Project – Part 3 (Group Project, 5 Marks)

Group #5:

Student ID	Name	Surname
202219102	Xiaoyuanying	Kuang
202219015	Jun	Qi
202219044	Yueheng	Wang
202219072	Fanghua	Dai
202219077	Jiayi	Li

Case Study

 # High-tech Restaurant.

The restaurant maintains an electronic catalogue for the list of food and beverage items that it provides. Meal customization is supported. Customers are provided by a unique APP to order food and pay bill on premises, to order online and to make bookings. An extended customer record is maintained, so it is possible to build a profile for the different customers. Data collection includes traditional user data (e.g. requested meals/beverages) integrated with additional data (e.g. time of purchase or visit, number of people attending, etc.) to increase the profile accuracy. Premium customers are awarded with discounts, as well as customised offers based on the profile generated are periodically sent to customers. The platform is connected to suppliers and provides an automated estimation of food/beverage requests through an external AI-powered service. These requests are validated by the manager in the system and, then, is automatically sent to the different providers. A similar service is available to connect food delivery services: a delivery request received through the restaurant APP can be automatically forwarded to the delivery company.

Feedback (from instructors)

Group 5:
Great presentation. Good work. I guess you can improve as follows:

- An important stakeholder is missing: Restaurant Staff (e.g. Chef, Waiter, etc.)
- At Level 2, you are adopting one single container to describe a Software System. That is ok but I would like to see a bit more of detail. Please better structure your architecture by adopting more than one container to describe them.

软件设计是个性化的工作，没有标准答案。下面几点建议仅供大家参考
（1）按面向对象思维考虑问题：从 Level1 开始一个 software system 集中处理一个大的核心对象。课件中图书管理为例，Libarary port 处理图书的借、还和评论，而 Analytices system 主要是对 library port 系统产生的数据记录的处理。**两个 software system 处理的核心对象不同。**
（2）按核心利益相关者考虑问题：Libarary port 主要为读者提供服务，读者是最核心的利益相关者；而 Analytices system 为管理者提供服务，管理者是核心利益相关者。**一个 software system 服务一类主要利益相关者。**
（3）按现实开发角度考虑问题：一个系统组成部件的设计应尽量能够在一张 A4 纸或一页 ppt 中清晰展示，如果出现过于拥挤、字体很小才能容纳的情况，应该考虑进行拆分。**设计结果呈现出来做到清晰、简洁。**
（4）从软件体系结构的视角，**设计以核心用户的核心业务为重点**，核心业务需求要能够在系统中找到对应的详细设计，相关的支持系统（如支付/定位等）不能省略。不是太核心的功能不用过多设计，甚至可以不设计。

（5）**系统中逐级命名** softeware system .container.component **表意清晰、统一**。（命名有具体确定含义，不使用过于通用的表意不清的名称如 Query|Search）

Feedback (from peers)
C4 has a clear structure, but the content is slightly lengthy, so it would be better if it could be streamlined.

1. Revised solution after initial peer-review and presentation (5 marks, Group assessed)

You should **address the feedback received** and provide a **revised version of your solution**.
For each component of your project that **you are going to modify**, please provide:

- **Original version** of the diagram / table
- **Revised version** (please highlight changes where possible)
- **A short explanation on the change applied**

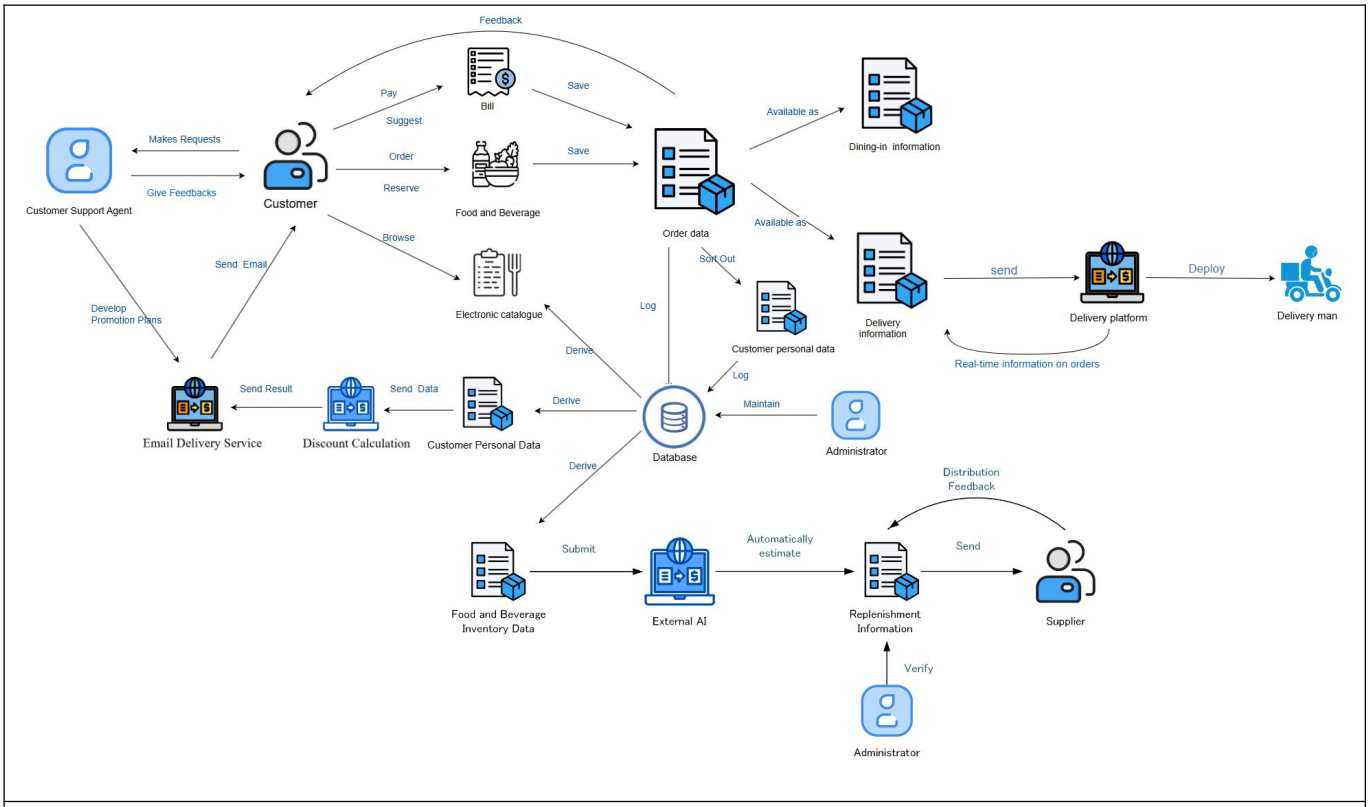
This is an opportunity to revise and improve your work. In this part of the project, we will assess the QUALITY of your outcome.

1. Key Operations

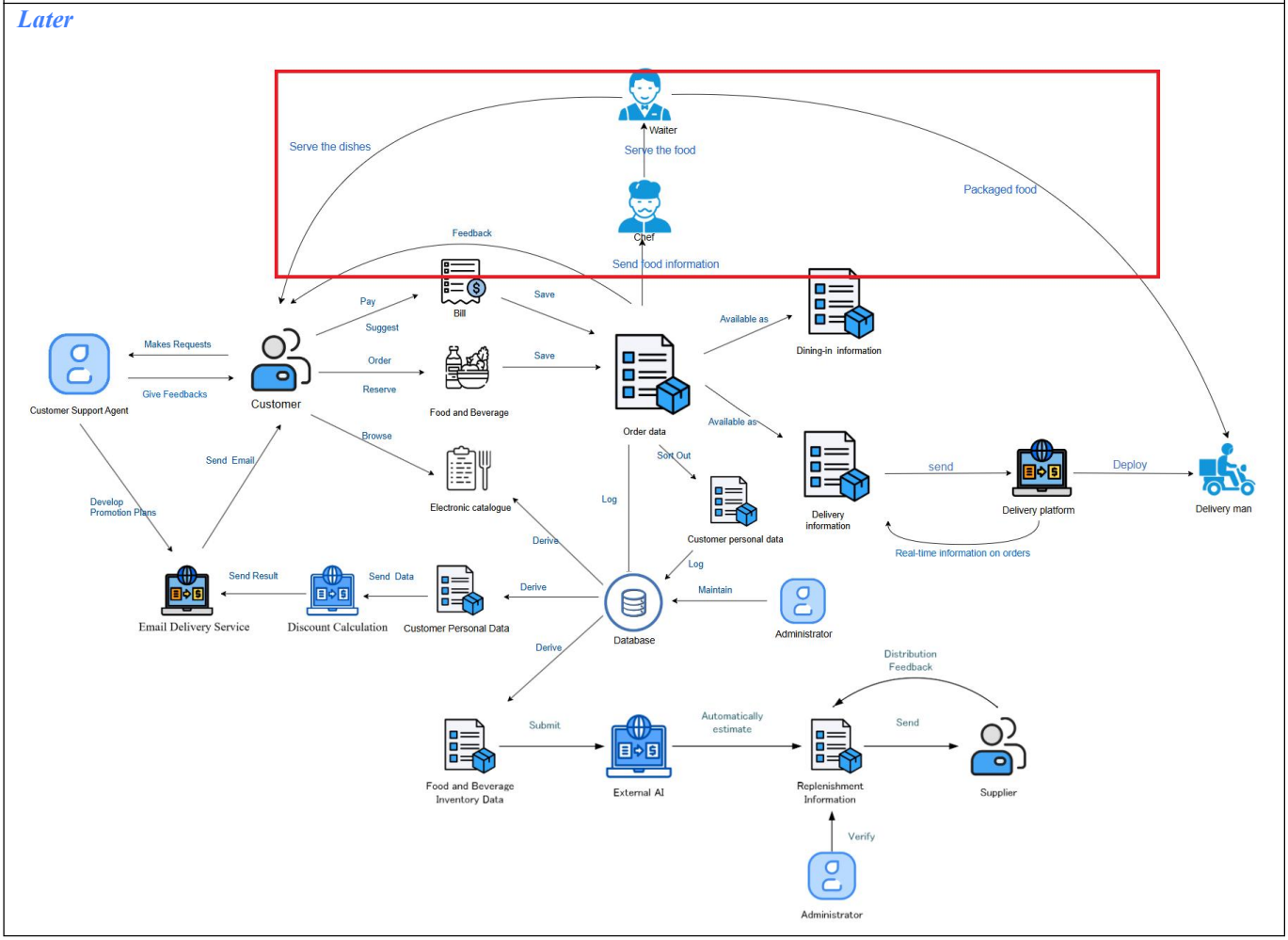
System overview
Add lost stakeholders: waiter and chef to the total system to make the function of the system more perfect.
Former

System Conceptualization ：

The high-tech restaurant system is designed to enhance customer experience and operational efficiency. It integrates features such as an electronic catalogue, customer app, data collection and analysis, supply chain management, and delivery service integration. The system supports meal customization, smart order processing, and automated supply management. By leveraging AI technology and external services, it optimizes inventory forecasting and food delivery coordination.


