Deliverable #2

Management Of Cars Manufacturing Resources

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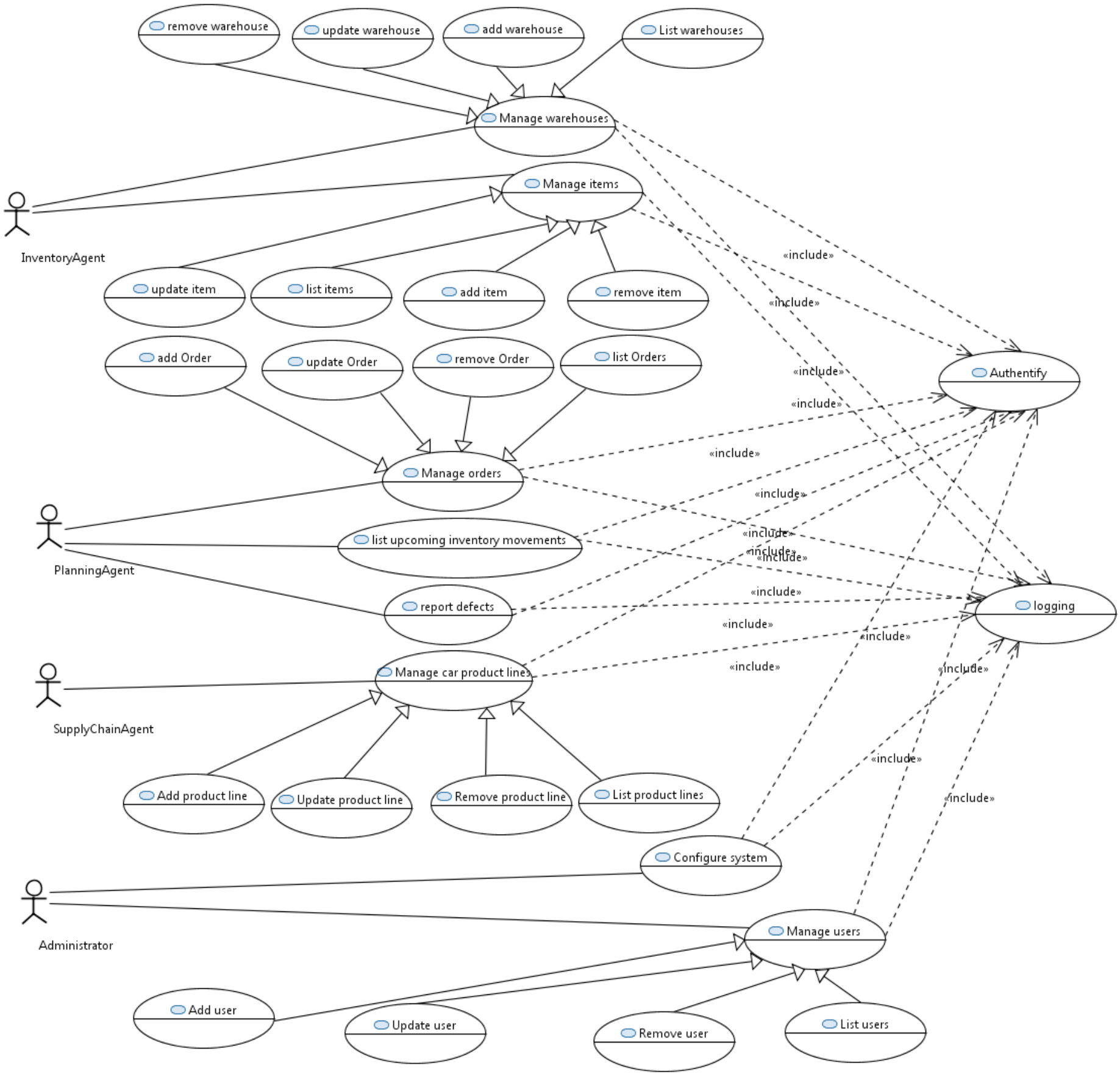
1- TEXTUAL DESCRIPTION

