CO457 Business Modelling

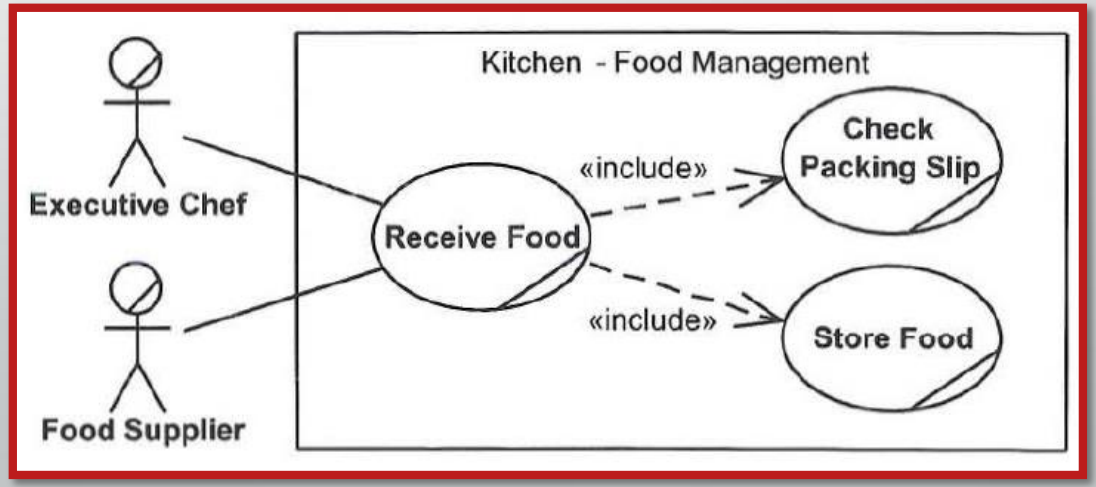
Module Week 6

Use-Case Models

Refined Business Use Cases

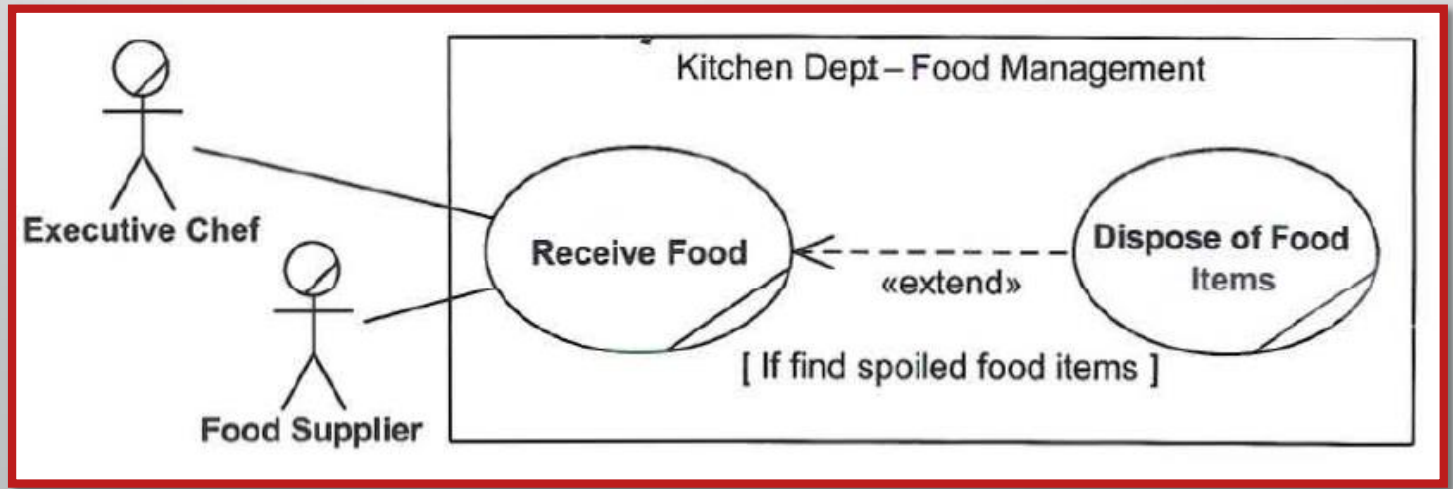
A Refined-Level Use-Case Diagram

- At the context level, **a use case is a main process performed by the business to reach an actor's goal**
- A **sub-process is a means by which the main process can be achieved**
  - Is done as part of the main process
  - Addresses an actor's sub-goal
  - **Is mode led with an « include» relationship on a refined use case diagram**