Feedback
Bill
Pay
Suggest
Save
Available as
Dining-in information
Makes Requests
Give Feedbacks
Customer Support Agent
Customer
Order
Reserve
Food and Beverage
Save
Order data
Available as
Browse
Send Email
Electronic catalogue
Sort Out
send
Deploy
Delivery information
Delivery platform
Delivery man
Develop Promotion Plans
Log
Customer personal data
Real-time information on orders
Derive
Log
Send Result
Send Data
Derive
Maintain
Email Delivery Service
Discount Calculation
Customer Personal Data
Database
Administrator
Derive
Distribution Feedback
Submit
Automatically estimate
Send
Food and Beverage Inventory Data
External AI
Replenishment Information
Supplier
Verify
Administrator

Later

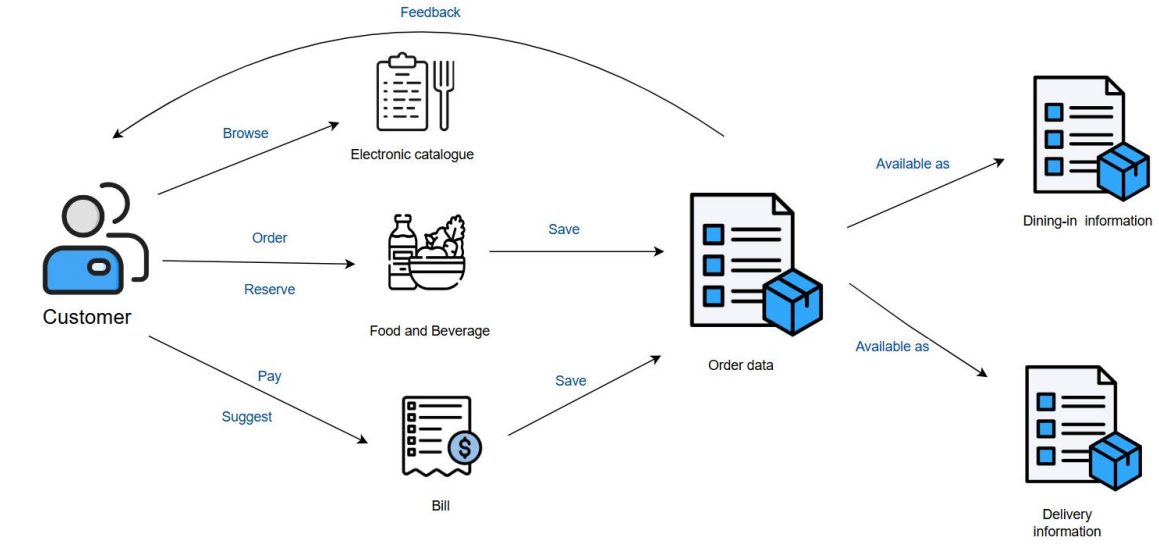

Waiter
Serve the dishes
Serve the food
Packaged food
Chef
Send food information
Feedback
Bill
Pay
Suggest
Save
Available as
Dining-in information
Makes Requests
Give Feedbacks
Customer Support Agent
Customer
Order
Reserve
Food and Beverage
Save
Order data
Available as
Browse
Send Email
Electronic catalogue
Sort Out
send
Deploy
Delivery information
Delivery platform
Delivery man
Develop Promotion Plans
Log
Customer personal data
Real-time information on orders
Derive
Log
Send Result
Send Data
Derive
Maintain
Email Delivery Service
Discount Calculation
Customer Personal Data
Database
Administrator
Derive
Distribution Feedback
Submit
Automatically estimate
Send
Food and Beverage Inventory Data
External AI
Replenishment Information
Supplier
Verify
Administrator

Sub-System.Ordering and Reservation System

For the Ordering and Reservation System, we add waiter and chef as two additional stakeholders to realize order management and service.

Former

Sub-system ID: *#5-1 Ordering and Reservation System*	**Student：Jun Qi (202219015)**	
Epic: As a **customer**, I want to use the app for ordering and reservations so that I can enjoy a seamless dining experience.		
User Story ID	**User Story**	**Functionality**
Restaurant.Order.us1	*As a customer, I want to browse the electronic menu in the app so that I can see the food and beverage options available at the restaurant.*	**RestaurantCustomelr.MealSelection**
Restaurant.Order.us2	*As a customer, I want to securely pay my bill through the app so that I can complete the transaction quickly and avoid waiting in line.*	**RestaurantCustomer.SafePay**
Restaurant.Order.us3	*As a customer, I want to place online orders through the app and customize my meals as needed so that my personal preferences are accurately conveyed to the kitchen.*	**RestaurantCustomer.MealSelection**
Restaurant.Order.us4	*As a customer, I want to reserve a table through the app and receive confirmation so that I can easily plan my visit.*	**RestaurantCustomer.Reserve**
Restaurant.Order.us5	*As a customer, I want to provide feedback on my dining experience through the app so that the restaurant can improve its service.*	**RestaurantCustomer.Feedback**
Restaurant.Order.us6	*As a customer, I want the app to recommend dishes based on my order history and preferences so that I can discover more foods that I might like.*	**RestaurantCustomer.MealSelection**
Restaurant.Order.us7	*As a customer, I want to modify my food selections before confirming the order so that I can ensure I get the food I want.*	**RestaurantCustomer.MealModification**
Restaurant.Order.us8	*As a customer, I want to view my order history in the app so that I can quickly repeat my previous favorite orders.*	**RestaurantCustomer.OrderHistory**
Restaurant.Order.us9	*As a customer, I want to receive push notifications in the app about my reservation confirmation and the status of my food preparation so that I can stay informed.*	**RestaurantCustomer.Notification**
Restaurant.Order.us10	*As a customer, I want to choose different payment methods (such as credit card, Alipay, or WeChat Pay) when paying the bill so that I can select the most convenient payment option.*	**RestaurantCustomer.PaymentOptions**
Diagrams		



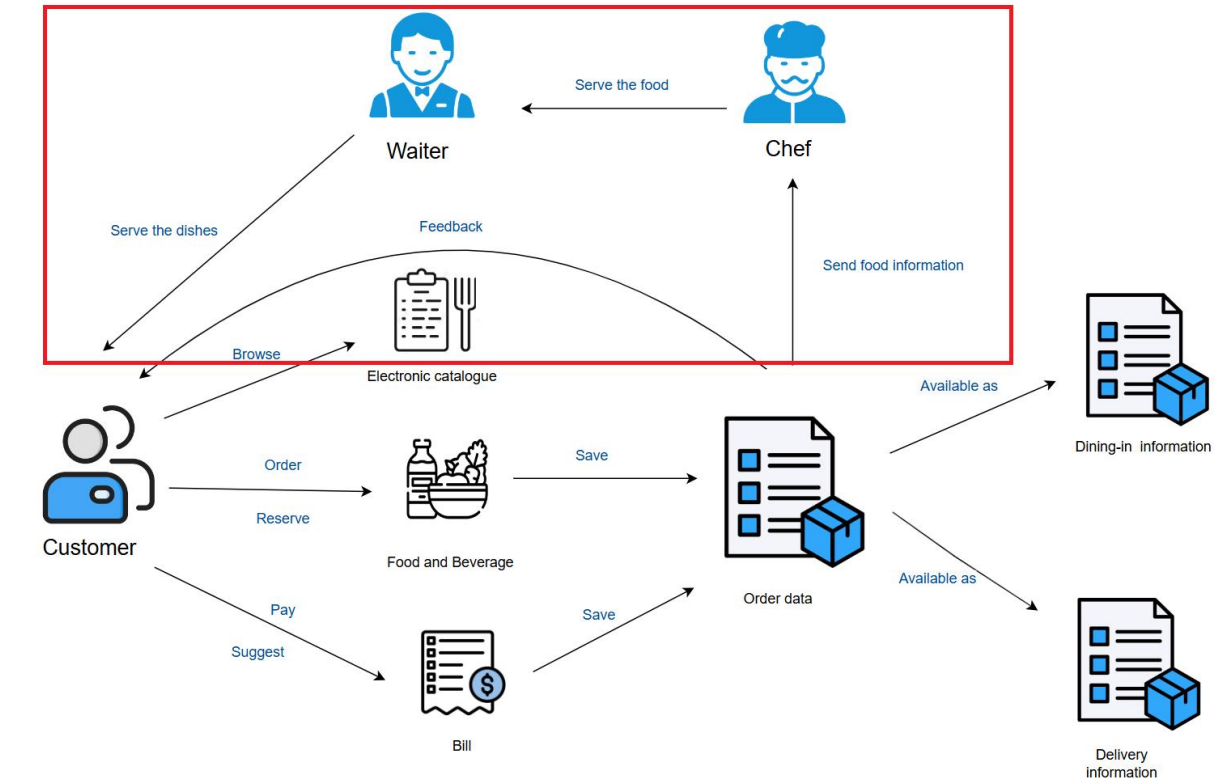
Ordering and Reservation Subsystem

Latter

Sub-system ID: *#5-1 Ordering and Reservation System*		
Epic: As a **customer**, I want to use the app for ordering and reservations so that I can enjoy a seamless dining experience.		
User Story ID	**User Story**	**Functionality**
Restaurant.Order.us1	*As a customer, I want to browse the electronic menu in the app so that I can see the food and beverage options available at the restaurant.*	**RestaurantCustomelr.MealSelection**
Restaurant.Order.us2	*As a customer, I want to securely pay my bill through the app so that I can complete the transaction quickly and avoid waiting in line.*	**RestaurantCustomer.SafePay**
Restaurant.Order.us3	*As a customer, I want to place online orders through the app and customize my meals as needed so that my personal preferences are accurately conveyed to the kitchen.*	**RestaurantCustomer.MealSelection**
Restaurant.Order.us4	*As a customer, I want to reserve a table through the app and receive confirmation so that I can easily plan my visit.*	**RestaurantCustomer.Reserve**
Restaurant.Order.us5	*As a customer, I want to provide feedback on my dining experience through the app so that the restaurant can improve its service.*	**RestaurantCustomer.ServiceFeedback**
Restaurant.Order.us6	*As a customer, I want to choose different payment methods (such as credit card, Alipay, or WeChat Pay) when paying the bill so that I can select the most convenient payment option.*	**RestaurantCustomer.PaymentOptions**

