# CO457
Business Modelling

Module Week 5

Use-Case Models

Business Use Cases

Business Use Cases

- A business use case is **a process done in the business to satisfy a primary actor's goal**
  - The goal is reached at the end of the process
- A food supplier wants to sell food items to the restaurant
  - The item of value is a food order from the executive chef
- The **chef satisfies this goal by ordering food**
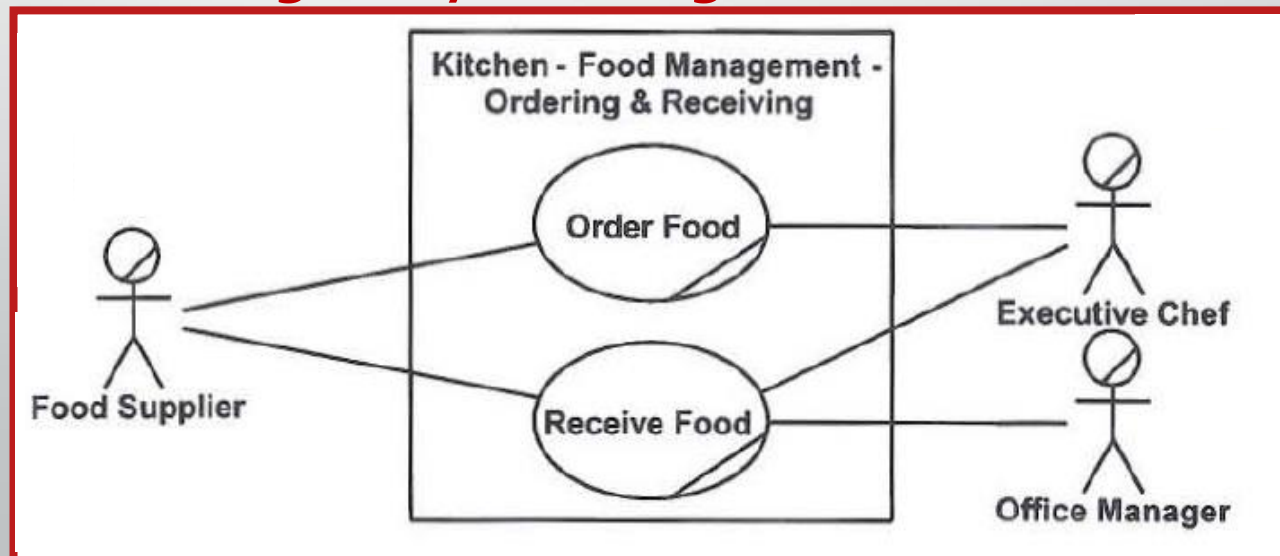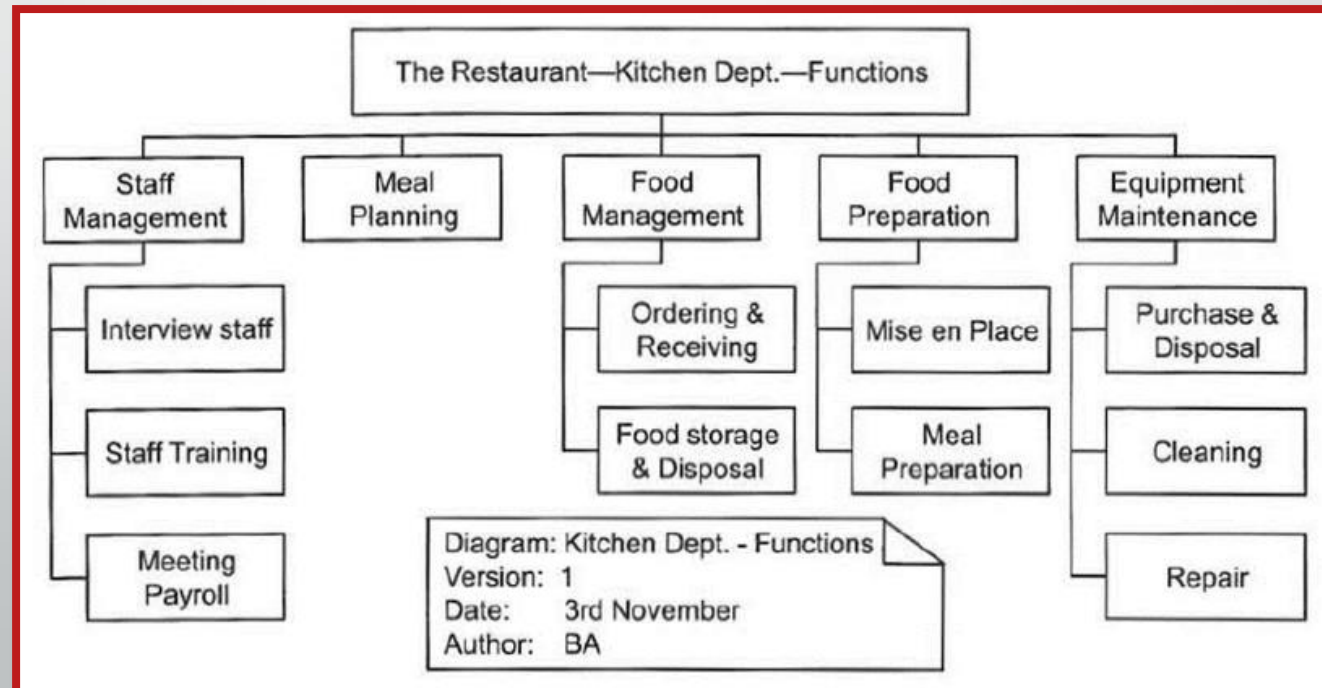
Business Use Cases