A Refined-Level Use-Case Diagram

- **Use the «extend» relationship if a sub-process is optional**
  - Based on some condition **being true**
  - Like an alternate flow that has its own internal complexity
- When receiving food, if the executive chef finds spoiled food items
  - The Dispose of Food Items process is performed



Fully Dressed Use Case: Additional Information

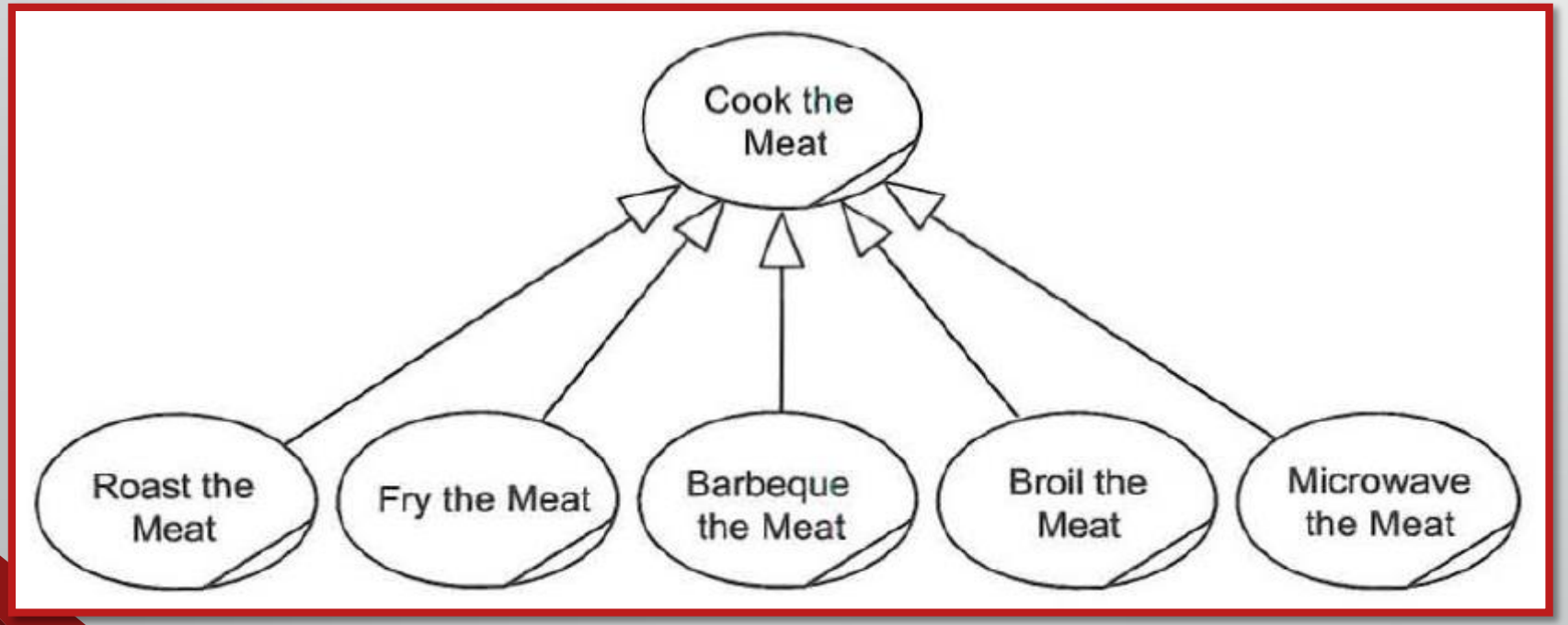
- Additional optional sections in a fully dressed use case description
- A refined use case diagram
  - **Using «include» , «extend» , and generalization relationships**
- A process flow diagram
  - **Illustrating all of the scenarios**
- **Performance requirements**
- **Business rules**