Epic: As a **chef,** I want to receive clear and customized orders from the app so that I can prepare meals efficiently and accurately according to customer preferences.		
User Story ID	**User Story**	**Functionality**
Restaurant.Order.us1	*As a chef, I want to have access to a digital kitchen display that shows incoming orders in real-time so that I can prioritize my tasks efficiently.*	**Restaurant*Chef.DigitalKitchenDisplay***
Restaurant.Order.us2	*As a chef, I want to be notified of any allergies or dietary restrictions related to an order so that I can prepare safe meals for all customers.*	**Restaurant*Chef.AllergyNotification***
Restaurant.Order.us3	*As a chef, I want to receive feedback on the meals I prepare from customers so that I can improve my cooking.*	**Restaurant*Chef.MealFeedback***

Epic: As a **waiter**, I want to access customer information and order statuses through the app so that I can provide timely and personalized service.		
User Story ID	**User Story**	**Functionality**
Restaurant.Order.us1	*As a waiter, I want to view customer orders and table reservations in real-time so that I can better manage service flow in the dining area.*	***RestaurantWaiter.OrderManagement***
Restaurant.Order.us2	*As a waiter, I want to see customer profiles and preferences (e.g., frequent orders) so that I can offer a personalized dining experience.*	***RestaurantWaiter.CustomerProfiles***
Restaurant.Order.us3	*As a waiter, I want to receive feedback from customers regarding their service and meals so that I can improve my performance and enhance customer satisfaction.*	***RestaurantWaiter.ServiceFeedback***
Diagrams		



Ordering and Reservation Subsystem

Sub-System.Delivery System

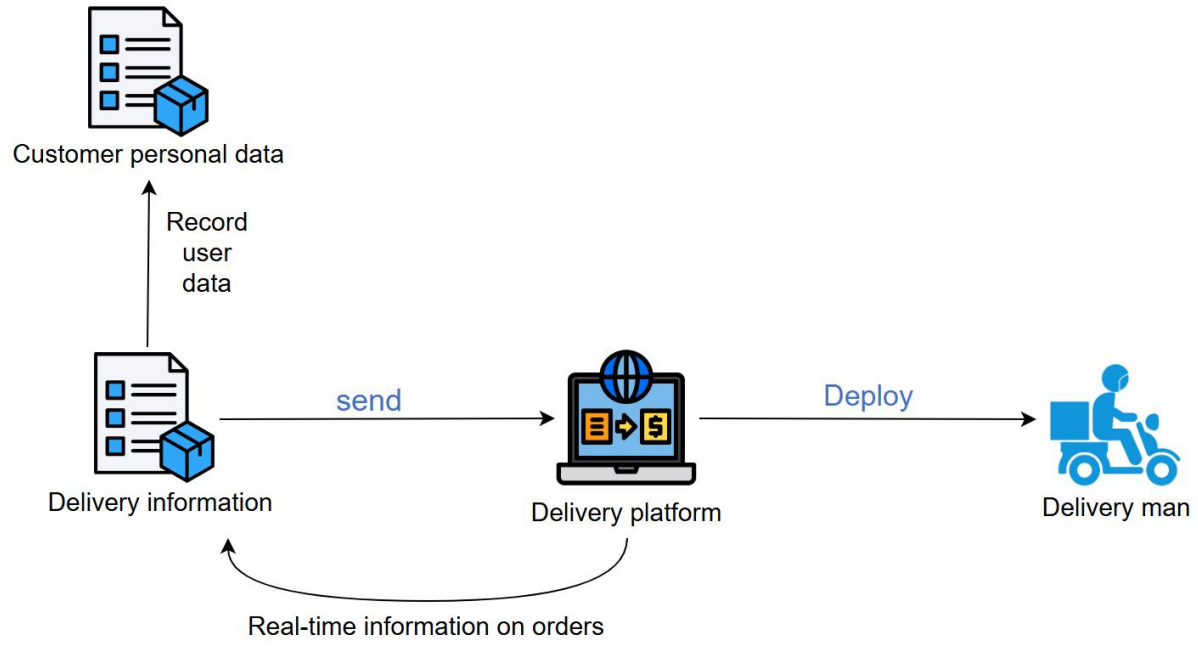
For the Delivery System, we add waiter and chef as two additional stakeholders to serve food and pack take-away food.

Former

Sub-system ID: *#5-4 Delivery System*	**Student:Yueheng Wang(202219044)**	
Epic: As a **customer**,I want to **have the same quality of service and convenience** as I order in the restaurant. I hope I can easily browse the menu, place orders and track my orders on the restaurant app, and enjoy efficient and satisfactory delivery services.		
User Story ID	**User Story**	**Functionality**
Restaurant.Delivery.us1	*As a customer, I want to be able to view all of the restaurant's dishes on the app when I order takeout.*	**Restaurant.Delivery.ViewDetails**
Restaurant.Delivery.us2	*As a customer, I want to be able to see the estimated delivery time and delivery cost before I place an order so I can make a more informed choice.*	**Restaurant.Delivery.ViewDetails**
Restaurant.Delivery.us3	*As a customer, I would like to be able to modify my order information, such as the delivery address and contact number, after the order is placed, and correct any errors before the delivery arrives.*	**Restaurant.Delivery.ModifyInformation**
Restaurant.Delivery.us4	*As a customer, I hope to see the real-time status of my order, such as whether the order has been served and the current location of the order, so as to reduce my anxiety in waiting*	**Restaurant.Delivery.ChechStatus**

	for the order, unnecessary communication with the restaurant, and improve my convenience.	
Restaurant.Delivery.us5	*As a customer, I hope to evaluate the restaurant and delivery staff after the order is completed, so as to help more users understand the relevant service experience.*	**Restaurant.Delivery.Feedback**

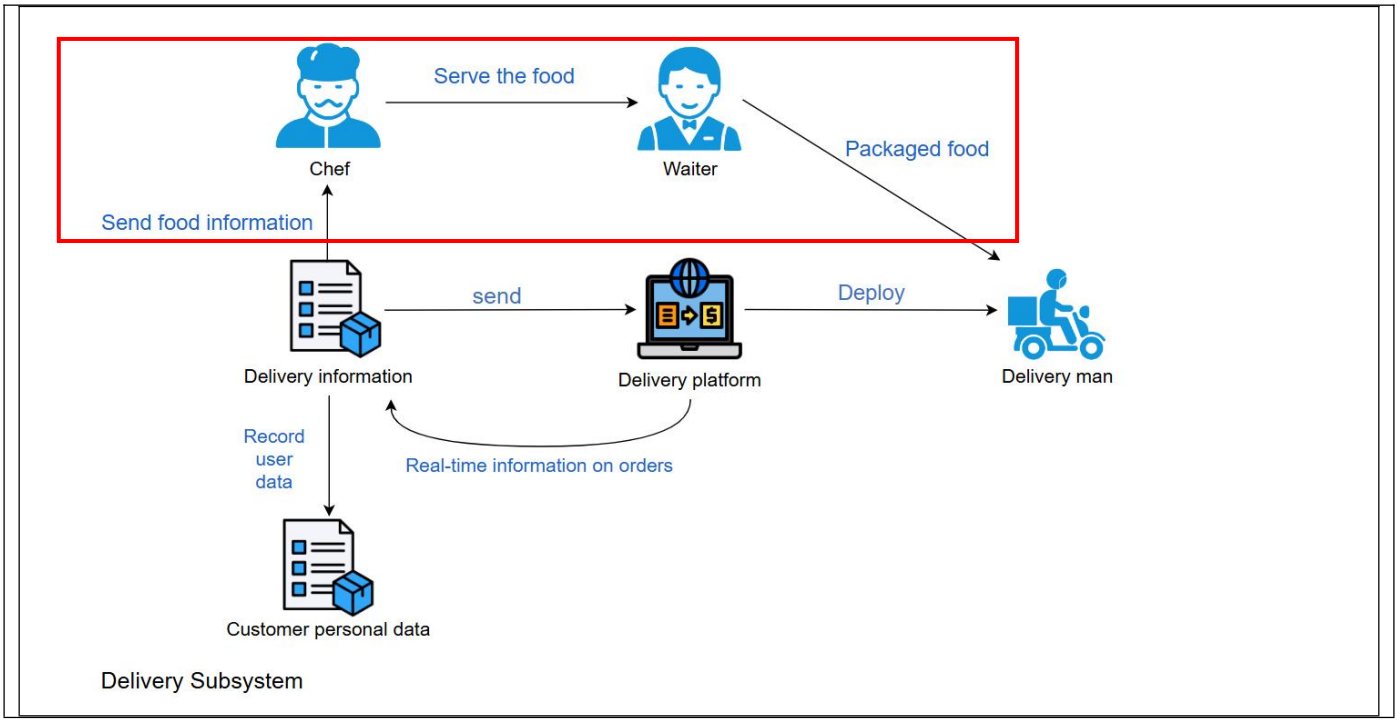
Diagrams



Later

Sub-system ID: *#5-4 Delivery System*	**Student:Yueheng Wang(202219044)**	
Epic: As a **customer**,I want to **have the same quality of service and convenience** as I order in the restaurant. I hope I can easily browse the menu, place orders and track my orders on the restaurant app, and enjoy efficient and satisfactory delivery services.		
User Story ID	**User Story**	**Functionality**
Restaurant.Delivery.us1	*As a customer, I want to be able to view all of the restaurant's dishes on the app when I order takeout.*	**Restaurant.Delivery.ViewDetails**
Restaurant.Delivery.us2	*As a customer, I want to be able to see the estimated delivery time and delivery cost before I place an order so I can make a more informed choice.*	**Restaurant.Delivery.ViewDetails**
Restaurant.Delivery.us3	*As a customer, I would like to be able to modify my order information, such as the delivery address and contact number, after the order is placed, and correct any errors before the delivery arrives.*	**Restaurant.Delivery.ModifyInformation**
Restaurant.Delivery.us4	*As a customer, I hope to see the real-time status of my order, such as whether the order has been served and the current location of the order, so as to reduce my anxiety in waiting for the order, unnecessary*	**Restaurant.Delivery.ChechStatus**