- **Appear as ovals** with a slash
    - To distinguish them from system use cases
- Name a use case using a **verb-noun phrase**
    - From the business perspective
   - **What the business does**
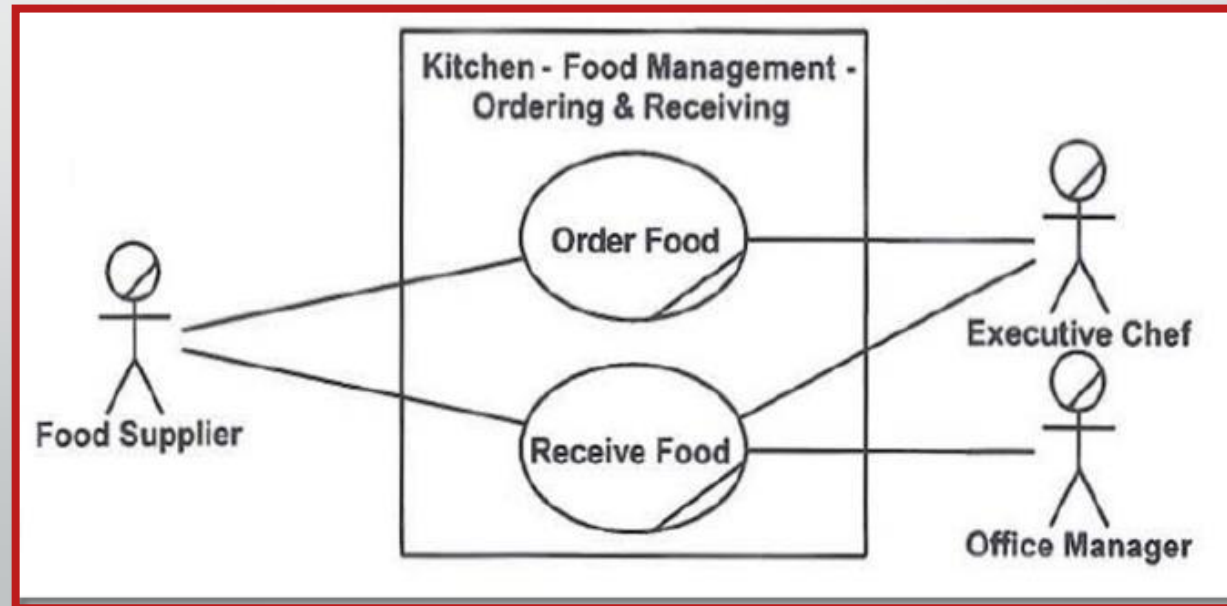
Business Use Cases

- Model use cases at the correct level of detail
  - **Not too general**
    - Manage Food
    - **It's a function on the functional decomposition** called Food Management

The Restaurant—Kitchen Dept.—Functions

Staff Management	Meal Planning	Food Management	Food Preparation	Equipment Maintenance
Interview staff		Ordering & Receiving	Mise en Place	Purchase & Disposal
Staff Training		Food storage & Disposal	Meal Preparation	Cleaning
Meeting Payroll				Repair