Fully Dressed Use Case: Additional Information

- The **business interface** being used
  - For example, phone, packing slip
- Special requirements
  - Supplementary requirements specific to this use case
- **Data requirements** specific to this use case
- **References to source material** and other related documents

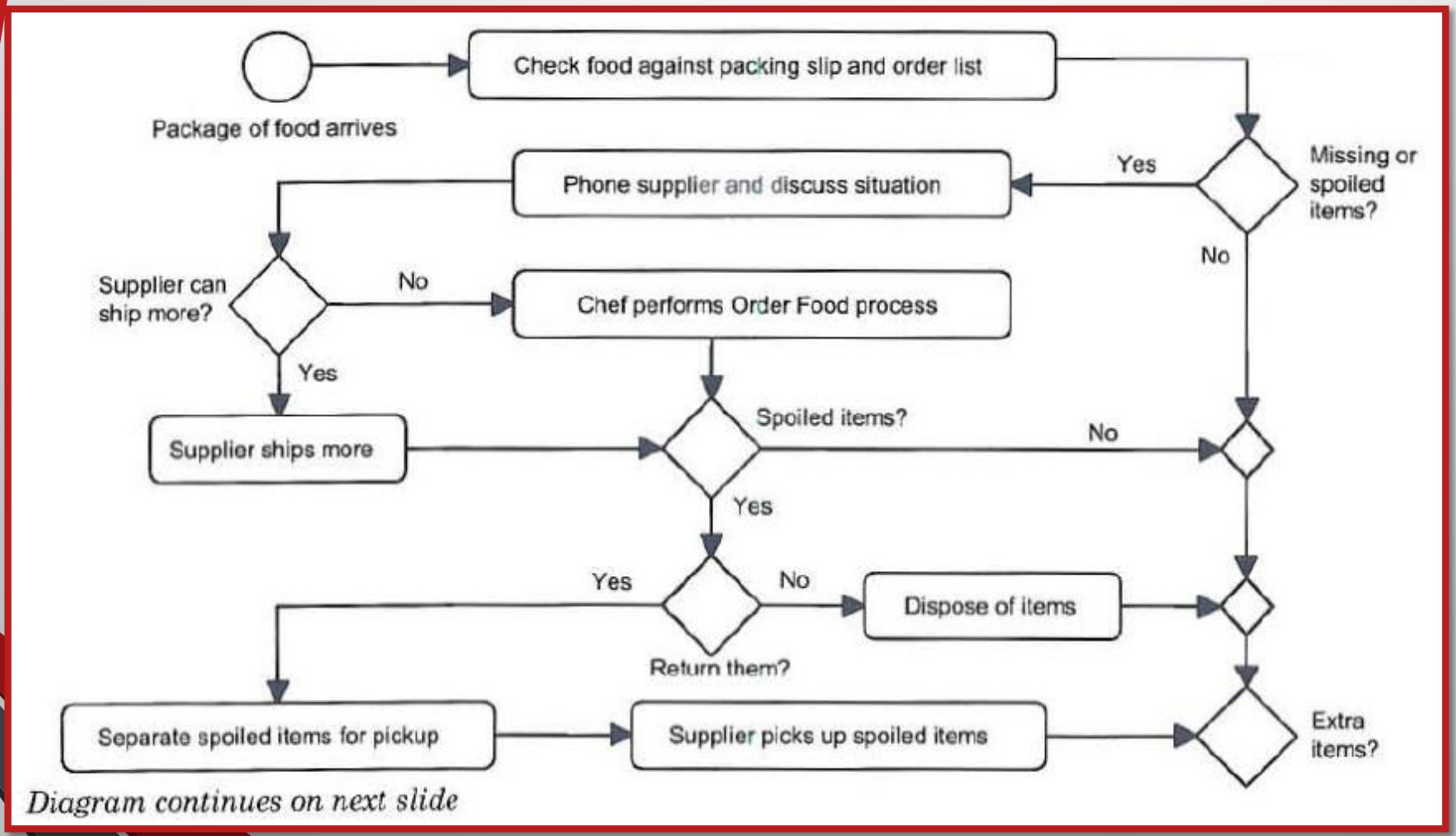
Generalisation Between Use Cases

- If there is **more than one way of achieving the goal**
  - Use generalisation



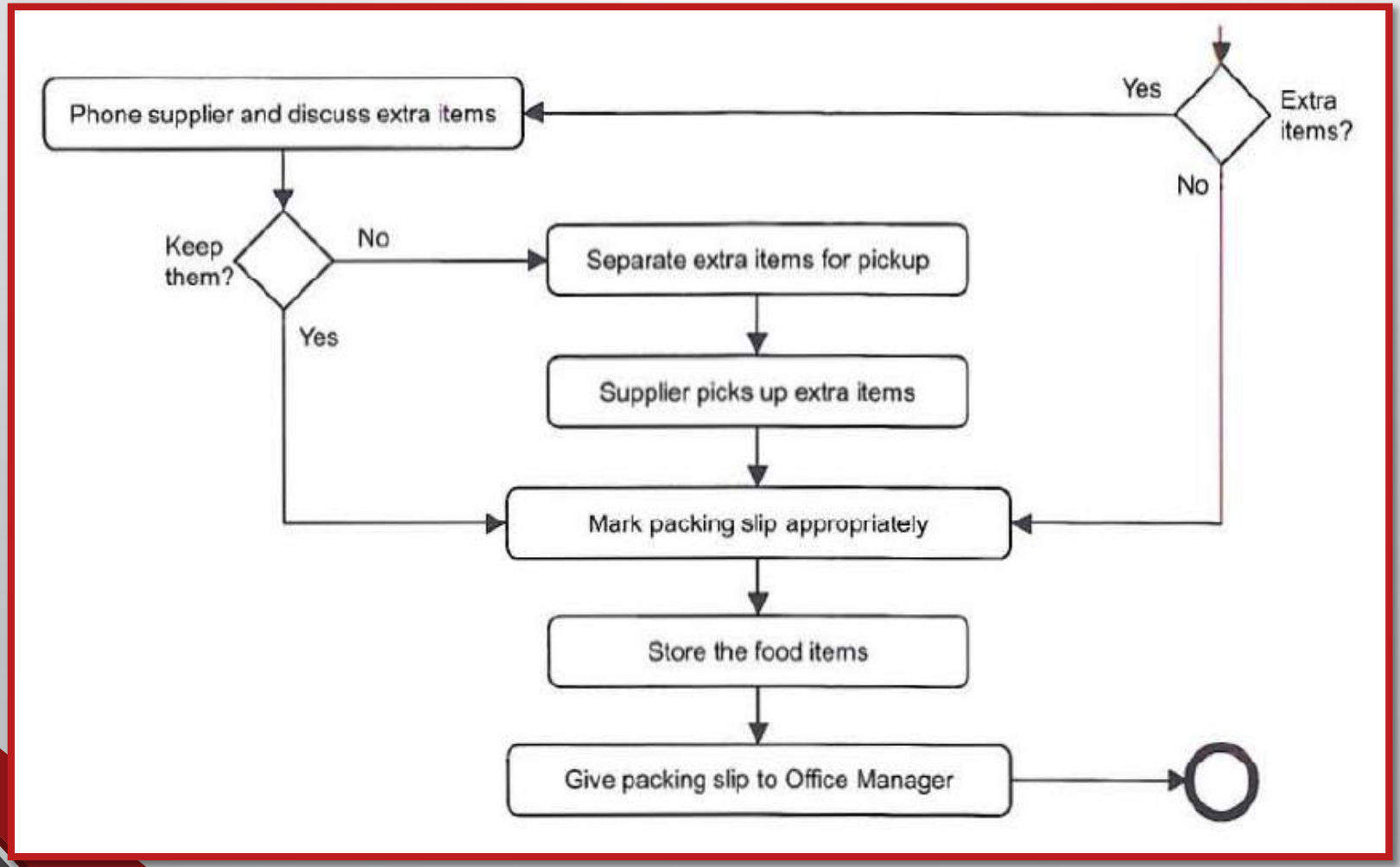
A Process Flow Diagram

- Receive Food process now diagram



A Process Flow Diagram

- Receive Food process flow diagram (continued)



