

Multi-Agents and Agent Systems

Flying Saucers Bakery

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Overview

1 Baking stage

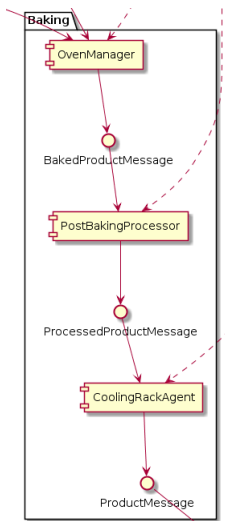
2 Packaging stage

3 Common agents

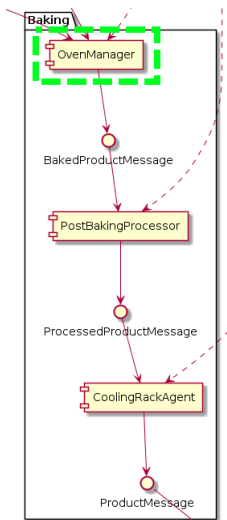
Baking Stage

Agents

- OvenManager
- PostBakingProcessor
- CoolingRackAgent

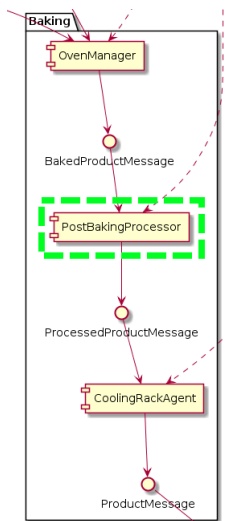


OvenManager



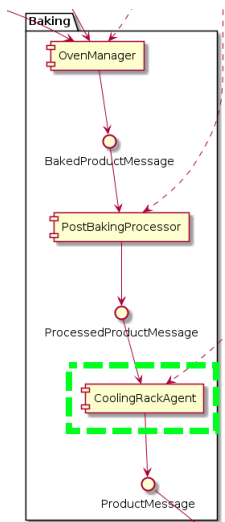
- Single Agent to manage all the ovens in the bakery.
- Receives **UnbakedProductMessage** from Proofer(Dough Preparation Stage).
- Sends **BakedProductMessage** to **PostBakingProcessor**(Baking Stage).

PostBakingProcessor



- Performs all the steps in the recipe of a product which occur between Baking and Cooling.
- Receives BakedProductMessage from OvenManager(Baking Stage).
- Sends the ProcessedProductMessage to CoolingRackAgent(Baking Stage).

CoolingRackAgent

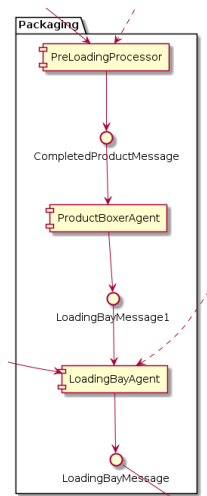


- Performs cooling steps of the recipe corresponding to different products.
- Receives `ProcessedProductMessage` from `PostBakingProcessor(Baking Stage)`.
- Sends `ProductMessage` to `PreLoadingProcessor(Packaging Stage)`.

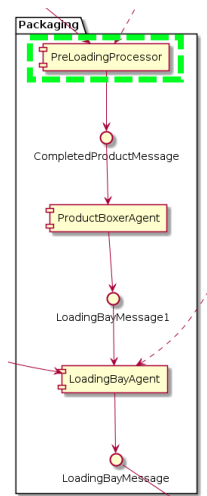
Packaging Stage

Agents

- PreLoadingProcessor
- ProductBoxerAgent
- LoadingBayAgent

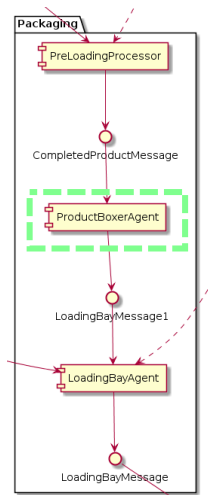


PreLoadingProcessor



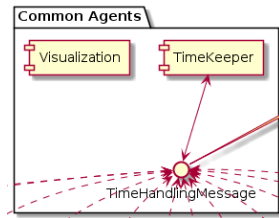
- Performs all steps in recipe of a product which lie between Cooling and Packaging.
- Recieves ProductMessage from CoolingRackAgent(Baking Stage).
- Sends CompletedProductMessage to ProductBoxerAgent(Packaging Stage).

ProductBoxerAgent



- Packs the products into boxes and dispatches them.
- Receives **CompletedProductMessage** from the **PreLoadingProcessor**(Packaging Stage).
- Sends **LoadingBayMessage** to the **LoadingBay agent**(Delivery Stage).

