

LECTURE-12

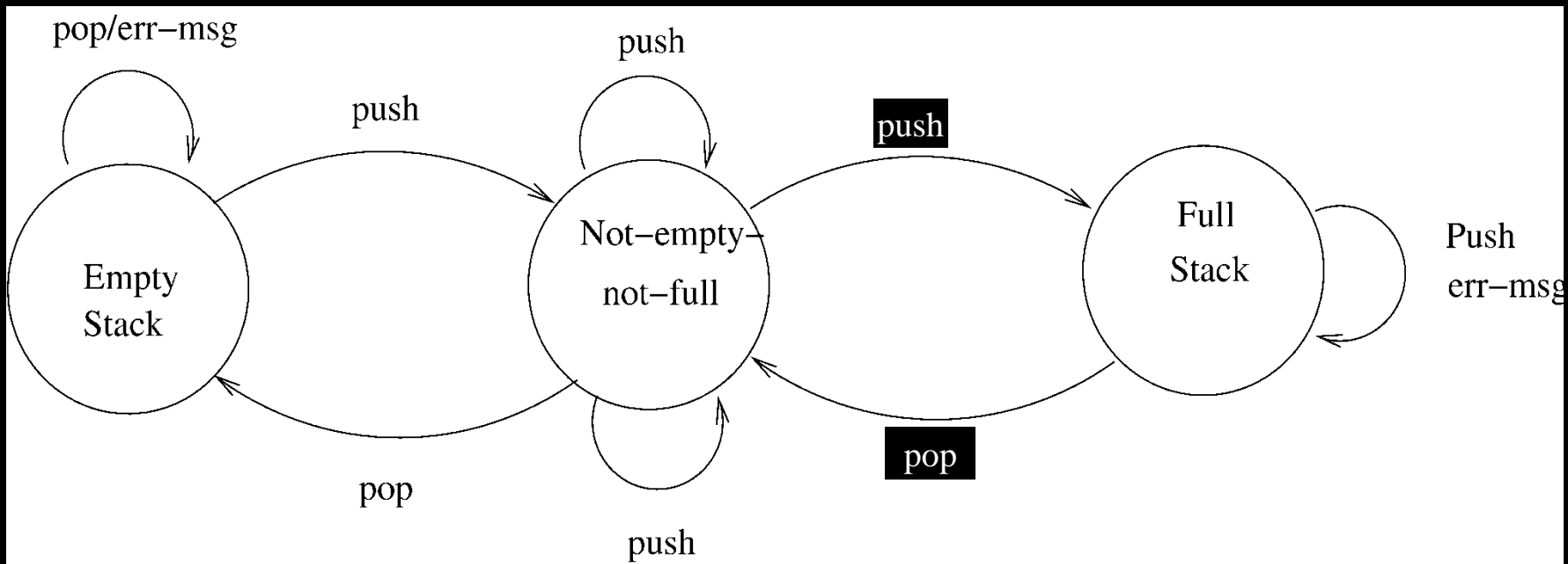
Other Diagrams

- Class diagram and interaction diagrams most commonly used during design
- There are other diagrams used to build different types of models

State Diagrams

- Dynamic model to represent behavior of an individual object or a system
- Shows the states of an object and transitions between them
- Helps understand the object – focus only on the important logical states
- State diagrams can be very useful for automated and systematic testing