	communication with the restaurant, and improve my convenience.	
Restaurant.Delivery.us5	*As a customer, I hope to evaluate the restaurant and delivery staff after the order is completed, so as to help more users understand the relevant service experience.*	**Restaurant.Delivery.Feedback**
Epic: As a **chef**, I want to clearly **check the details** of takeout orders and **update the status of orders** to ensure that dishes can be timely and accurately completed and meet the needs of users		
User Story ID	**User Story**	**Functionality**
Restaurant.Delivery.us1	*As a chef, I want to be able to view the details of the delivery order through the system, including the name of the dish, the quantity, the special requirements, etc., so that I can prepare the food according to the requirements.*	**RestaurantChef.Delivery.ViewDetails**
Restaurant.Delivery.us2	*As a chef, I want to be able to update the status in the system after the dish is made to notify the server or delivery person for the next step.*	**RestaurantChef.Delivery.UpdateStatus**
Restaurant.Delivery.us3	*As a chef, I want to be able to receive alerts for special orders (such as peak or VIP orders) so that they can be prioritized.*	**RestaurantChef.Delivery.AllergyNotification**
Restaurant.Delivery.us4	*As a chef, I want to receive feedback from users to help me improve my service*	**RestaurantChef.Delivery.Feedback**
Epic: As a **waiter**, I want to be able to efficiently **check, pack and deliver** takeout orders to ensure that each order is properly checked and packaged before serving.		
User Story ID	**User Story**	**Functionality**
Restaurant.Delivery.us1	*As a waiter, I want to be able to review and check orders after they are made to ensure the accuracy of delivery.*	**RestaurantWaiter.Delivery.CheckOrder**
Restaurant.Delivery.us2	*As a waiter, I want a status update when I deliver an order to the delivery person so that the system records the pickup time and notifies the user.*	**RestaurantWaiter.Delivery.UpdateStatus**
Restaurant.Delivery.us3	*As a waiter, I would like to be able to mark special requirements (such as no heat, less salt, etc.) on the packaging bag when packing an order so that the delivery person or customer can more clearly identify the customized content of the order.*	**RestaurantWaiter.Delivery.MarkOrder**
Restaurant.Delivery.us4	*As a waiter, I hope to be able to check the expected arrival time of the deliveryman in the system after the order is packaged, so that the delivery can be timely delivered when the deliveryman arrives and the waiting time can be reduced.*	**RestaurantWaiter.Delivery.CheckStatus**
Diagrams		


Serve the food
Chef
Waiter
Packaged food
Send food information
send
Deploy
Delivery information
Delivery platform
Delivery man
Record user data
Real-time information on orders
Customer personal data
Delivery Subsystem

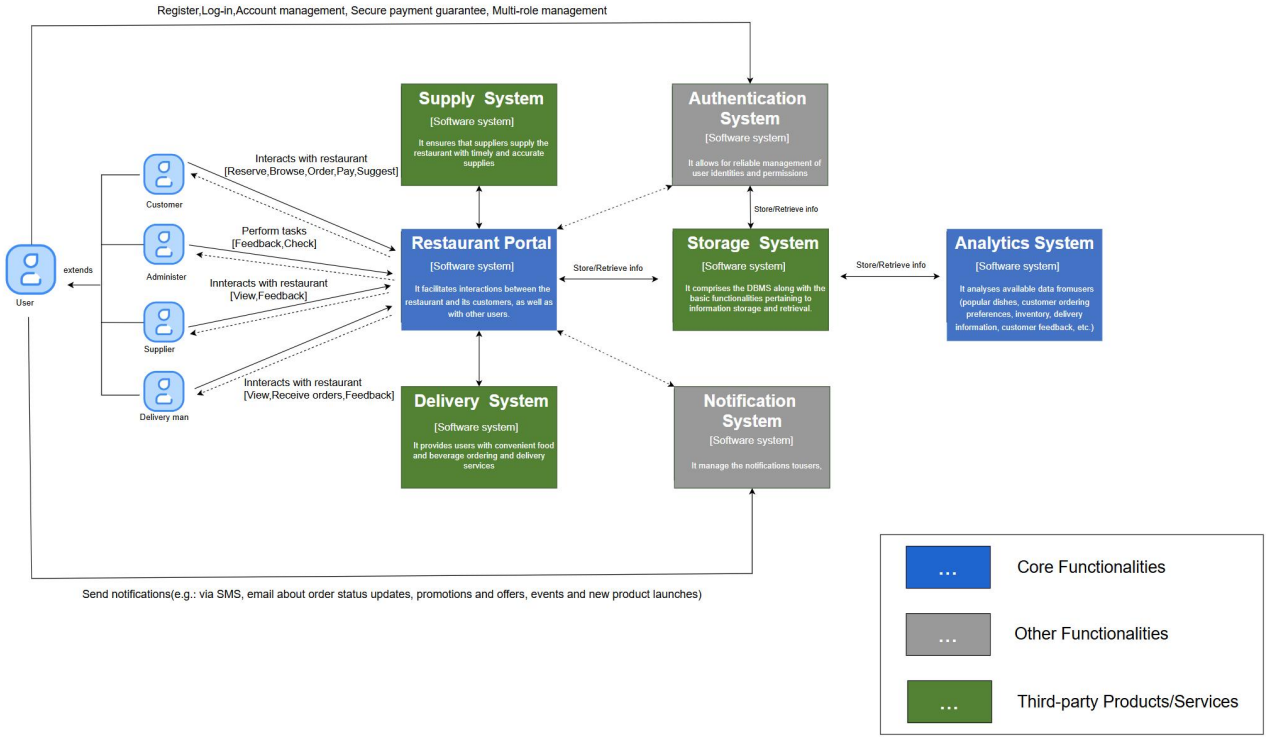
2. Software Architecture

2.1 level 1

Level 1

For level1, we add the user staff and split the functions of the original software system -restaurant portal to form a new structure, to make the function of each system more independent and clear

Former



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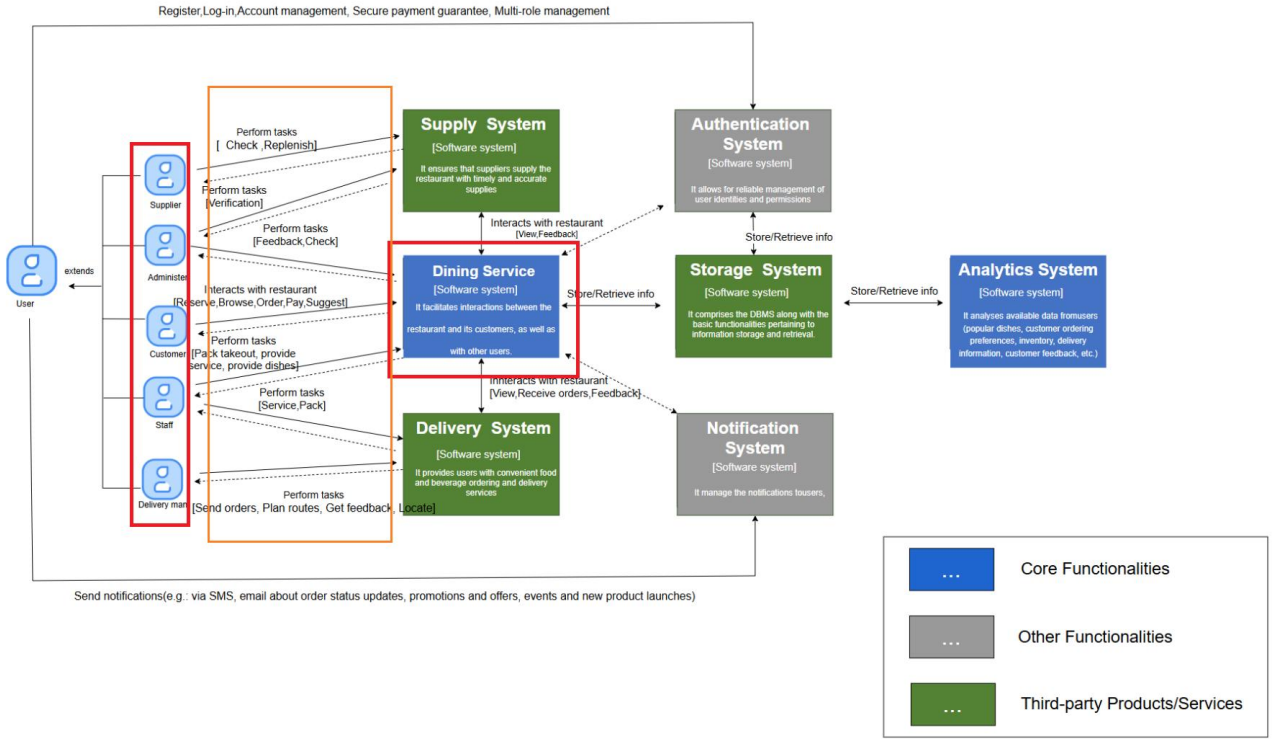


