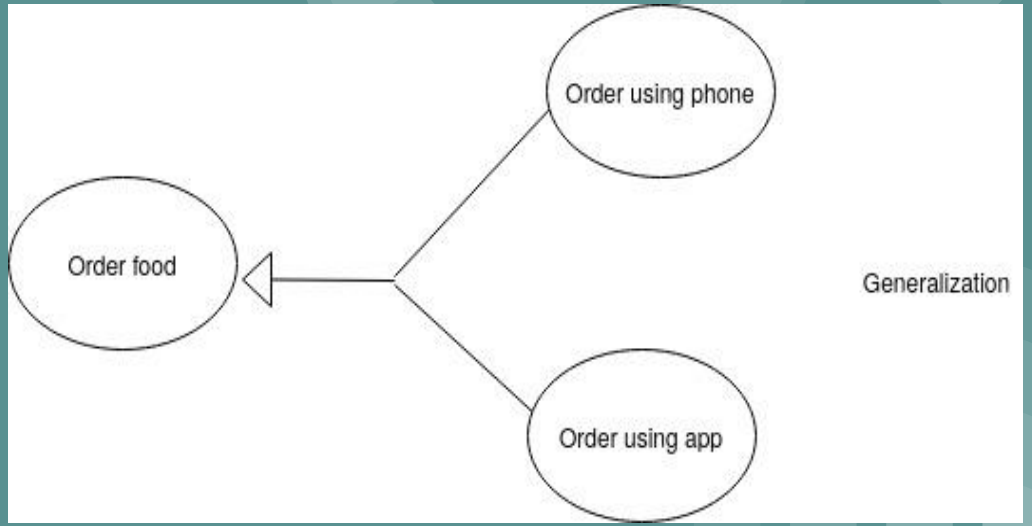
Association



Use Case Diagram : Relations

Generalization





Use Case Diagram : Relations

Dependency

Include :

- Base use case includes functionality of another mandatory use case
- Extract common functionalities and share among use cases

Extend :

- Optional use case extends base use case

Microwave Example : 1

User can heat up food

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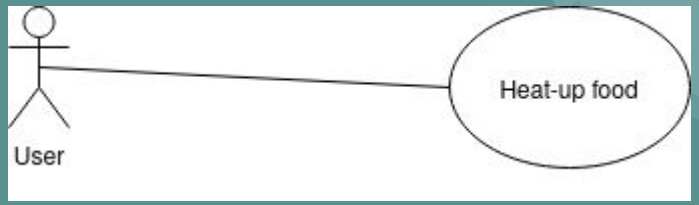

Microwave Example : 2

User can cook food as well, common use case is starting the timer

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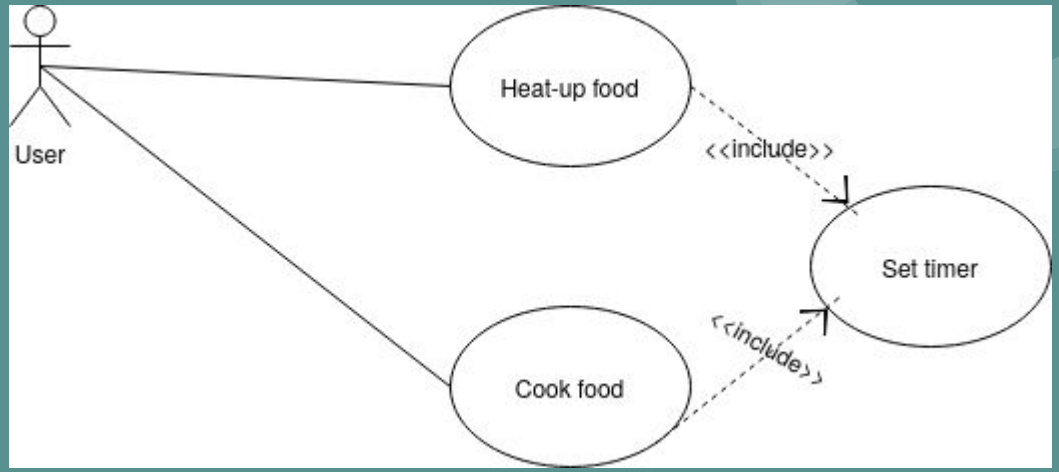
User can cook food as well, common use case is starting the timer



Microwave Example : 3

User can choose to slice/decorate food

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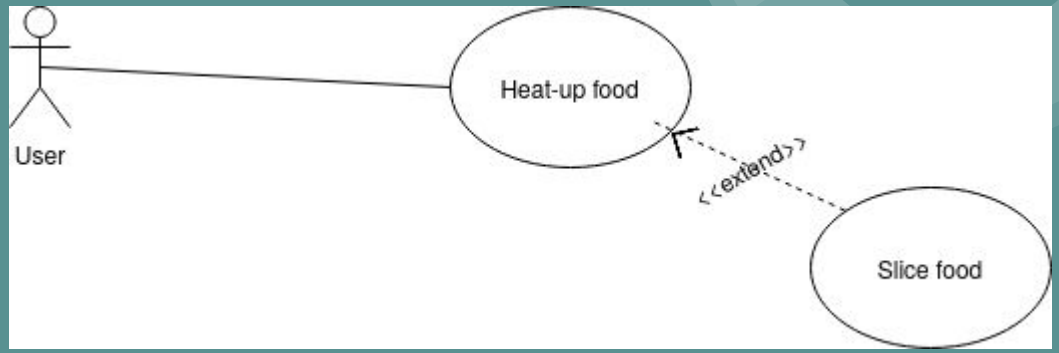

Scenario : Refugee Management

Hope Refugee Agency, is known for its work on the well-being of climate refugees. They have a head office in Dhaka where the management decides plan of action at the beginning of each quarter, based on which field officers carry out programmes. Field officers from different departments are responsible for their respective programs. Health officers focus on nutritional assessment of children and their development. If any child is malnourished, they are included in special treatment programs where children are monitored to assess the effectiveness of the program. On the other hand, education officers devise learning modules, assess students' progress. If any student needs extra care, they are also assigned to special needs programs based on the type of help they require. Both health and education officers are required to fill-in respective reports. Whenever a report is filed, it is automatically uploaded to the central database. Field officers can also make recommendations based on their observations to management. Management generates quarterly reports.