Diagram: Kitchen Dept. - Functions
Version: 1
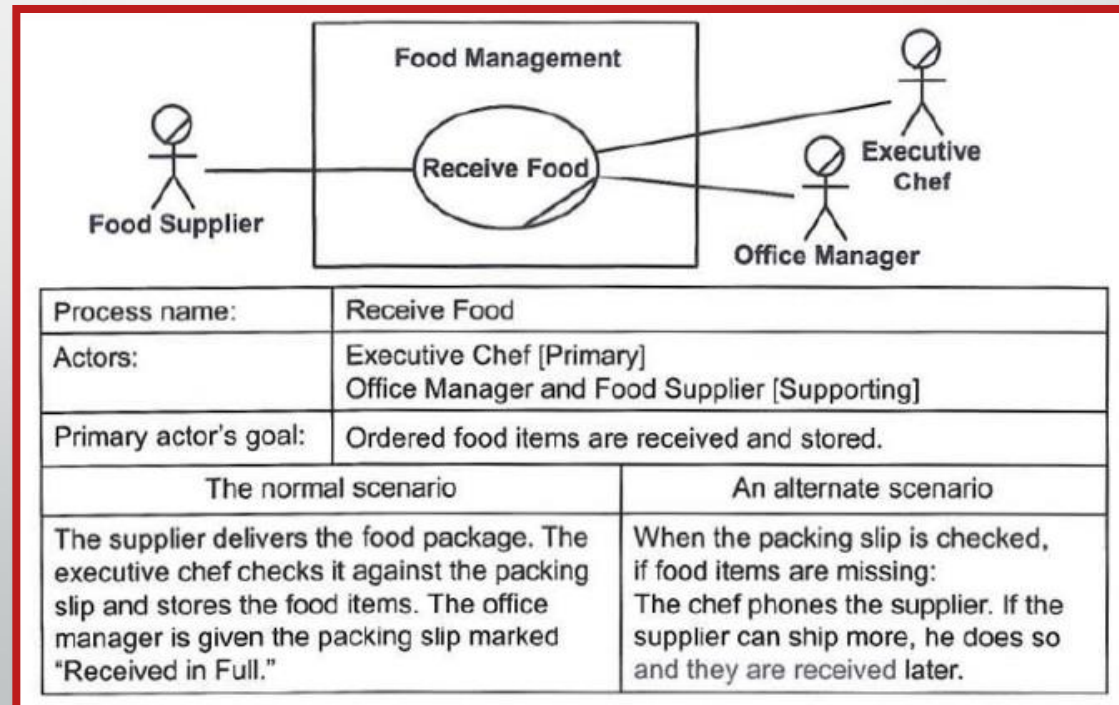Date: 3rd November
Author: BA

Business Use Cases

- Model use cases at the correct level of detail
  - **Not too detailed**
    - **Check Packing Slip and Store Food**
    - **These are activities, steps, or events** inside the Receive Food use case
    - **Sub-tasks of the main task**
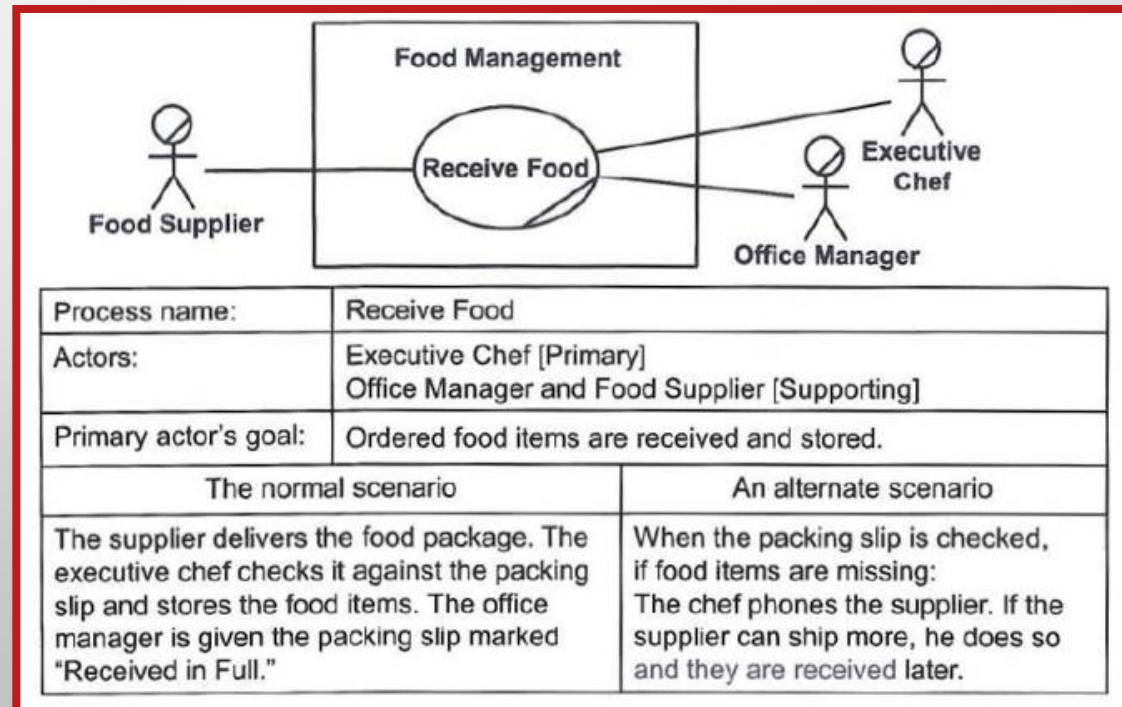   - Sub-goals of the actor performing Receive Food
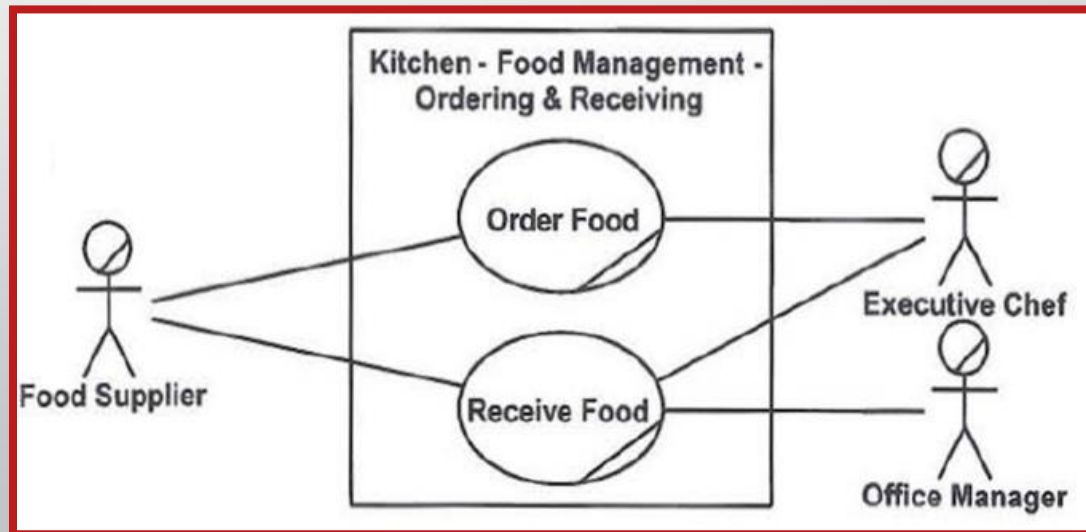
Scenarios