Two of the main departments of a car manufacturing company are Supply Chain management department and the Inventory management department. The Inventory is the set of warehouses, where the company stores the parts that compose the produced cars, as well as the previously produced batches of cars. The stored parts are called items. Each item belongs to a category, has its own reference and the name of the provider from whom it was purchased. An item category is a part of vehicle. It can be a door, wheel, side mirror, etc. Each category has a name, description, and dimensions (length, width and height). At any time, an item can be stored in any one of the warehouses owned by the company. Inventory agents (people working in the inventory management department), are responsible of keeping track of inventory movements (in/out), the warehouses' current respective states, and items' locations. A warehouse is characterized by the set of item categories that can be stored in it, and the capacity that it can hold of this category. The management of warehouses falls into the responsibilities of the inventory agent as well.

The production of the cars takes place in a supply chain. Each produced car has a reference number, and belongs to a batch (group of cars with which it was produced), a car product line (brand or model), and a color. After its production, if the car is not to be delivered immediately, it is passed to an inventory agent to manage its storage. In a batch, we can only produce cars of the same product line. These batches have a date of production, quantity, and the car product line that they produce. A product line, on the other hand, is characterized by the categories of items involved in its production with their respective quantities as well as a blueprint file detailing how the cars of this product line should be assembled. A supply chain agent (a person working in the supply chain department) is responsible of managing the product lines that the supply chain produce.

The link between the supply chain and inventory is established through the planning agents. Planning agents coordinate with other departments in order to schedule future production batches as well as provision of the necessary parts accordingly. They are also responsible of keeping track of future inventory movements (planned in/out). After a batch is produced, if other departments find that all the cars in a batch (or just some cars of this batch) do not conform to production standards such as the requirements for custom batches, health and safety or market standards, they update the planning agent who then submits a defect report. A defect report has a reference number, a date of submission, a description of the defect and the concerned cars or batch. After filing a defect report, it is up to the planning agent to reschedule a new batch to be produced or to cancel this batch.

2- Use Case Diagram



3- Detailed use case description

3-1- Report Defects

Use Case Title	Report Defects
Brief Description	User reports the defects of a specific product line batch.
Preconditions	n/a
Triggering event	User reports defects.
Main Flow	1. User selects to report a defect. 2. The system requests information regarding the defect such as affected product line, affected batch, affected parts, etc. 3. User confirms the input information. 4. System requests user credentials for authentication. 5. If the user is authorized, information of the defect is processed and the inventory database is updated. 6. System logs operation. 7. System shows successful operation message.
Alternate Flow	1. User selects to report a defect. 2. The system requests information regarding the defect such as affected product line, affected batch, affected parts, etc. User confirms the input information. 3. User confirms the input information. 4. System requests user credentials for authentication. 5. If user is not authorized, information of the defect is not processed. 6. System logs operation. 7. System shows unsuccessful operation message. 8. Go to Step 4.
Postconditions	n/a

3-2- Manage Orders

Use Case Title	Manage Orders
Brief Description	Adding, viewing, querying, updating, or removing orders
Preconditions	n/a
Triggering event	User wants to perform an order management operation
Main Flow	1. The user chooses an operation. 2. If the operation requires input, the system asks the user of input. 3. When the user submits the request with the input, the system asks for credentials. 4. If the user is authorized, and the input is valid the request is processed. 5. The system updates the database. 6. The system confirms success of operation and logs the operation.
Alternate Flow1	1. The user chooses an operation. 2. If the operation requires input, the system asks the user of input. 3. When the user submits the request with the input, the system asks for credentials. 4. If the user is not authorized the system notifies the user of failure of operation. 5. The system logs the operation and goes to 4.
Alternate Flow2	1. The user chooses an operation. 2. If the operation requires input, the system asks the user of input. 3. When the user submits the request with the input, the system asks for credentials. 4. If the user is authorized, and the input is not valid the request is not processed. 5. The system logs the operation and goes to 4.
Postconditions	n/a

3-3- Manage Items

Use Case Title	Manage items
Brief Description	Adding, viewing, querying, updating, or removing items
Preconditions	n/a
Triggering event	User wants to perform an item management operation
Main Flow	1. The user chooses an operation. 2. If the operation requires input, the system asks the user of input. 3. When the user submits the request with the input, the system asks for credentials. 4. If the user is authorized, and the input is valid the request is processed 5. The system updates the database. 6. The system confirms success of operation and logs the operation.
Alternate Flow1	1. The user chooses an operation. 2. If the operation requires input, the system asks the user of input.