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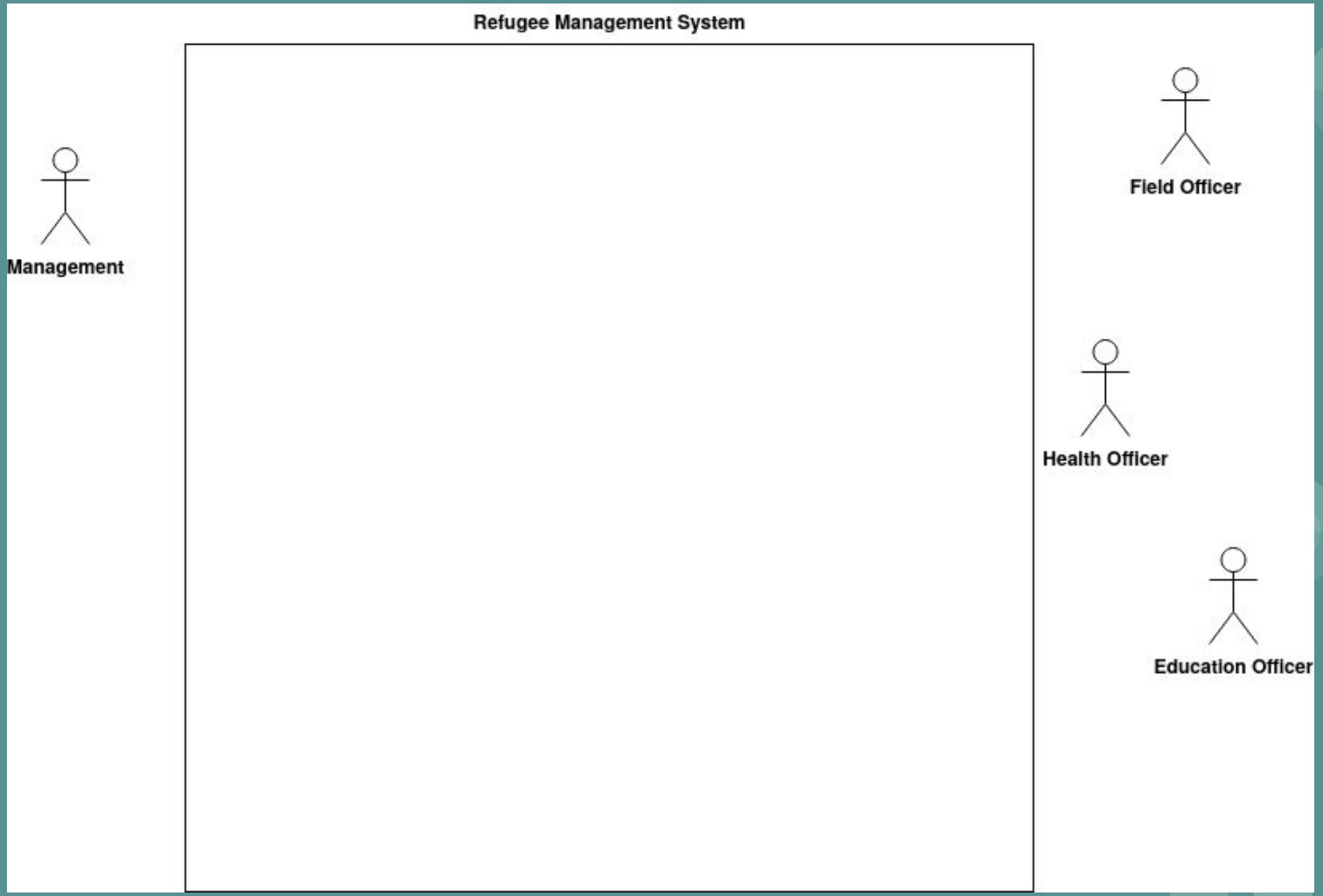
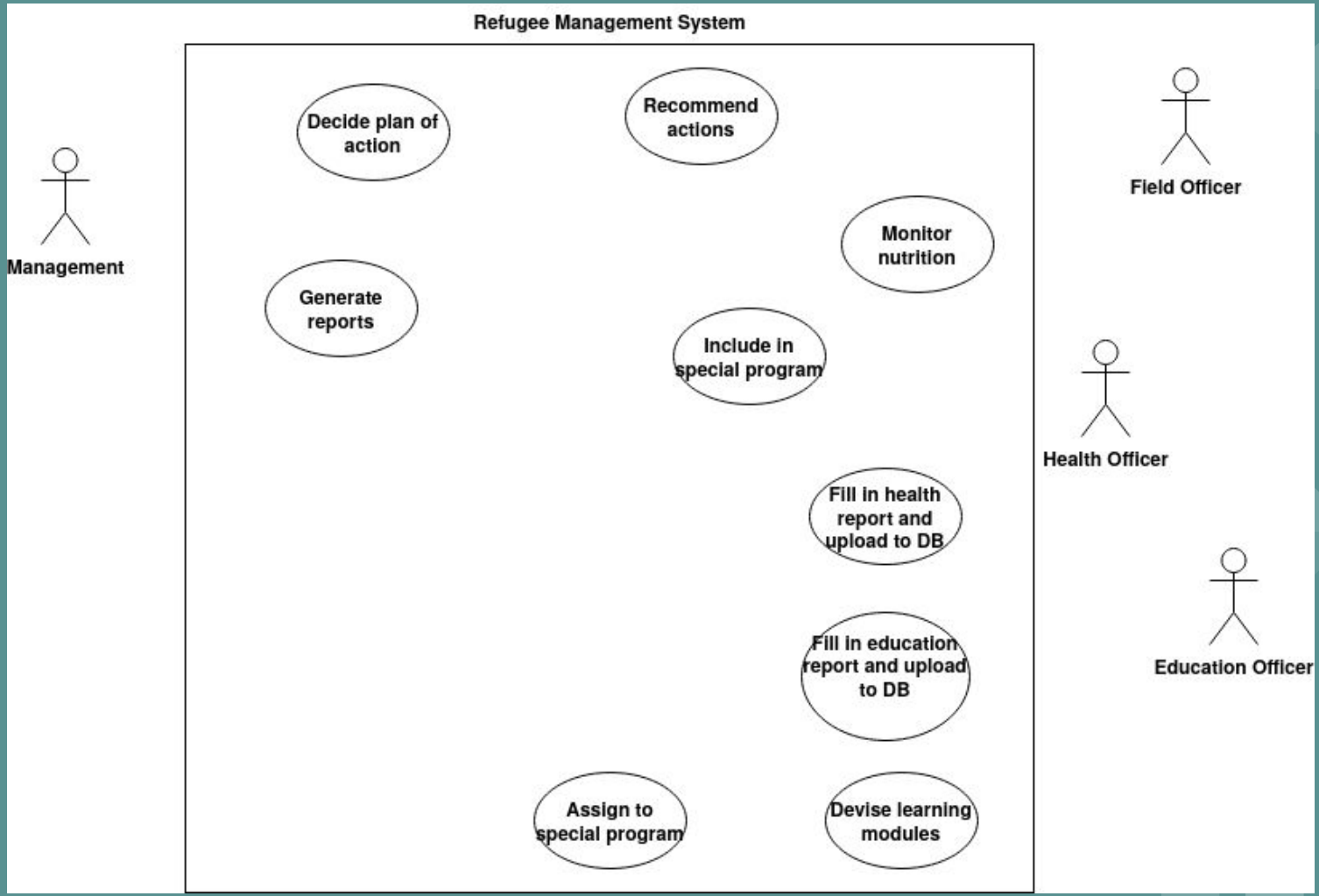
Steps of Creating a Use Case Diagram