Performance Requirements

- **Actor population size**
  - There are seven servers
- **Growth rate** of the actor population
  - The number of servers rarely changes
- **Frequency of use case occurrence**
  - Peak occurrence
    - On Saturday evening, the kitchen produces 45 meals per hour at peak capacity
  - Daily, weekly, monthly, or yearly patterns
- **Growth rate of occurrence**
  - The average number of main courses prepared on Saturday night is increasing by two every month

Performance Requirements

- **Alternate flow branching ratios**
  - The chance of finding spoiled food items when ordering is 1 percent
- **Response times**
  - Average duration to complete
    - The average meal preparation time is 15 minutes
    - The average time to load the dishwasher is four minutes
  - Expected duration to complete
    - 98 percent of all meals shall be prepared within 25 minutes
    - 95 percent of dishwasher loads should be done within five minutes

Modelling Business Processes

Business Process Models

Business Process Models

- There are many process and workflow modelling techniques
  - **Flowcharts were invented in 1921 by Frank Gilbreth**
    - Formalized in 1947 by American Society of Mechanical Engineers
  - **Line Of Visibility Enterprise Modelling (LOVEM)**
    - **Developed by IBM (see Article PDF in this weeks folder on Blackboard)**

Business Process Models

- Integrated DEFinition (IDEFC)
  - Process Description Capture
  - One of many U.S. Air Force funded modelling diagrams
- **Activity diagrams**
  - **UML diagram for IT process modelling**
- All can be used to **design business processes and workflows**
- **OMG has standardised the business process diagram with BPMN**

Business Process Models

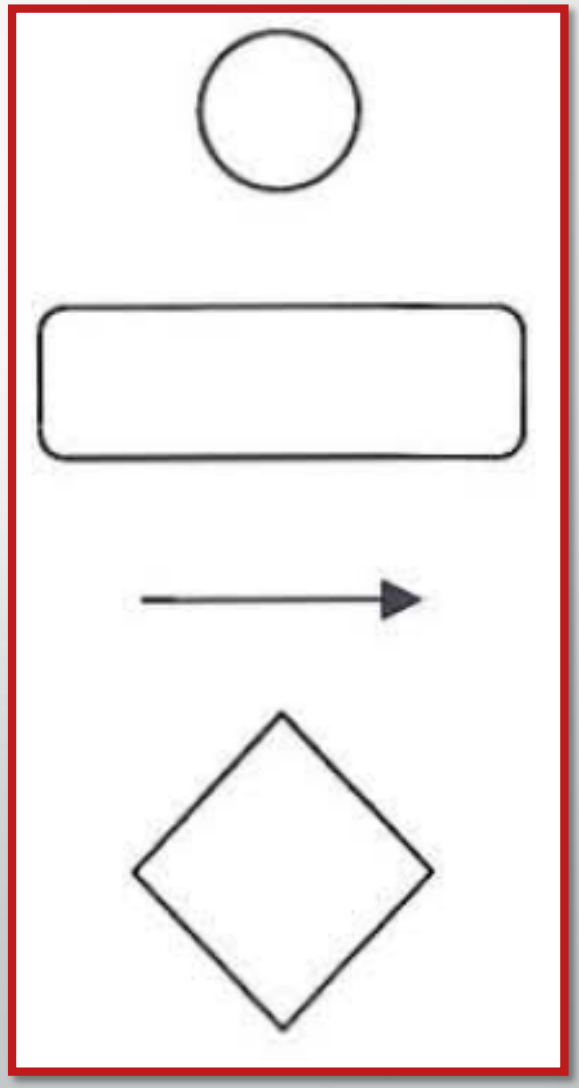
- **Business Process Modelling Notation**
  - Developed by the Business Process Management Initiative
    - Merged with OMG in 2005
  - Maintained by OMG
- **Provides a notation to draw Business Process Diagrams (BPD)**

Business Process Models

- **A business process diagram describes a business process**
- A business process is **a collection of related, structured activities that produce a service or product that meets the needs of a client**
  - A business use case
  - A cross-functional map