- A use case is **a collection of scenarios**

- A scenario is **a sequence of interactions (events) and activities (steps) among the actors** using business objects (equipment and documents)

  - A particular story

  - **A path through the use case**

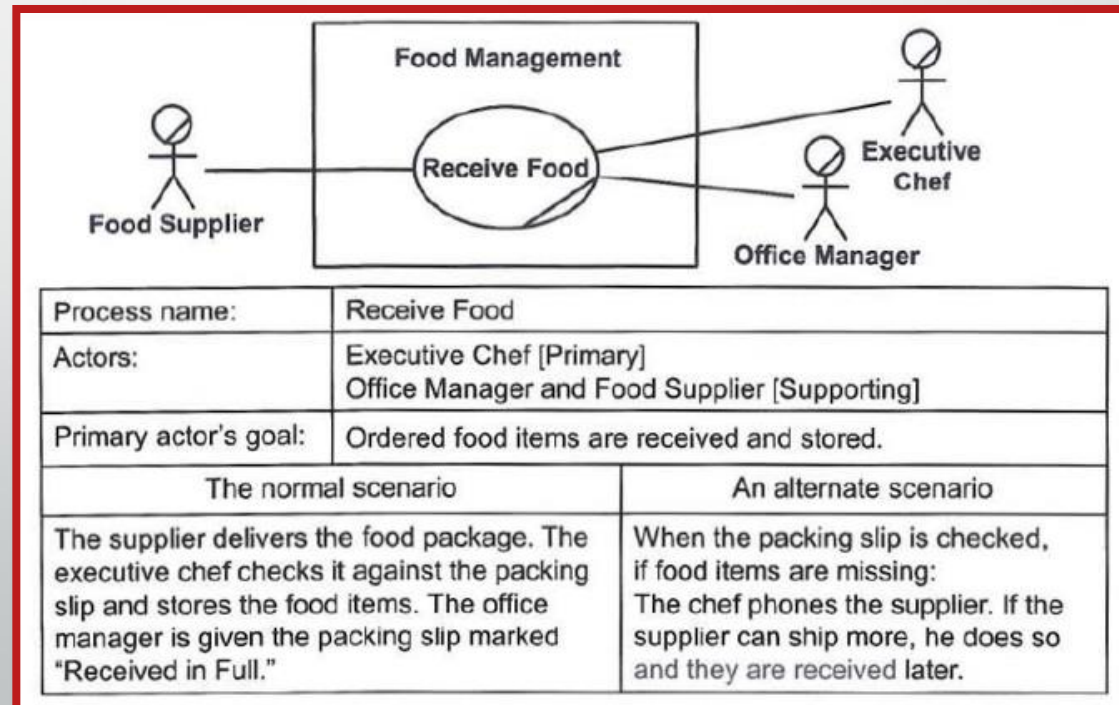| Process name:	Receive Food	
Actors:	Executive Chef [Primary] Office Manager and Food Supplier [Supporting]	
Primary actor's goal:	Ordered food items are received and stored.	
The normal scenario		An alternate scenario
The supplier delivers the food package. The executive chef checks it against the packing slip and stores the food items. The office manager is given the packing slip marked "Received in Full."		When the packing slip is checked, if food items are missing: The chef phones the supplier. If the supplier can ship more, he does so and they are received later.

Scenarios

- Scenarios **may succeed or fail to reach the goal**
    - The most frequently performed **successful path** is called
        - **The main flow** or
        - **The basic path** or
        - **The normal scenario**

Process name:	Receive Food	
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The normal scenario		An alternate scenario
The supplier delivers the food package. The executive chef checks it against the packing slip and stores the food items. The office manager is given the packing slip marked "Received in Full."		When the packing slip is checked, if food items are missing: The chef phones the supplier. If the supplier can ship more, he does so and they are received later.