- Identify actors
- Identify use cases
- Draw the system boundary
- Place the actors and use cases on the diagram
- Extract common (include) and additional (extend) functionalities for use cases
- Use generalizations where applicable
- Add association relationships


Refugee Management System
Management
Field Officer
Health Officer
Education Officer


Refugee Management System
Decide plan of action
Recommend actions
Monitor nutrition
Generate reports
Include in special program
Fill in health report and upload to DB
Fill in education report and upload to DB
Assign to special program
Devise learning modules
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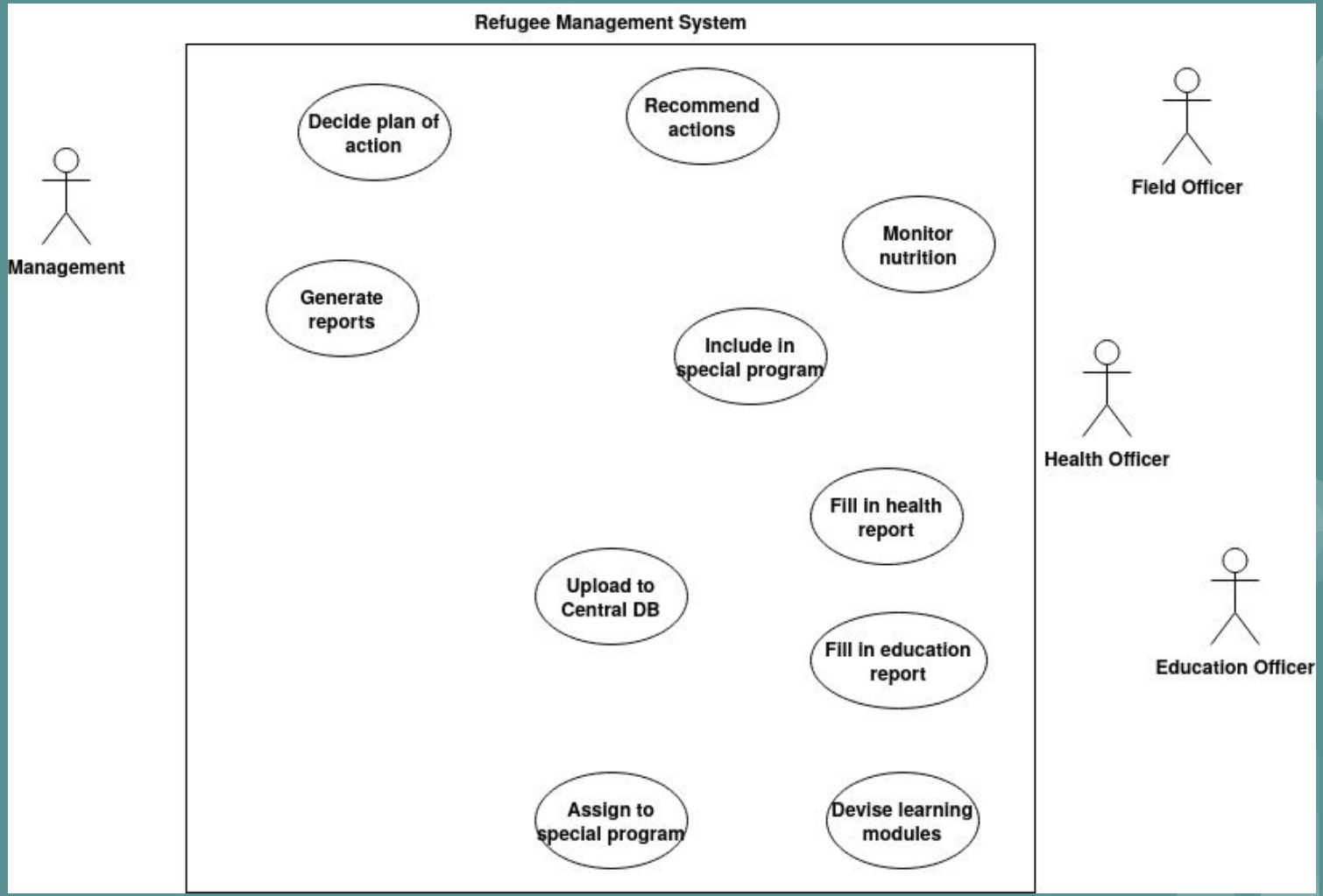
Field Officer
Health Officer
Education Officer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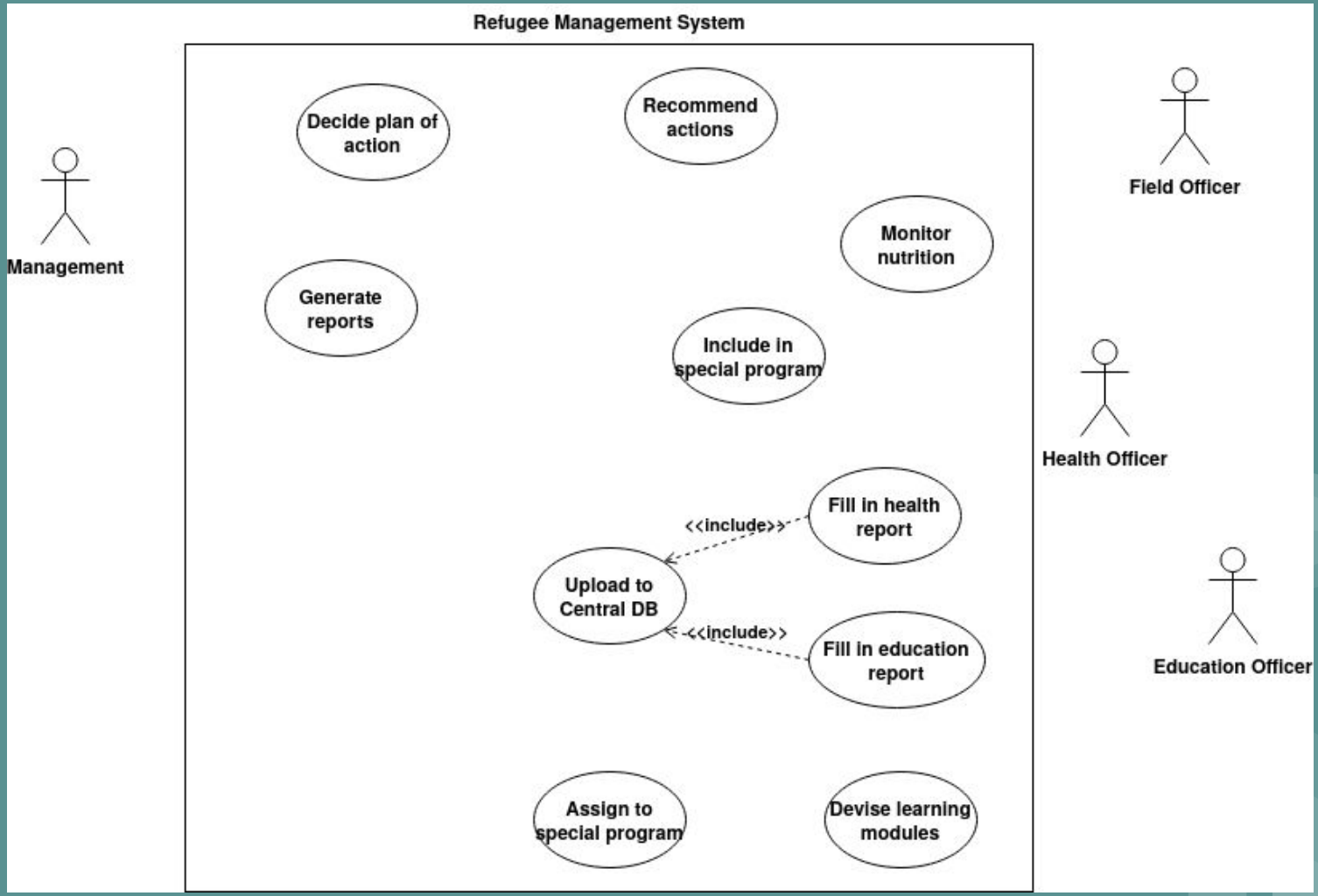