2.2 level 2

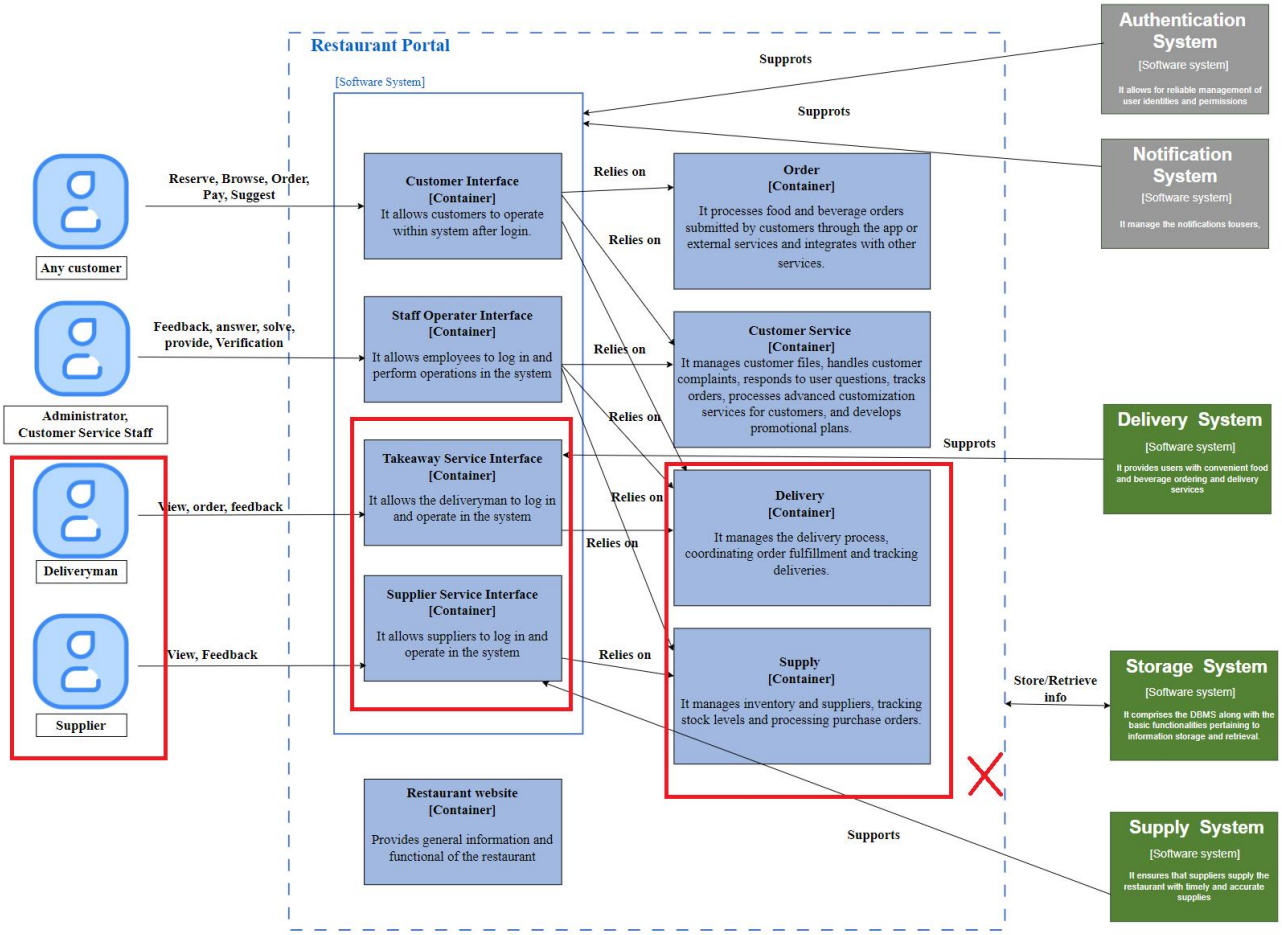
Level2.Dining Service System.Container

For the Dining service subsystem, we changed its name to make the software system clearer. We separated the containers belonging to other software systems. We added an administrator operation interface container to make the container settings more reasonable.

Former

Dining Service System

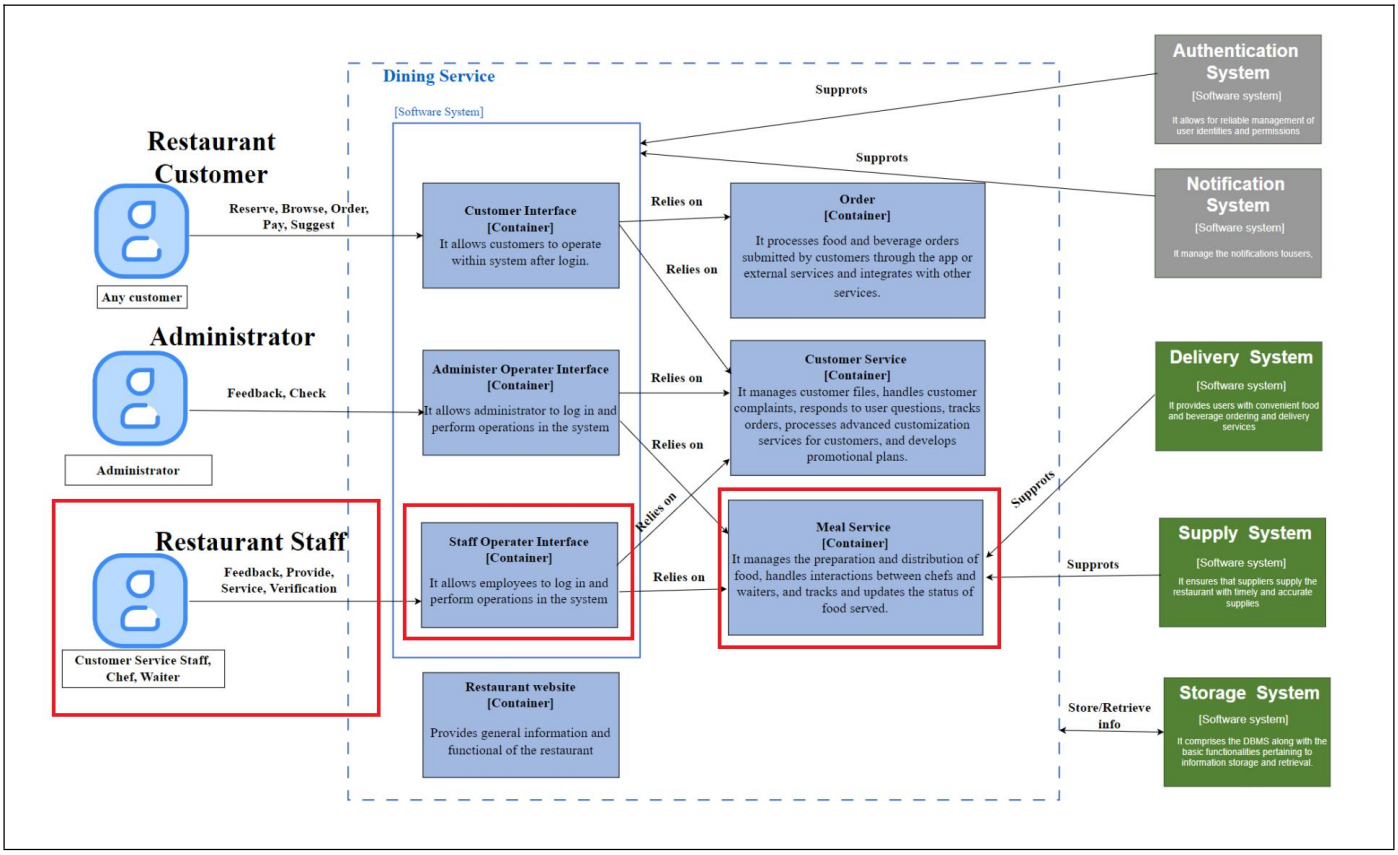
[Software System]



Later

Dining Service System

[Software System]

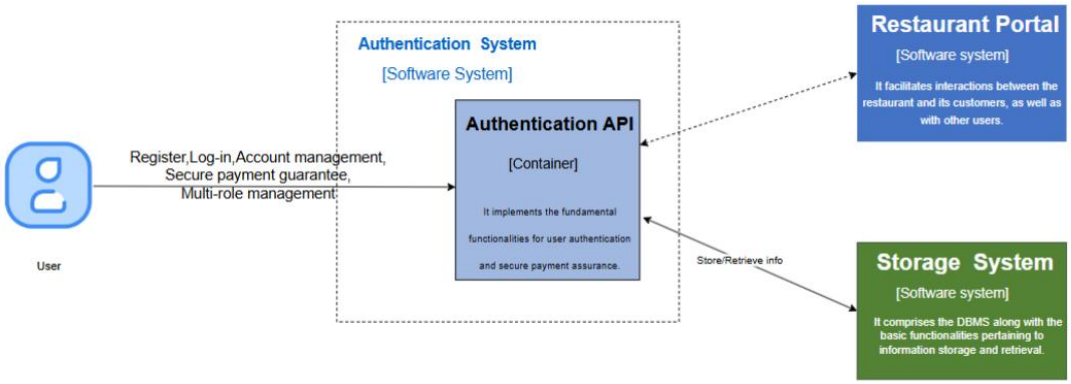

Dining Service
[Software System]
Restaurant Customer
Reserve, Browse, Order, Pay, Suggest
Any customer
Administrator
Feedback, Check
Administrator
Restaurant Staff
Feedback, Provide, Service, Verification
Customer Service Staff, Chef, Waiter
Customer Interface [Container]
It allows customers to operate within system after login.
Administer Operater Interface [Container]
It allows administrator to log in and perform operations in the system
Staff Operater Interface [Container]
It allows employees to log in and perform operations in the system
Restaurant website [Container]
Provides general information and functional of the restaurant
Relies on
Relies on
Relies on
Relies on
Relies on
Relies on
Order [Container]
It processes food and beverage orders submitted by customers through the app or external services and integrates with other services.
Customer Service [Container]
It manages customer files, handles customer complaints, responds to user questions, tracks orders, processes advanced customization services for customers, and develops promotional plans.
Meal Service [Container]
It manages the preparation and distribution of food, handles interactions between chefs and waiters, and tracks and updates the status of food served.
Supprots
Supprots
Supprots
Supprots
Store/Retrieve info
Authentication System
[Software system]
It allows for reliable management of user identities and permissions
Notification System
[Software system]
It manage the notifications lousers,
Delivery System
[Software system]
It provides users with convenient food and beverage ordering and delivery services
Supply System
[Software system]
It ensures that suppliers supply the restaurant with timely and accurate supplies
Storage System
[Software system]
It comprises the DBMS along with the basic functionalities pertaining to information storage and retrieval.