State diagram of a stack



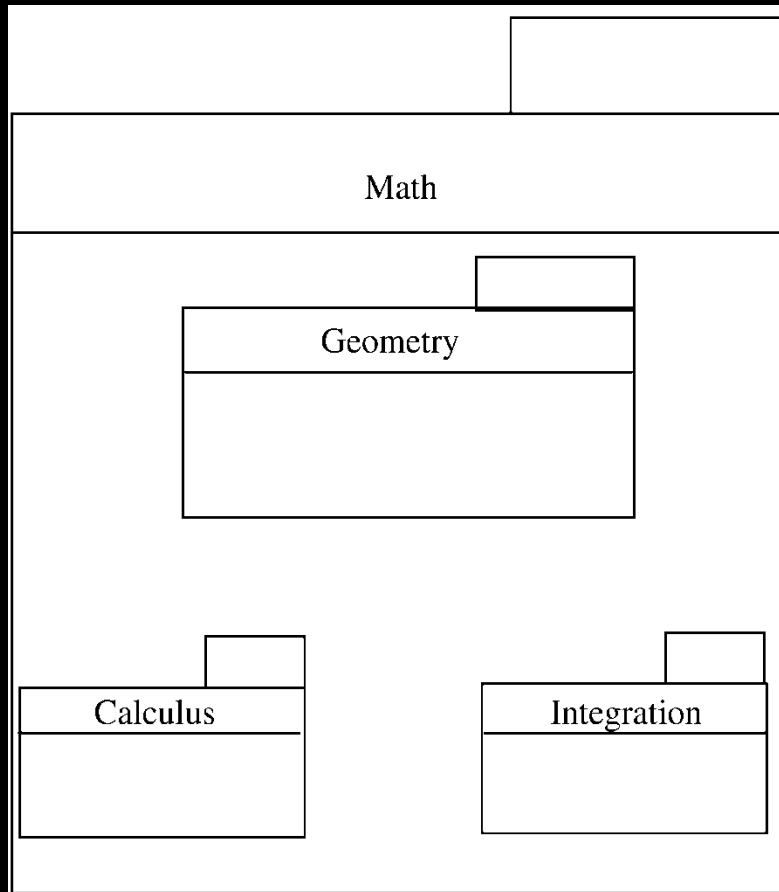
Activity Diagrams

- Another method for modeling the dynamic behavior
- Describes the sequence of activities, and parallel behavior in a system
 - Activity represented by ovals, dependence shown by inputs/outputs
- Variant of a state diagram – captures the state of the system and transitions

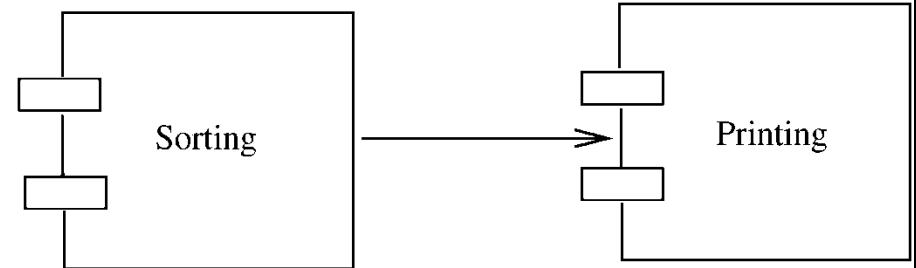
Other Diagrams

- Instead of objects/classes, can represent components, packages, subsystems
- These are useful for developing architecture structures
- UML is extensible – can model a new but similar concept by using stereotypes (by adding <<name>>)
- Tagged values can be used to specify additional properties, e.g. private, readonly..
- Notes can be added

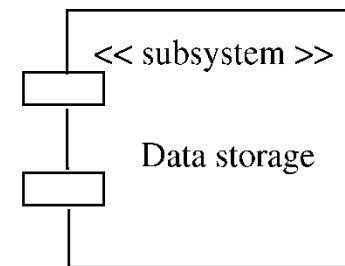
Other symbols



PACKAGE



COMPONENT - CONNECTOR



SUBSYSTEM

Design using UML

- Many OOAD methodologies have been proposed
- They provide some guidelines on the steps to be performed
- Basic goal is to identify classes, understand their behavior, and relationships
- Different UML models are used for this
- Often UML is used, methodologies are not followed strictly