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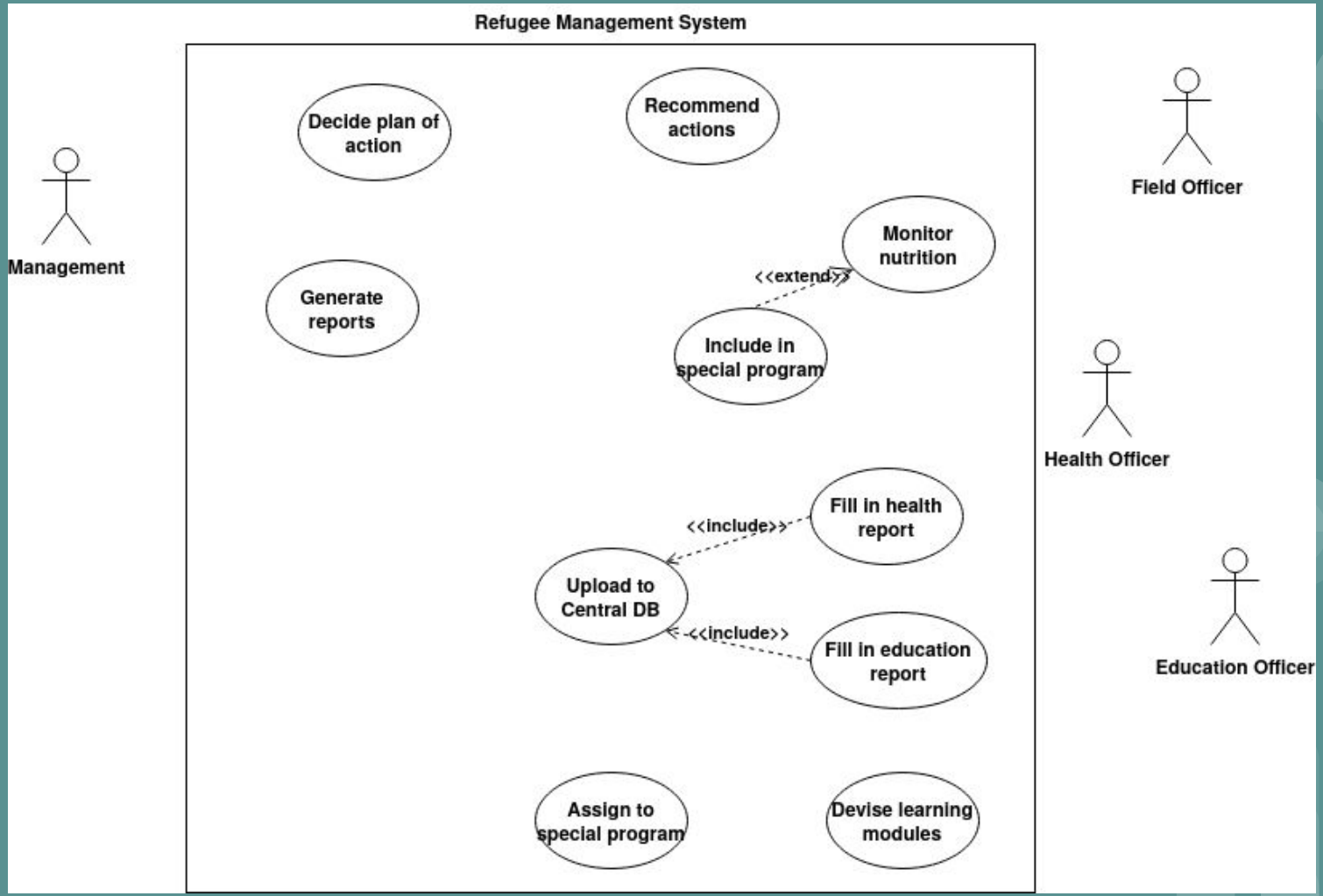
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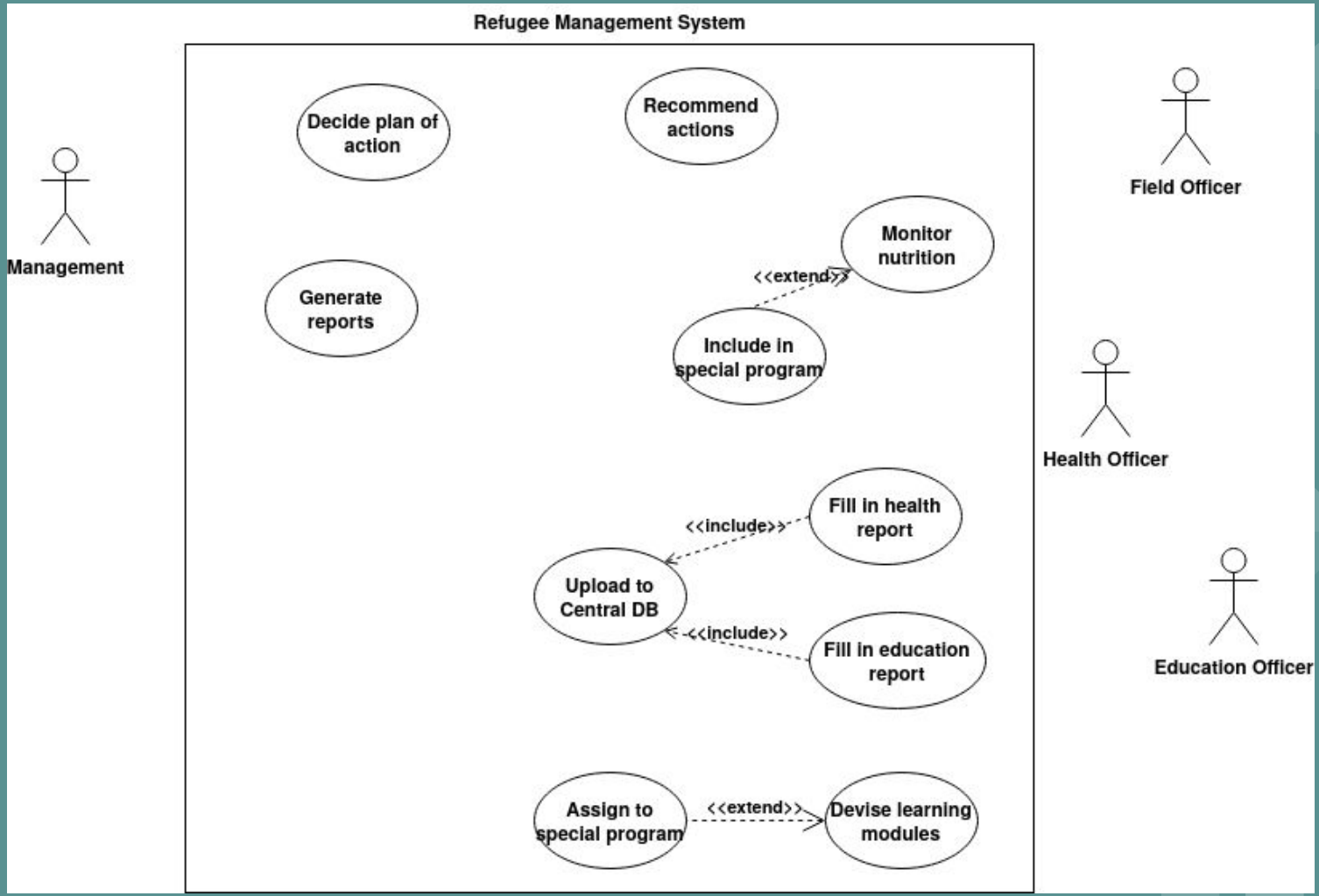
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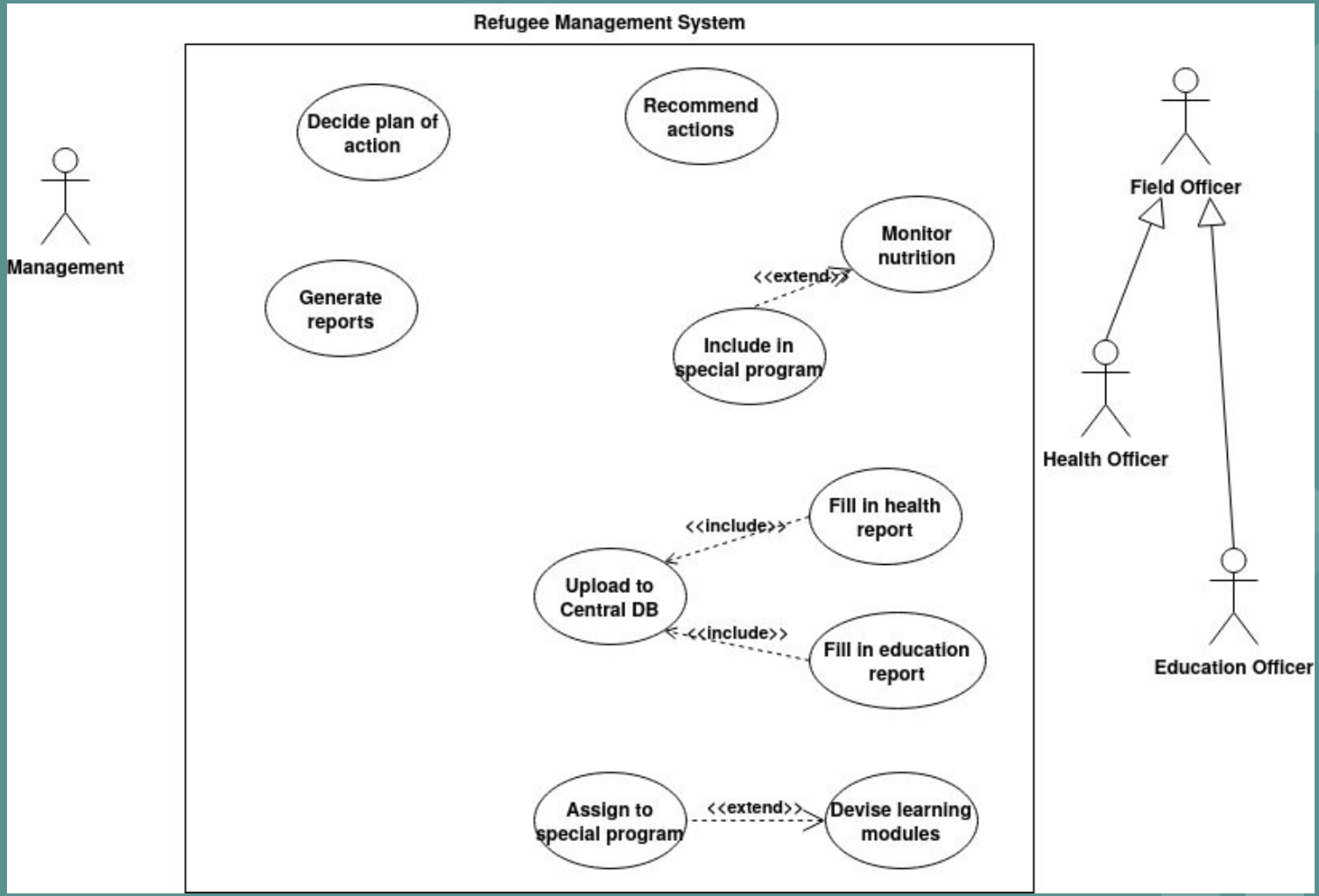