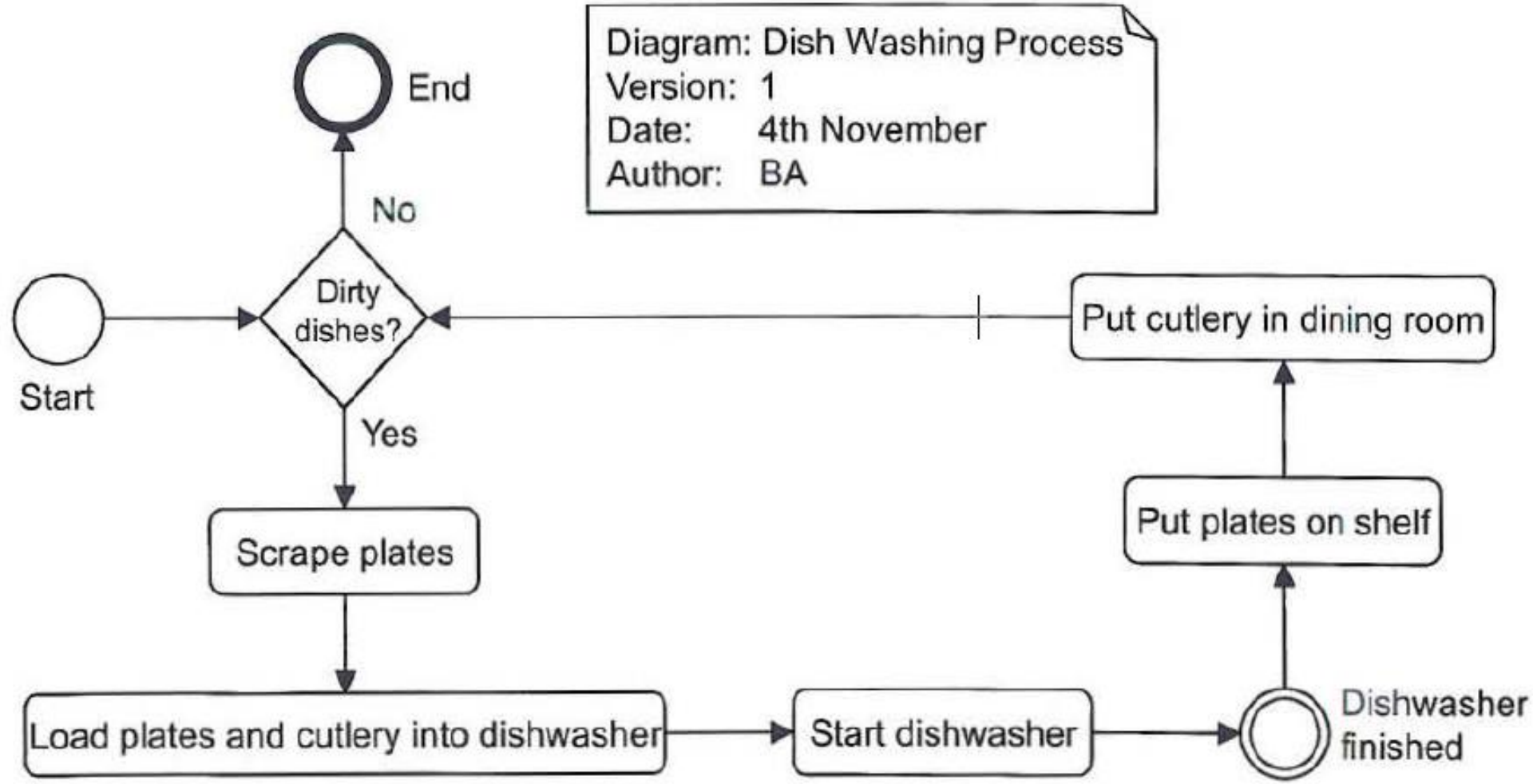
Business Process Diagram

- A basic business process diagram contains:
- **Start and end points**
  - Events
  - Circles
- **A sequence of steps**
  - Activities
  - Boxes
  - Sequence flow
  - Arrows
- **Decisions**
  - Gateways
  - Diamonds



Business Process Diagram: Example

- Kitchen BPD example:



Business Process Modelling Notation

- BPMN contains four types of modelling elements
  - **Flow objects are the main behavioural elements**
    - Events
    - Activities
    - Gateways
  - **Connecting objects are arrows**
    - Sequence flow
    - Message flow
    - Association
  - **Swim lanes for grouping the flow and connecting objects**
  - **Artefacts for providing additional information on the diagram**
    - Data object
    - Group