Level2.Authentication System & Notification System & Storage System.Container

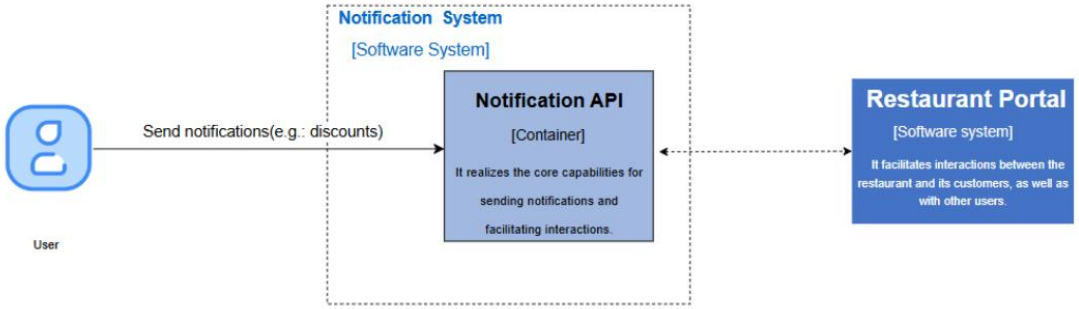
Changed the name of the system, Restaurant Portal -> Dining Service

Former

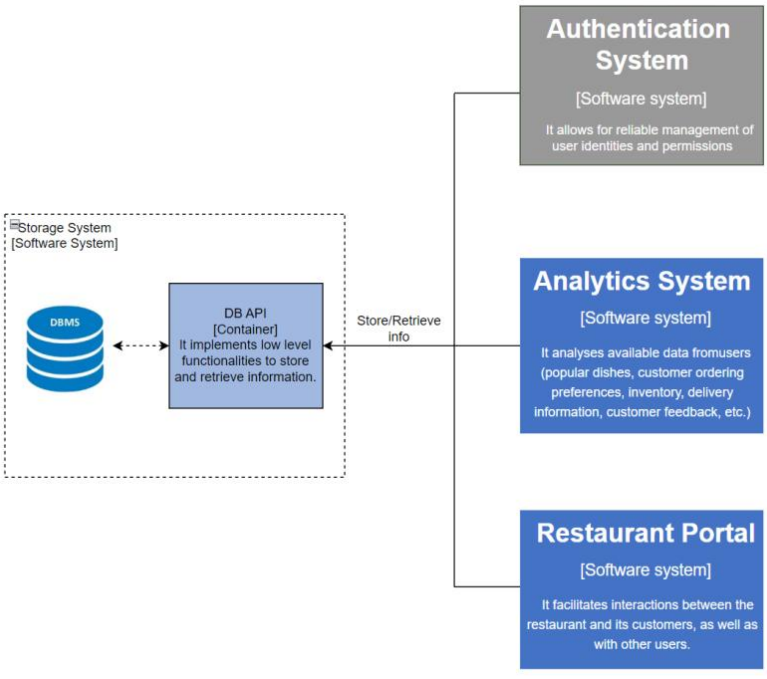
Authentication System
[Software System]



Notification System
[Software System]

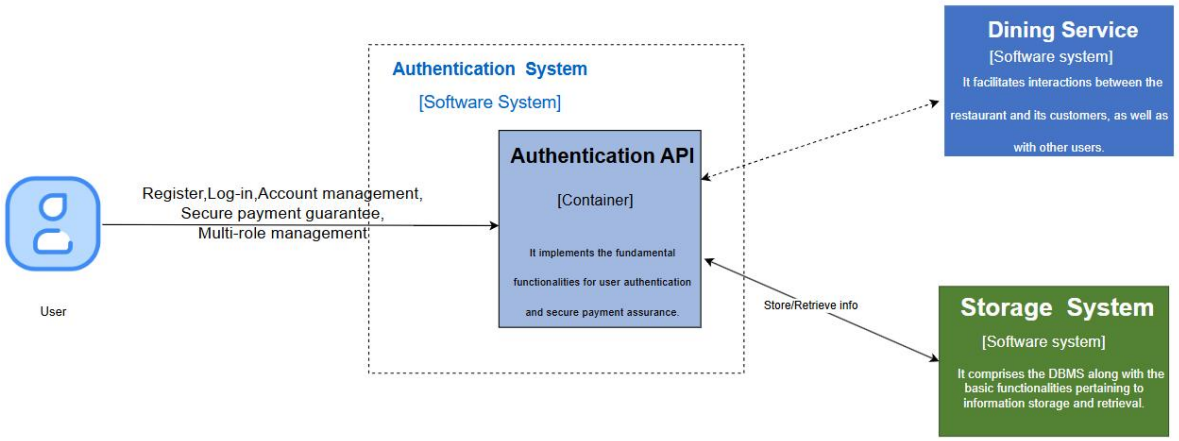


Storage System
[Software System]

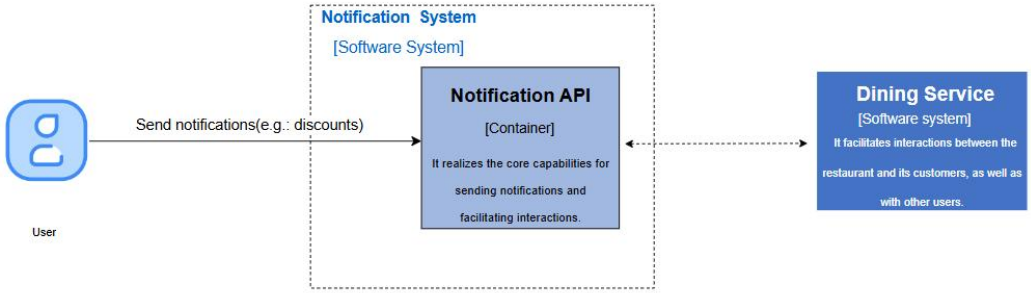


Later

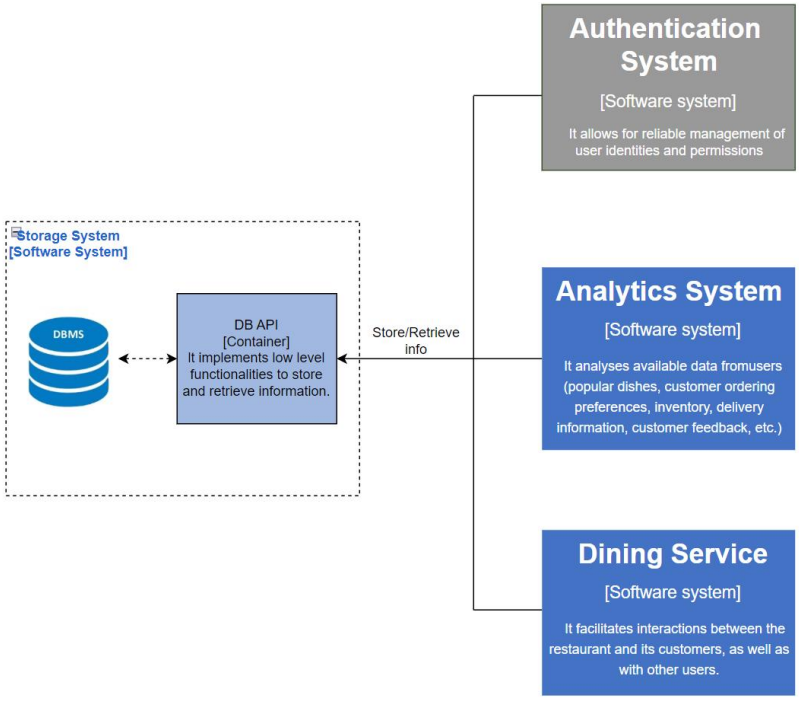
Authentication System
[Software System]



Notification System
[Software System]



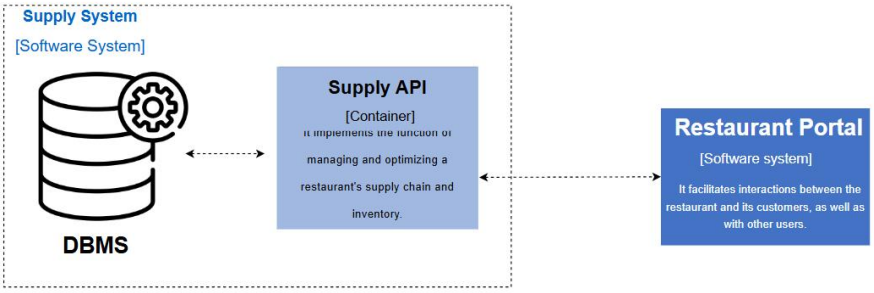
Storage System
[Software System]



Level2.Supply System.Container

For the supply system, we add two containers--Supplier Service Interface and Supply, and introduce supplier to realize the interaction of functions

Former



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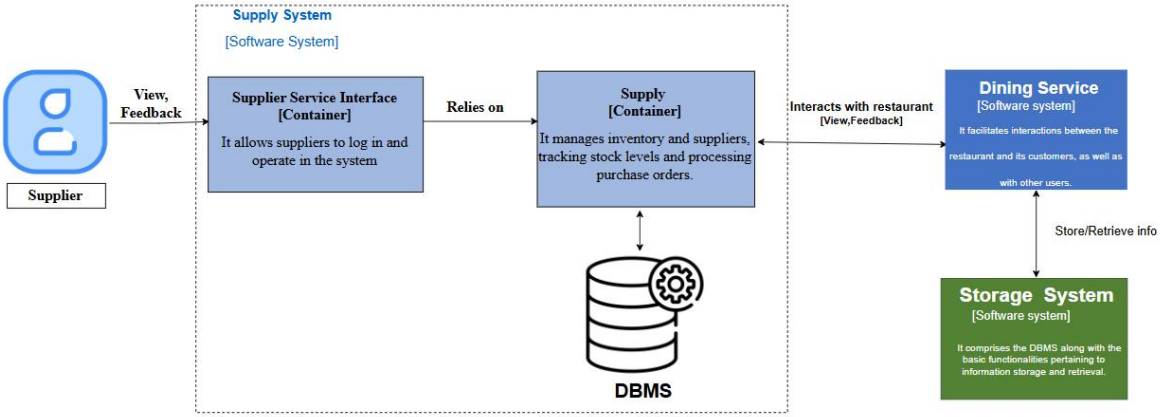
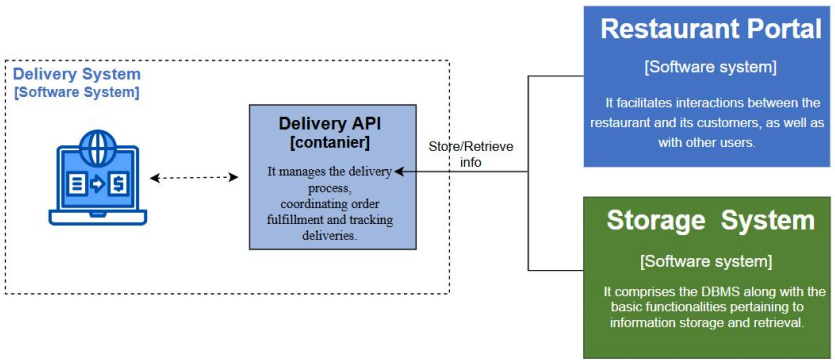