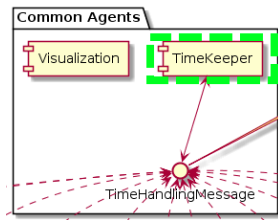
Common agents



Agents

- TimeKeeper
- BaseAgent
- VisualisationAgent (Order board)

TimeKeeper

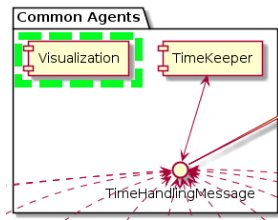


- It is responsible for the movement of time in the entire bakery eco-system.
- Receives finished from the based agents of all the agents.
- Sends TimeStep to all the base agents of all the agents.

BaseAgent

- BaseAgent is a parent to all agents in bakery simulation.
- Receives TimeStep from the TimeKeeper agent.
- Sends finished to the TimeKeeper agent. Sends all the messages to the visualization agents.

Order Board Visualisation Agent



- Creates an instance of JavaFX application instance Visualizer during initialization and forwards all interface agent messages to the Visualizer instance.
- Receives the output messages of all the interface agents(via their Base Agents).
- Does not sent any messages.

Order Board Visualisation Agent

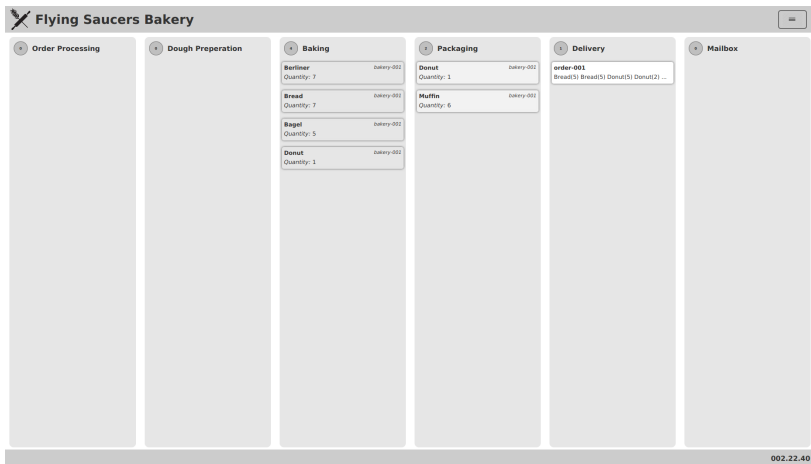


Figure: Board visualization in progress

Order Board Visualisation Agent

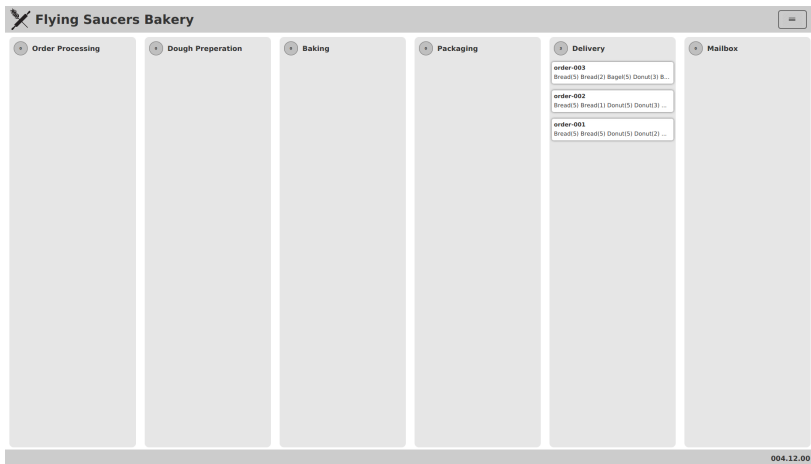


Figure: Board visualization complete

Order Board Visualisation Agent

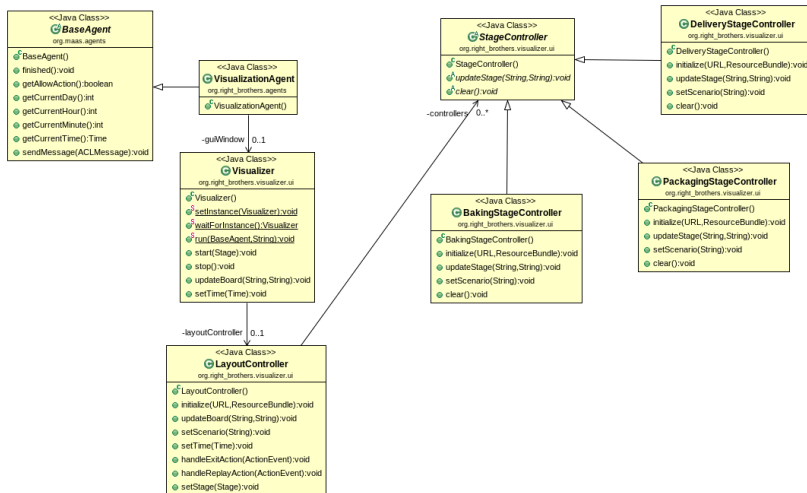


Figure: Class diagram of the major classes of the visualizer

Thank you
Demo