Scenarios

- Scenarios may succeed or fail to reach the goal
  - Alternate scenarios **may succeed or fail**
    - Also known as **alternative scenarios**
   - **Failed alternate scenarios are called exception scenarios**

Process name:	Receive Food	
Actors:	Executive Chef [Primary] Office Manager and Food Supplier [Supporting]	
Primary actor's goal:	Ordered food items are received and stored.	
The normal scenario		An alternate scenario
The supplier delivers the food package. The executive chef checks it against the packing slip and stores the food items. The office manager is given the packing slip marked "Received in Full."		When the packing slip is checked, if food items are missing: The chef phones the supplier. If the supplier can ship more, he does so and they are received later.

Food Management

Receive Food

Food Supplier

Executive Chef

Office Manager

Eliciting Business Use Cases

- To elicit use cases from participants
  - **Decide on the subject being modelled**
  - **Describe the primary actors involved**
  - **Identify the primary actors' goals**
  - **Define the use cases that satisfy the goals**
  - **Identify the supporting actors, if any**
  - **Draw the context-level use-case diagram**
    - Use associations to connect actors to use cases
  - Document the use cases and actors
- **Use the term process** instead of use case
  - To increase audience understanding

Business Use Cases vs. System Use Cases

- A business use-case model

  - Has an organisation unit and function(s) as its subject

  - Contains processes

    - **Done by actors in the business**

    - **Interacting with actors outside the business**

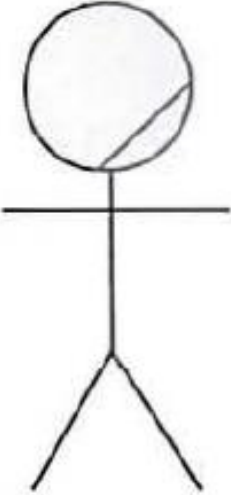   - **Consisting of manual and automated steps**
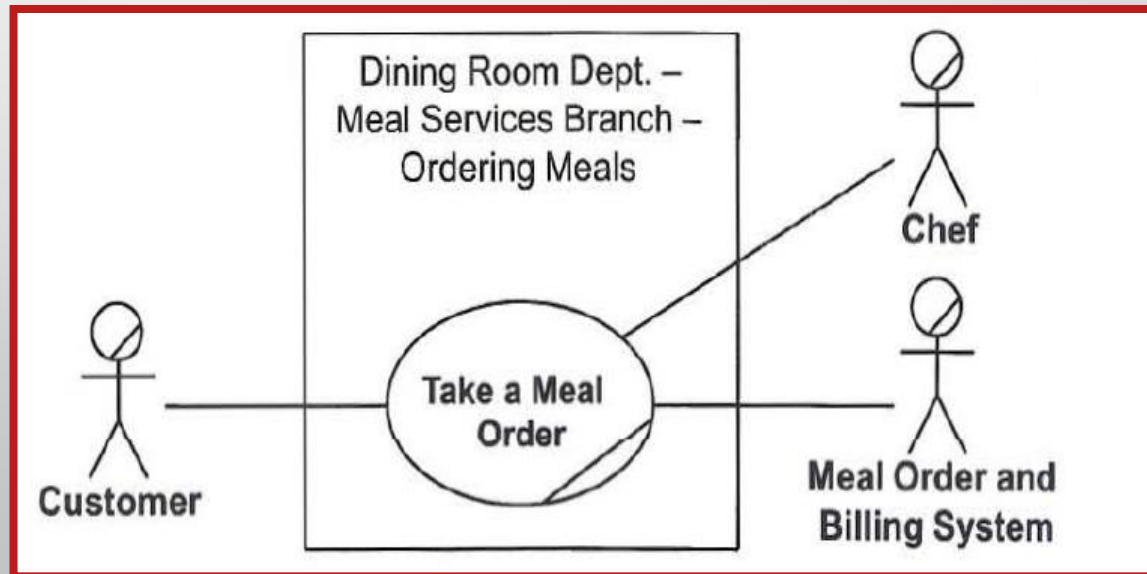
Business Use Cases vs. System Use Cases