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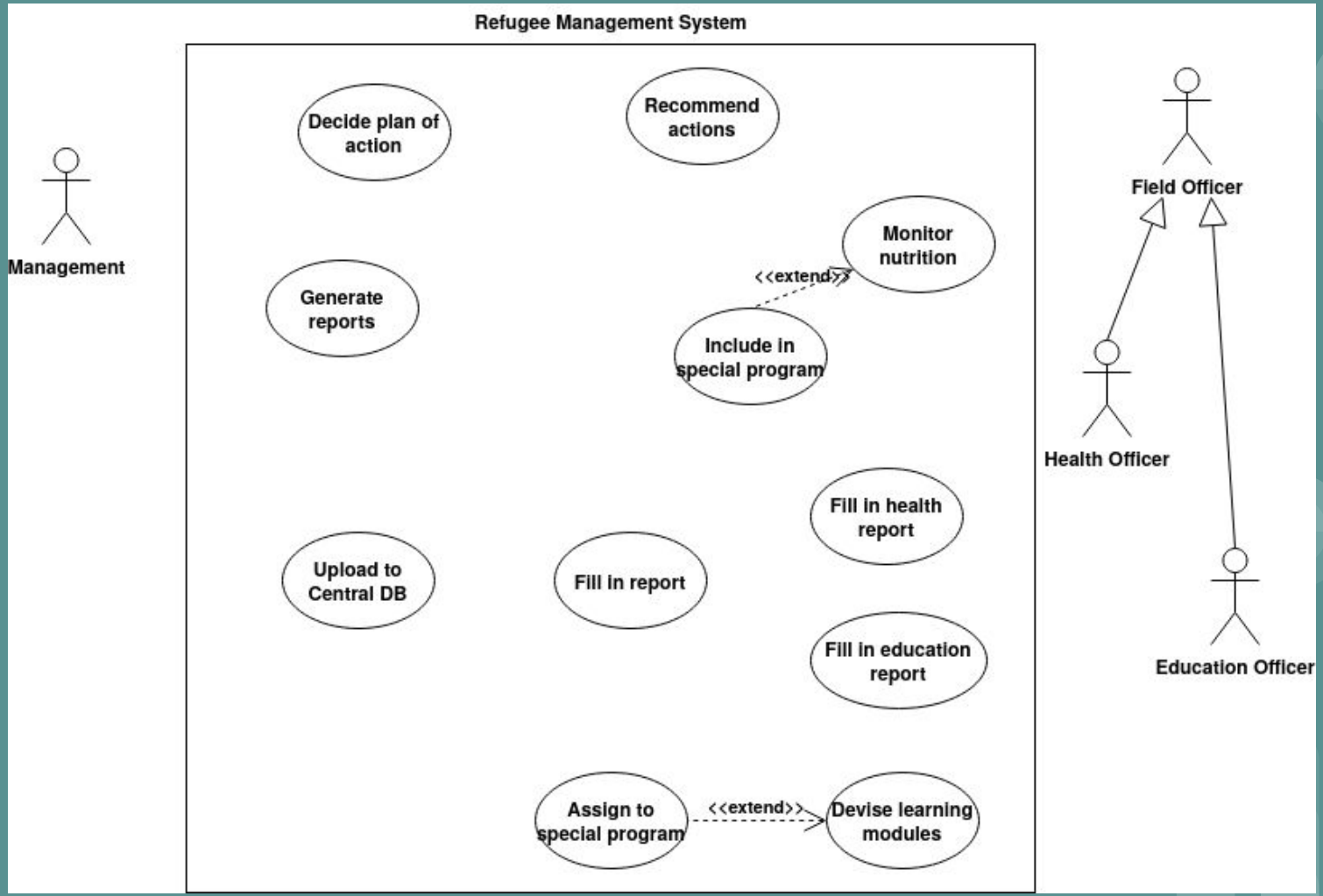
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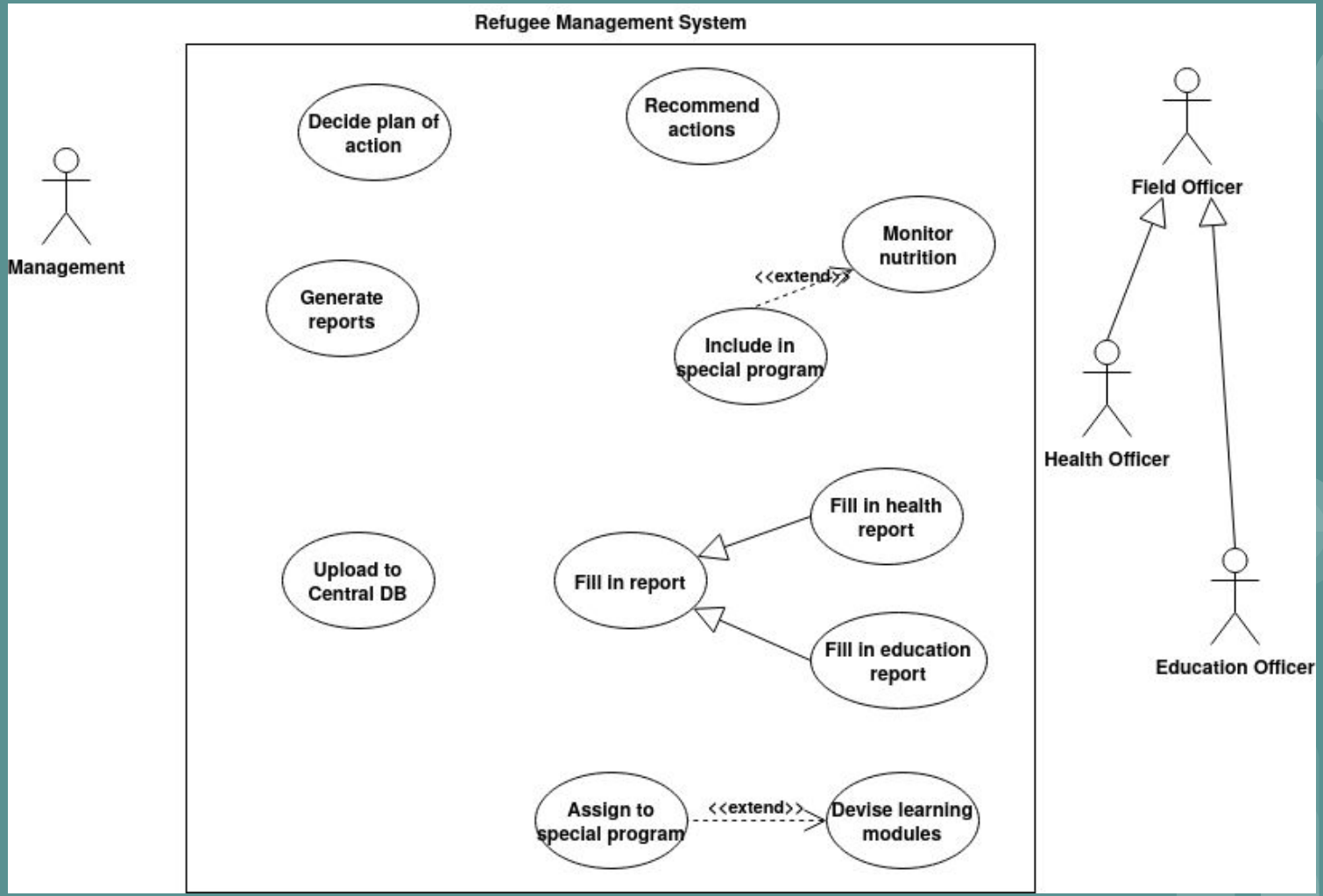
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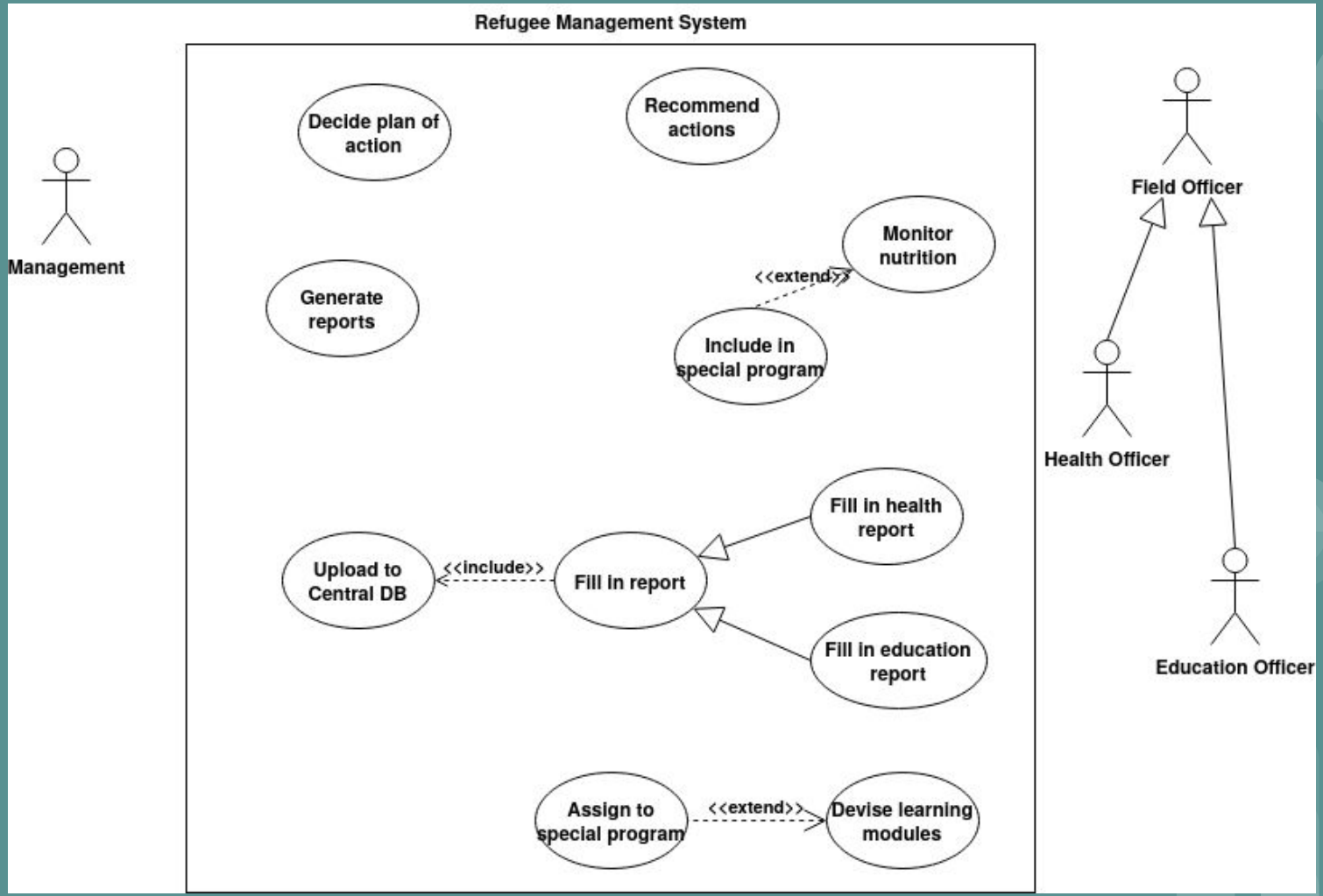