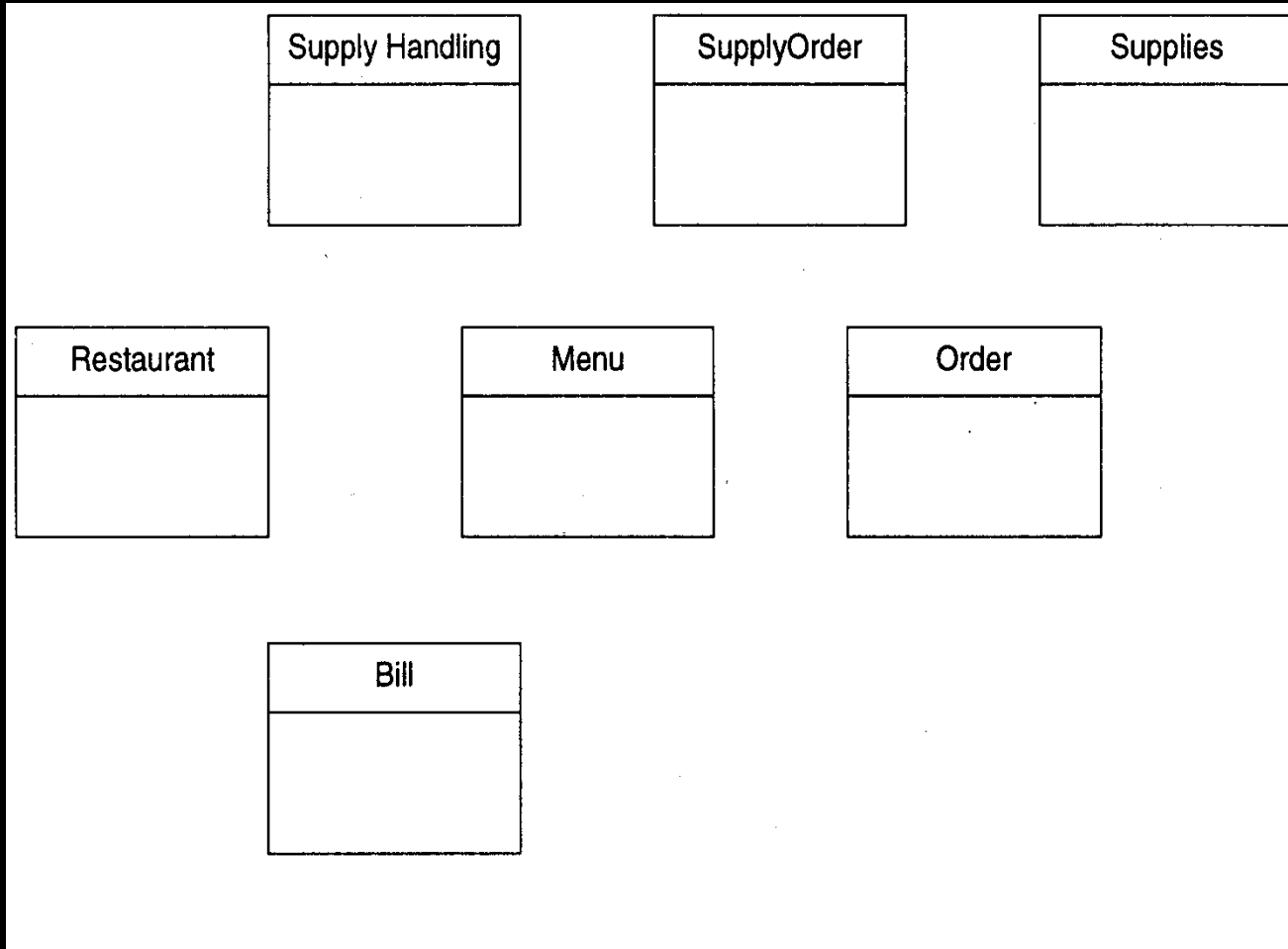
Design using UML

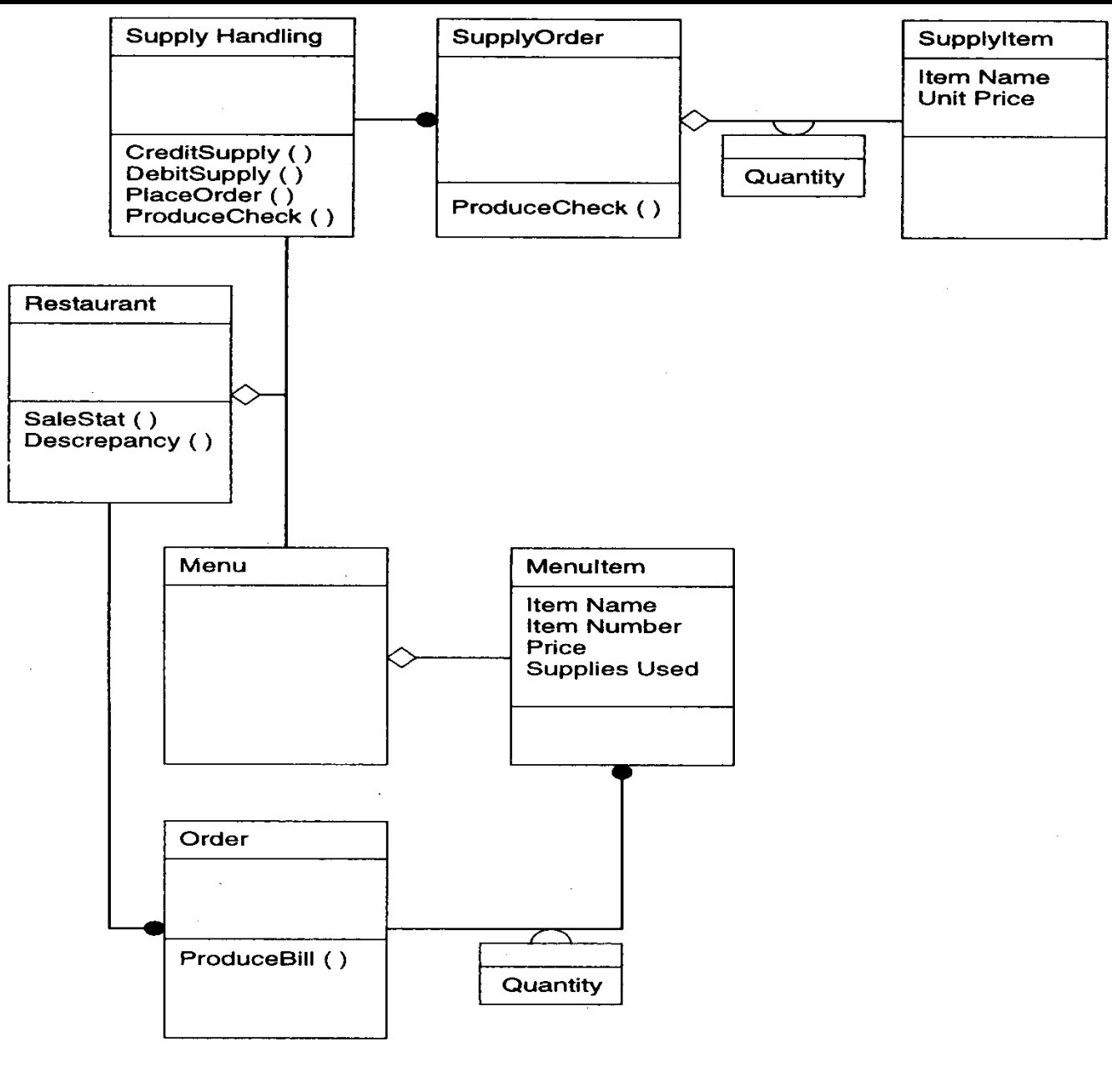
- Basic steps
 - Identify classes, attributes, and operations from use cases
 - Define relationships between classes
 - Make dynamic models for key use cases and use them to refine class diagrams
 - Make a functional model and use it to refine the classes
 - Optimize and package
- Class diagrams play the central role; class definition gets refined as we proceed