- A system use case model
  - Has an IT system as its subject
  - Contains processes
    - **Performed on the IT system**
    - **Interacting with users (system actors)**
    - **Consisting of automated steps**
  - No slashes on stick figures or ovals
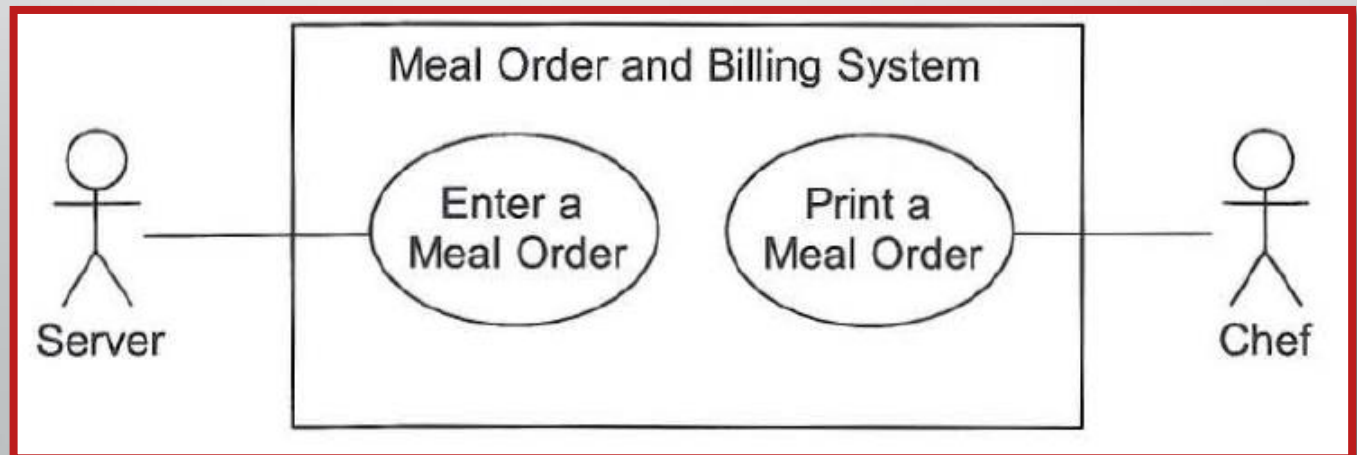
Writing Actor Descriptions

Actor	Description
Food supplier	A food supplier is a business that supplies restaurants with food items. Food suppliers usually specialize in a type of food item. For example, one supplier may supply meats, fish, and poultry, a second may supply fresh fruits and vegetables, while a third may supply dry goods and cooking oil. Food suppliers take orders and deliver food items in packages with a packing slip. They invoice the restaurant immediately and expect payment within 15 days.

Writing Use-Case Descriptions

- Use cases can be **documented at three different levels of detail**

  - **Brief**

    - One-paragraph summary of the main flow

Headings	Content
Process name:	Receive Food
Actors:	Executive Chef [Primary], Office Manager and Food Supplier [Supporting]
Primary actor's goal:	Ordered food items are received and stored.
Description:	The food supplier packages the food items and delivers them with a packing slip to the kitchen. Throughout the week, the executive chef—or, in his absence, the sous chef—receives, checks, and stores these food items. The packing slips marked "Received in Full" are given to the office manager for later invoice checking.

Writing Use-Case Descriptions

- Use cases can be documented at three different levels of detail
  - **Casual**
    - **Multiple paragraphs describing the main and alternate flows**

Alternate flows:	When checking the delivery: If the items received are inconsistent with those on the packing slip or the order list, then the chef phones the food supplier and tells him about the difference. When talking with the supplier: If there are items missing and the supplier agrees to ship more, the chef will receive them later. If there are items missing and the supplier does not have any, the chef repeats the Order Food process for them. If there are additional items and the chef agrees to keep them, the chef gives the corrected packing slip to the office manager. If there are additional items and the chef does not want them, the chef stores them separately for later pickup by the supplier.

Writing Use-Case Descriptions

Headings	Content
Process name:	Receive Food
Actors:	Executive Chef [Primary], Office Manager and Food Supplier [Supporting]
Primary actor's goal:	Ordered food items are received and stored.
Main flow:	The food supplier packages the food items and delivers them with a packing slip to the kitchen. Throughout the week, the executive chef, or in his absence, the sous chef receives, checks, and stores these food items. The packing slips marked "Received in Full" are given to the office manager for later invoice checking.
Alternate flows:	When checking the delivery: If the items received are inconsistent with those on the packing slip or the order list, then the chef phones the food supplier and tells him about the difference. When talking with the supplier: If there are items missing and the supplier agrees to ship more, the chef will receive them later. If there are items missing and the supplier does not have any, the chef repeats the Order Food process for them. If there are additional items and the chef agrees to keep them, the chef gives the corrected packing slip to the office manager. If there are additional items and the chef does not want them, the chef stores them separately for later pickup by the supplier.