Level2.Delivery System.Container

For the delivery system, we added two containers - the delivery service interface and the delivery, and added DBMS parts to store and invoke information. Since all users in the system can interact with this function, we introduced the user to interact with the delivery interface,

Former



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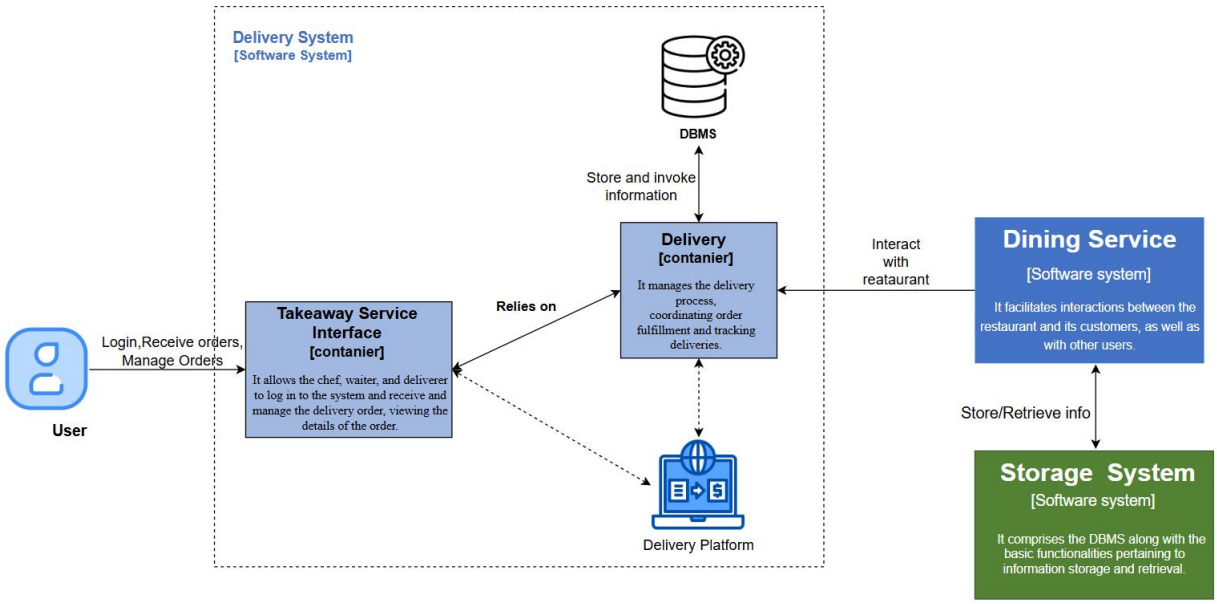
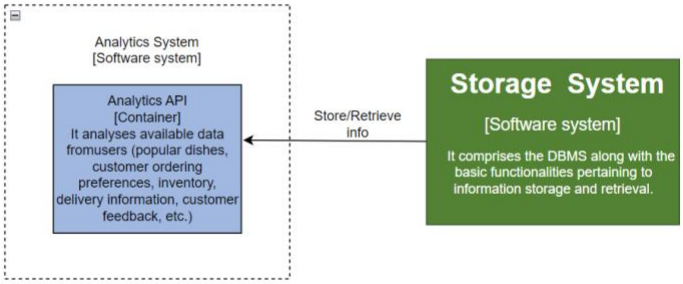


Level2.Analytics System.Container

Add more containers to the level3 diagram to make the system structure clearer

Former



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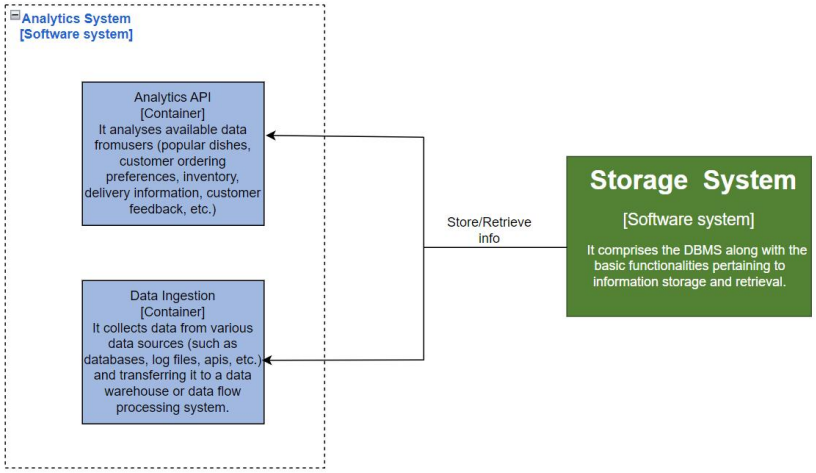
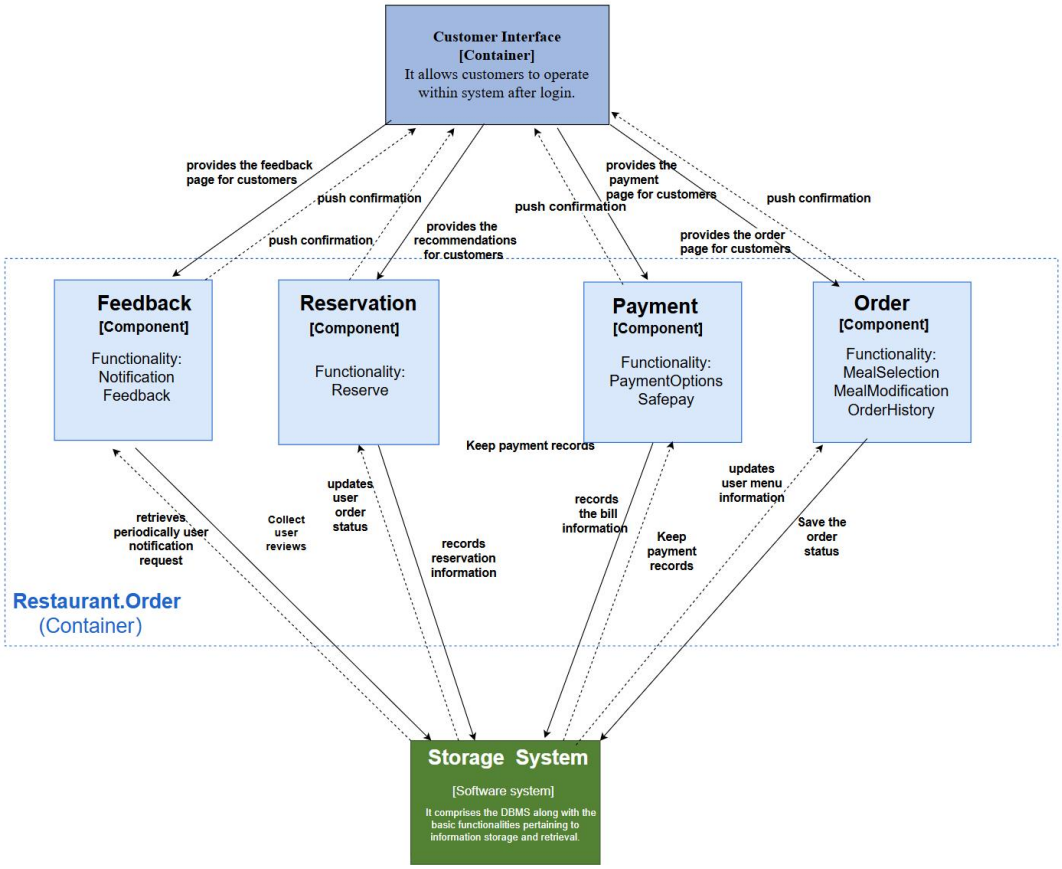