	3. When the user submits the request with the input, the system asks for credentials. 4. If the user is not authorized the system notifies the user of failure of operation. 5. The system logs the operation and goes to 4.
Alternate Flow2	1. The user chooses an operation. 2. If the operation requires input, the system asks the user of input. 3. When the user submits the request with the input, the system asks for credentials. 4. If the user is authorized, and the input is not valid the request is not processed. 5. The system logs the operation and goes to 4.
Postconditions	n/a

3-4- Manage Warehouses

Use Case Title	Manage warehouses
Brief Description	adding, viewing, querying, updating, or removing warehouses
Preconditions	n/a
Triggering event	User wants to perform an warehouses management operation
Main Flow	1. The user chooses an operation. 2. If the operation requires input, the system asks the user of input. 3. When the user submits the request with the input, the system asks for credentials. 4. If the user is authorized, and the input is valid the request is processed. 5. The system updates the database. 6. The system confirms success of operation and logs the operation.
Alternate Flow1	1. The user chooses an operation. 2. If the operation requires input, the system asks the user of input. 3. When the user submits the request with the input, the system asks for credentials. 4. If the user is not authorized the system notifies the user of failure of operation. 5. The system logs the operation and goes to 4.
Alternate Flow2	1. The user chooses an operation. 2. If the operation requires input, the system asks the user of input. 3. When the user submits the request with the input, the system asks for credentials. 4. If the user is authorized, and the input is not valid the request is not processed. 5. The system logs the operation and goes to 4.
Postconditions	n/a

3-5- Manage Car Product Lines

Use Case Title	Manage car product lines
Brief Description	adding, viewing, querying, updating, or removing product lines
Preconditions	n/a
Triggering event	User wants to perform a product line management operation
Main Flow	1. The user chooses an operation. 2. If the operation requires input, the system asks the user of input. 3. When the user submits the request with the input, the system asks for credentials. 4. If the user is authorized, and the input is valid the request is processed. 5. The system updates the database. 6. The system confirms success of operation and logs the operation.
Alternate Flow1	1. The user chooses an operation. 2. If the operation requires input, the system asks the user of input. 3. When the user submits the request with the input, the system asks for credentials. 4. If the user is not authorized the system notifies the user of failure of operation. 5. The system logs the operation and goes to 4.
Alternate Flow2	1. The user chooses an operation. 2. If the operation requires input, the system asks the user of input. 3. When the user submits the request with the input, the system asks for credentials. 4. If the user is authorized, and the input is not valid the request is not processed. 5. The system logs the operation and goes to 4.
Postconditions	n/a

3-6- List Upcoming Inventory Movements

Use Case Title	List upcoming inventory movements
Brief Description	shows the user future in-operations and out-operations from/to the inventory
Preconditions	n/a
Triggering event	User requests to see future inventory movements
Main Flow	1. User selects to see future inventory movements. 2. The system asks for any query options preferences (fork dates, specific products or items, specific locations). 3. User confirms the query preferences if any. 4. System requests user credentials for authentication. 5. If the user is authorized, the selected inventory movements are displayed. 6. System logs operation.
Alternate Flow	1. User selects to see future inventory movements. 2. The system asks for any query options preferences (fork dates, specific products or items, specific locations). 3. User confirms the query preferences if any. 4. System requests user credentials for authentication. 5. If user is not authorized, system notifies the user of unsuccessful operation. 6. System logs operation and goes to step 4.
Postconditions	n/a

4- Non-Functional Requirements

- Usability: The software should be easy to use by the domain people and not require long training time.
- Security: The software ensures its own AAA (Authentication, Authorization, and Accountability).
- Scalability: The software should be able to scale up.
- Configurability: The software should not be bounded to one deployment configuration.
- Interoperability: The software should enable the integration and interoperation with other systems.