Writing Use-Case Descriptions

- Use cases can be documented at three different levels of detail

    - **Fully dressed**

        - **Detailed descriptions of all flows**

        - **Structured with numbered steps**

        - **Additional sections capturing more use-case properties**

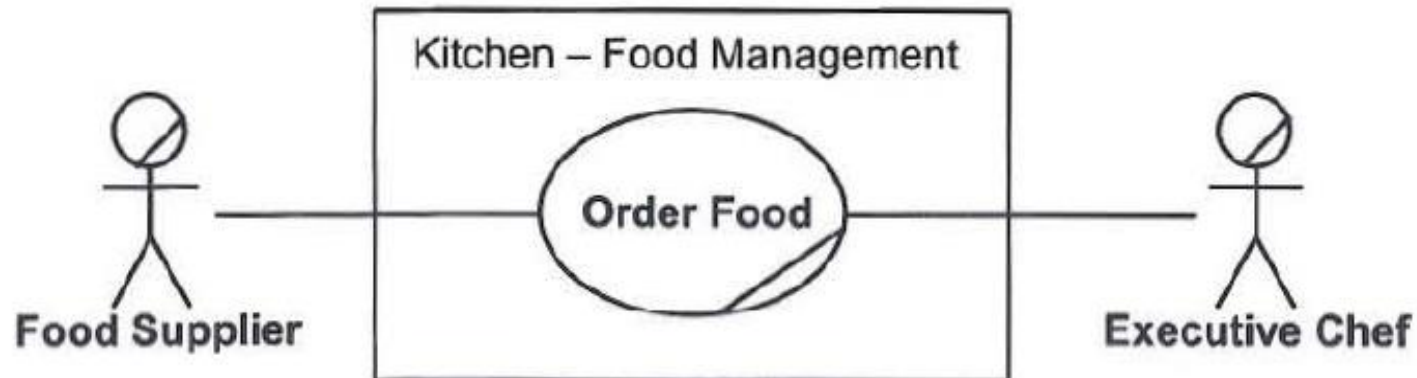| Headings	Content
Main flow:	1. The food supplier delivers a package of food items to the kitchen. 2. The chef compares the items in the package with the packing slip and the order list. 3. The chef writes "Received in Full" on the packing slip. 4. The chef stores the food items in the pantry, refrigerators, or freezer depending on type. 5. The packing slip is given to the office manager for later invoice checking.

Writing Use-Case Descriptions

- Select the description level based on:

  - Project purpose

  - Time available for modelling

  - Audience

- A use-case survey model is a context-level use-case diagram plus actor and brief use-case descriptions

Brief Use-Case Descriptions: Example Headings

Headings	Content
Process name:	Order Food
Actors:	Food Supplier [Primary], Executive Chef [Supporting]
Primary actor's goal:	Receive food orders from the restaurant
Description:	Every Monday, the executive chef checks the supply of food items in the pantry, refrigerators, and freezers. He then phones the food suppliers and orders the required food items.

Kitchen – Food Management

Order Food

Food Supplier

Executive Chef

Brief Use-Case Descriptions: Example

- A use case does not describe how the process is done internally
  - It describes what happens from the actors' external perspectives

Headings	Content
Process name:	Receive Food
Actors:	Executive Chef [Primary], Office Manager and Food Supplier [Supporting]
Primary actor's goal:	Ordered food items are received and stored.
Description:	The food supplier packages the food items and delivers them with a packing slip to the kitchen. Throughout the week, the executive chef—or, in his absence, the sous chef—receives, checks, and stores these food items. The packing slips marked "Received in Full" are given to the office manager for later invoice checking.

Casual use-case description

- **Keep the brief description as the main flow**
- **Add paragraphs for significant alternate flows**
  - **Start each paragraph with 'When ... If ...etc.'**

Alternate flows:	When checking the delivery: If the items received are inconsistent with those on the packing slip or the order list, then the chef phones the food supplier and tells him about the difference.
	When talking with the supplier: If there are items missing and the supplier agrees to ship more, the chef will receive them later.
	If there are items missing and the supplier does not have any, the chef repeats the Order Food process for them.
	If there are additional items and the chef agrees to keep them, the chef gives the corrected packing slip to the office manager.
	If there are additional items and the chef does not want them, the chef stores them separately for later pickup by the supplier.

Casual Use-Case Description: Alternate Flows

- **Alternate flows for missing or additional food items**

Alternate flows:	When checking the delivery: If the items received are inconsistent with those on the packing slip or the order list, then the chef phones the food supplier and tells him about the difference. When talking with the supplier: If there are items missing and the supplier agrees to ship more, the chef will receive them later. If there are items missing and the supplier does not have any, the chef repeats the Order Food process for them. If there are additional items and the chef agrees to keep them, the chef gives the corrected packing slip to the office manager. If there are additional items and the chef does not want them, the chef stores them separately for later pickup by the supplier.

Casual Use-Case Description: Alternate Flows

- Alternate flows for spoiled food items

- Not all the alternate flows need to be described

  - We may choose to ignore those that are least likely to occur

Alternate flows:	When checking the delivery: If any food items are spoiled, the chef phones the food supplier and tells him about the spoilage. When talking with the supplier: If the supplier agrees to ship replacements the chef will receive them later. If the supplier cannot replace them, the chef performs the Order Food process for them. If the supplier wants the spoiled items returned, the chef stores them separately for later pickup by the supplier. If the supplier does not want the spoiled items returned, the chef disposes of them.