2.3 level 3

Level3.Restaurant.Order.component

Improved the functionality of each component

Former



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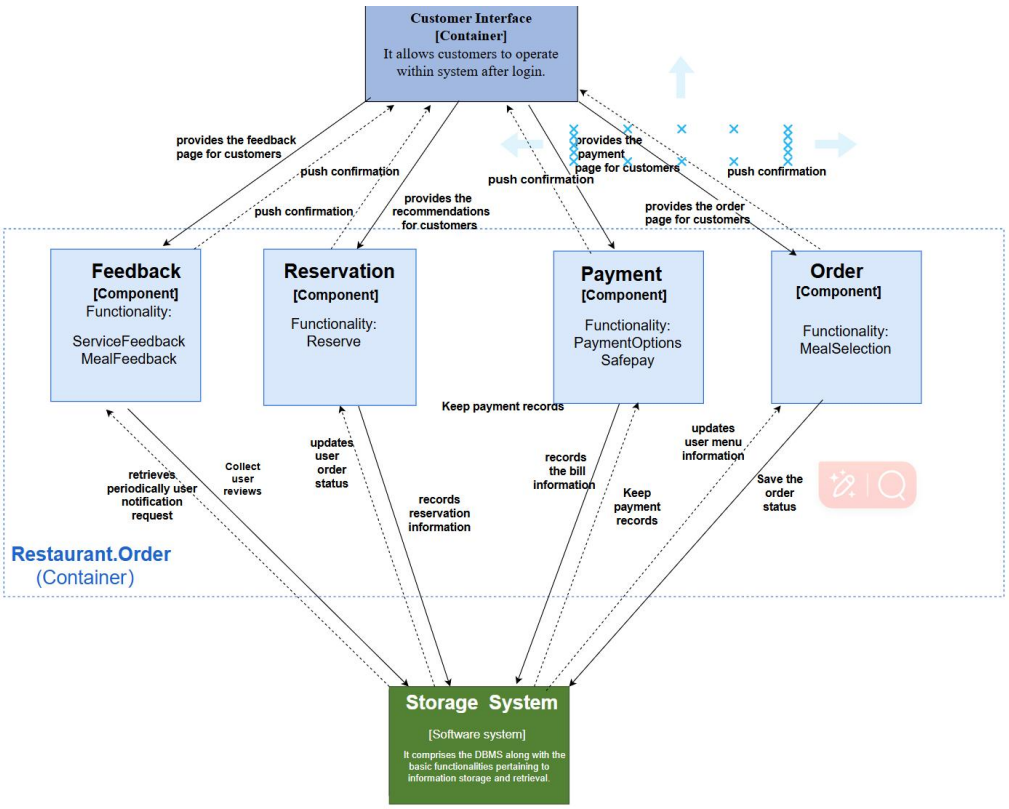
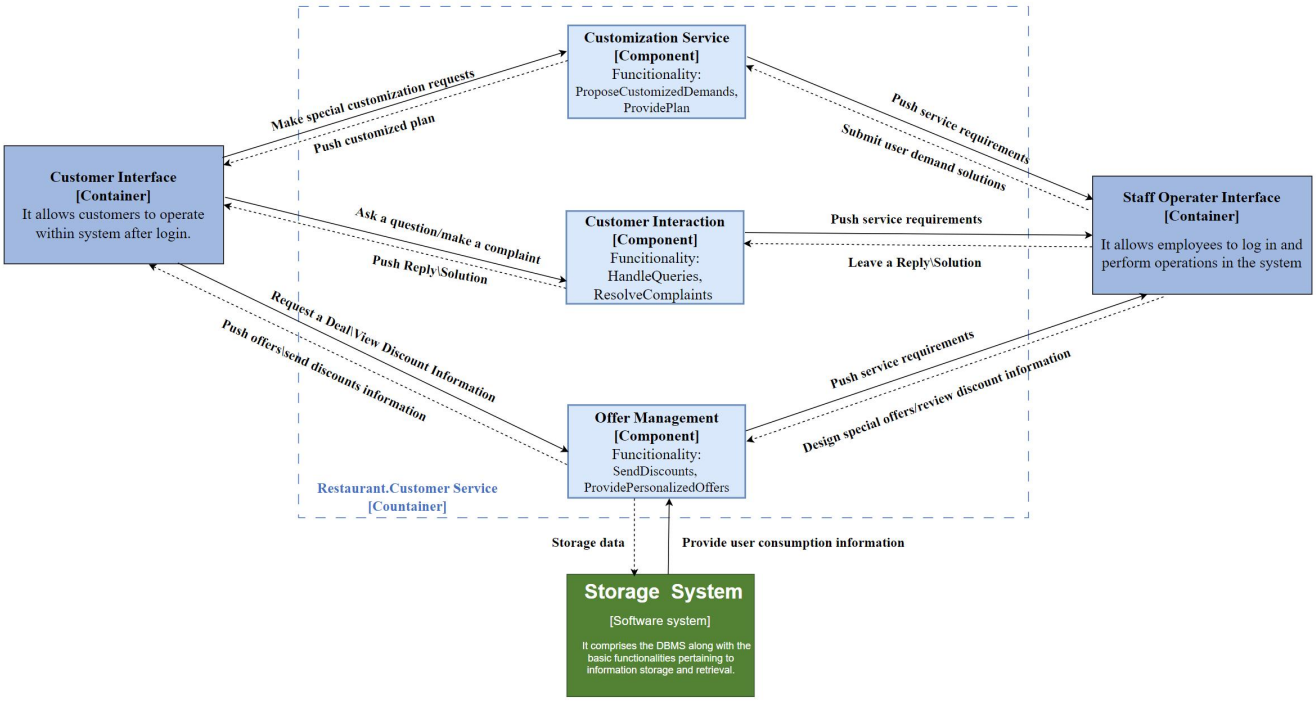


Level3.Restaurant.Customer Service.component

Separating the duties of regular staff and administrators makes the level 3 diagram clearer

Former



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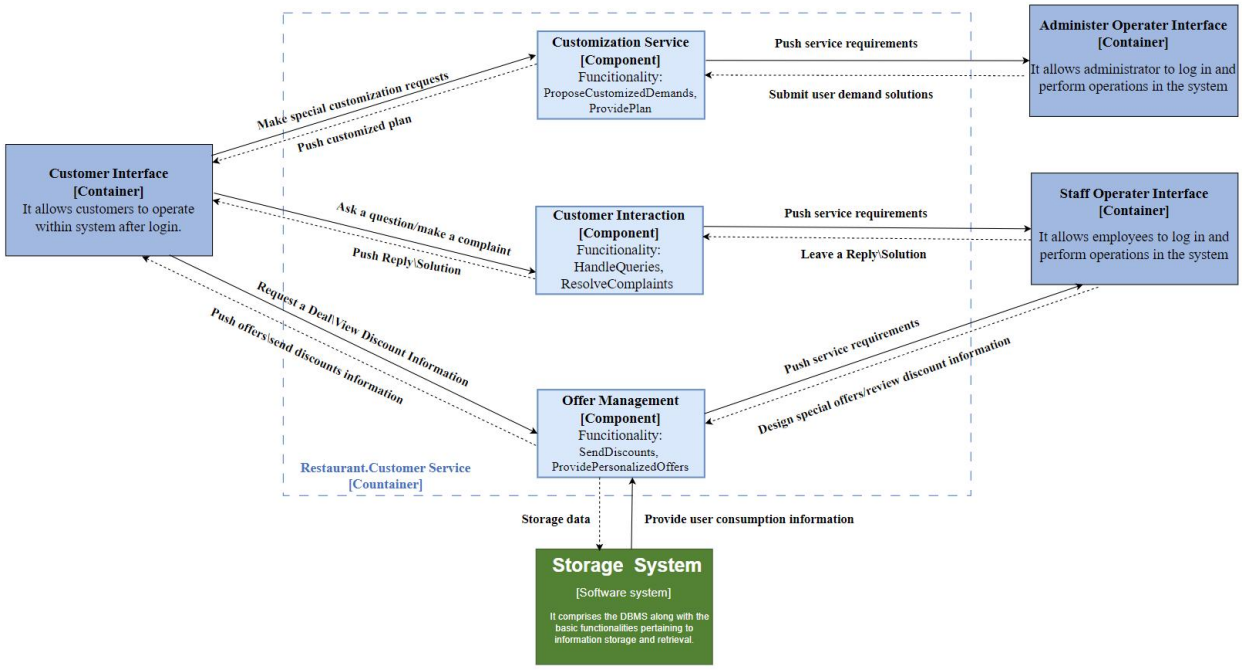
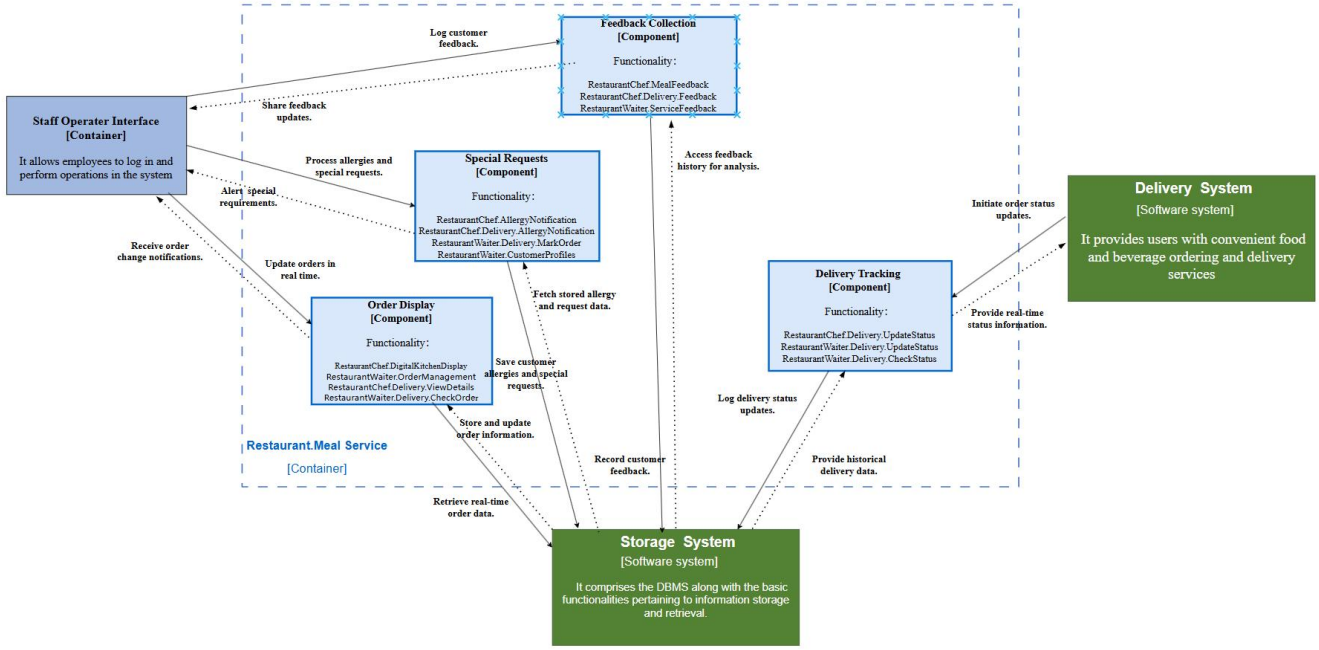


Level3.Restaurant.Meal Service.component

Separate the food container to make the working structure of the software architecture clearer.

Former

None

Later