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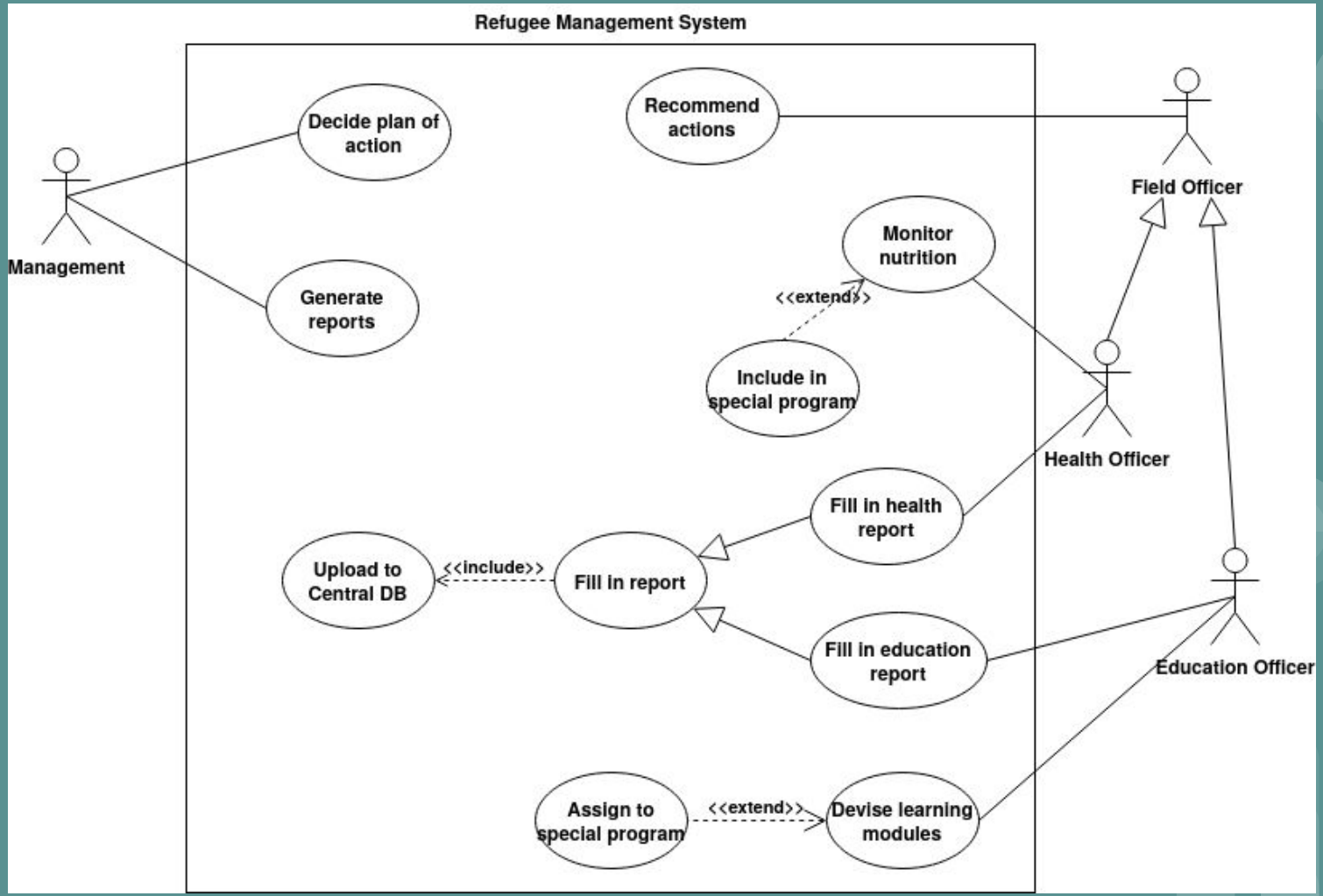
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Use Case Description

- Use case name
- ID
- Priority
- Actor
- Description
- Trigger : External, Temporal
- Preconditions
- Normal flow of steps
- Postconditions
- Exceptions