Fully Dressed Use-Case Description

- A fully dressed use-case description contains
  - **The primary actor and goal**
  - **The supporting actors**
  - **A list of any other stakeholders**
    - **Whose interests are served by the use case**
    - **Who may have an influence on the use case**
  - Any preconditions that must be true before the use case can be started
    - Usually as a result of some previous use case completing
  - The post-conditions that are true if the use case succeeds
    - Includes the goal(s) the primary actor wants to achieve
    - Are also called success guarantees

Fully Dressed Use-Case Description: Example

Headings	Content
Process name:	Receive Food
Primary actor:	Executive Chef
Primary actor's goal:	Ordered food items are received and stored.
Supporting actors:	Office Manager and Food Supplier
Stakeholders:	Restaurant Auditor: Wants accurate records to be kept. Health Inspector: Wants food stored correctly.
Preconditions:	Food items are on order with a supplier because the Order Food process has been performed. The kitchen is open for operation.
Post-conditions:	The food items are marked "Received in Full" on the packing slip and are checked off the order list. The packing slip has been given to the office manager. The received food items are stored correctly.

Fully Dressed Use-Case Description: Example

- A fully dressed use-case description contains
  - **All the scenarios: main and alternates**
  - **Structured with numbered steps**
- Steps 2 and 4 are not broken down Into multiple steps
  - Should not describe how they are done, only what is done

Headings	Content
Main flow:	1. The food supplier delivers a package of food items to the kitchen. 2. The chef compares the items in the package with the packing slip and the order list. 3. The chef writes "Received in Full" on the packing slip. 4. The chef stores the food items in the pantry, refrigerators, or freezer depending on type. 5. The packing slip is given to the office manager for later invoice checking.

Fully Dressed Use-Case Description: Alternate Flows

- A fully dressed use-case description contains
  - **Alternate flows described using**
    - **Branch point (Also known as the extension point)**
    - **Condition**
  - Additional optional sections
    - Depending on time available and importance to the project

Alternate flows:	Branch point: After 2.1
	 Condition: The supplier wants the spoiled items returned.
	 Flow: 2.1.5 The chef stores the items separately for the supplier
	                  to pick up.
	        2.1.6 Continue at Step 2.2.
	
	 Branch point: After 2.1
	 Condition: The supplier does not want the spoiled items.
	 Flow: 2.1.7 The chef disposes of the spoiled items.
	        2.1.8 Continue at Step 2.2.

Fully Dressed Use-Case Description: Alternate Flows

Alternate flows:	Branch point: After 2.
	Condition: Items are missing or spoiled.
	Flow: 2.1 The chef phones the food supplier and discusses the situation.
	    2.2 The chef writes the quantity received on the packing slip.
	    2.3 Continue at Step 4.
	
	Branch point: After 2.1
	Condition: The supplier agrees to ship items.
	Flow: 2.1.1 The supplier ships missing or replacement items.
	    2.1.2 Continue at Step 2.2.
	
	Branch point: After 2.1
	Condition: The supplier does not have any more items.
	Flow: 2.1.3 The chef performs the Order Food process.
	    2.1.4 Continue at Step 2.2.

Fully Dressed Use-Case Description: Alternate Flows

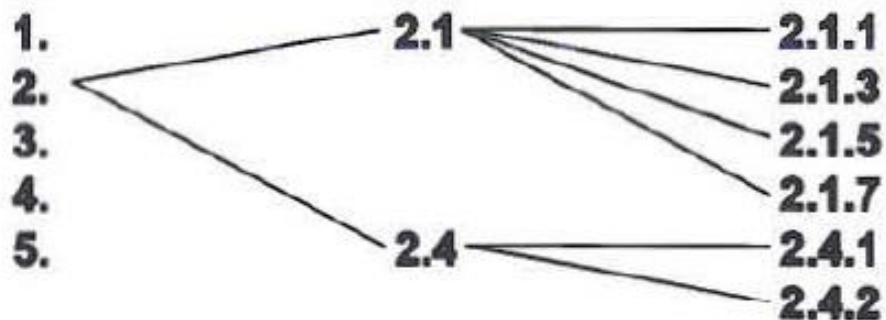| Alternate flows:	Branch point: After 2.1 Condition: The supplier wants the spoiled items returned. Flow: 2.1.5 The chef stores the items separately for the supplier to pick up. 2.1.6 Continue at Step 2.2. Branch point: After 2.1 Condition: The supplier does not want the spoiled items. Flow: 2.1.7 The chef disposes of the spoiled items. 2.1.8 Continue at Step 2.2.

Fully Dressed Use-Case Description: Alternate Flows

Alternate flows:	Branch point: After 2.
	Condition: Additional items in the package.
	Flow: 2.4 The chef discusses the additional items with the supplier.
	  2.5 The chef writes the quantity kept on the packing slip.
	  2.6 Continue at Step 4.
	
	Branch point: After 2.4
	Condition: The chef agrees to keep the additional items.
	Flow: 2.4.1 Continue at Step 2.5.
	
	Branch point: After 2.4
	Condition: The chef wants to return the additional items.
	Flow: 2.4.2 The chef stores the additional items separately for the supplier to pick up.
	  2.4.3 Continue at Step 2.5.