Success Scenario

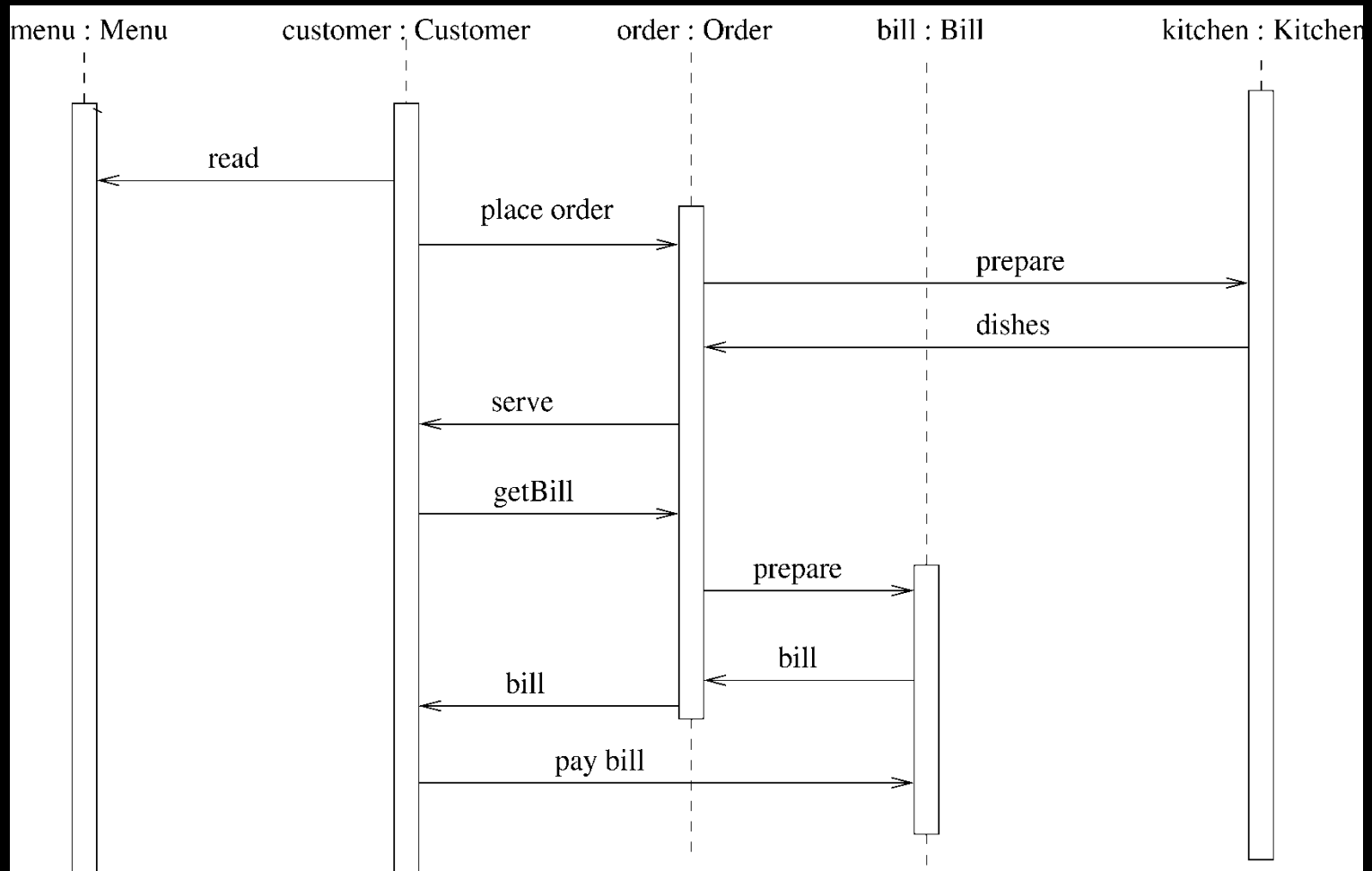
- Customer read the menu
- Customer places the order
- Order is sent to the kitchen for preparation
- Ordered items are served
- Customer requests for a bill for the order
- Bill is prepared for this order
- Customer is given the bill
- Customer pays the bill

Restaurant example: Initial classes





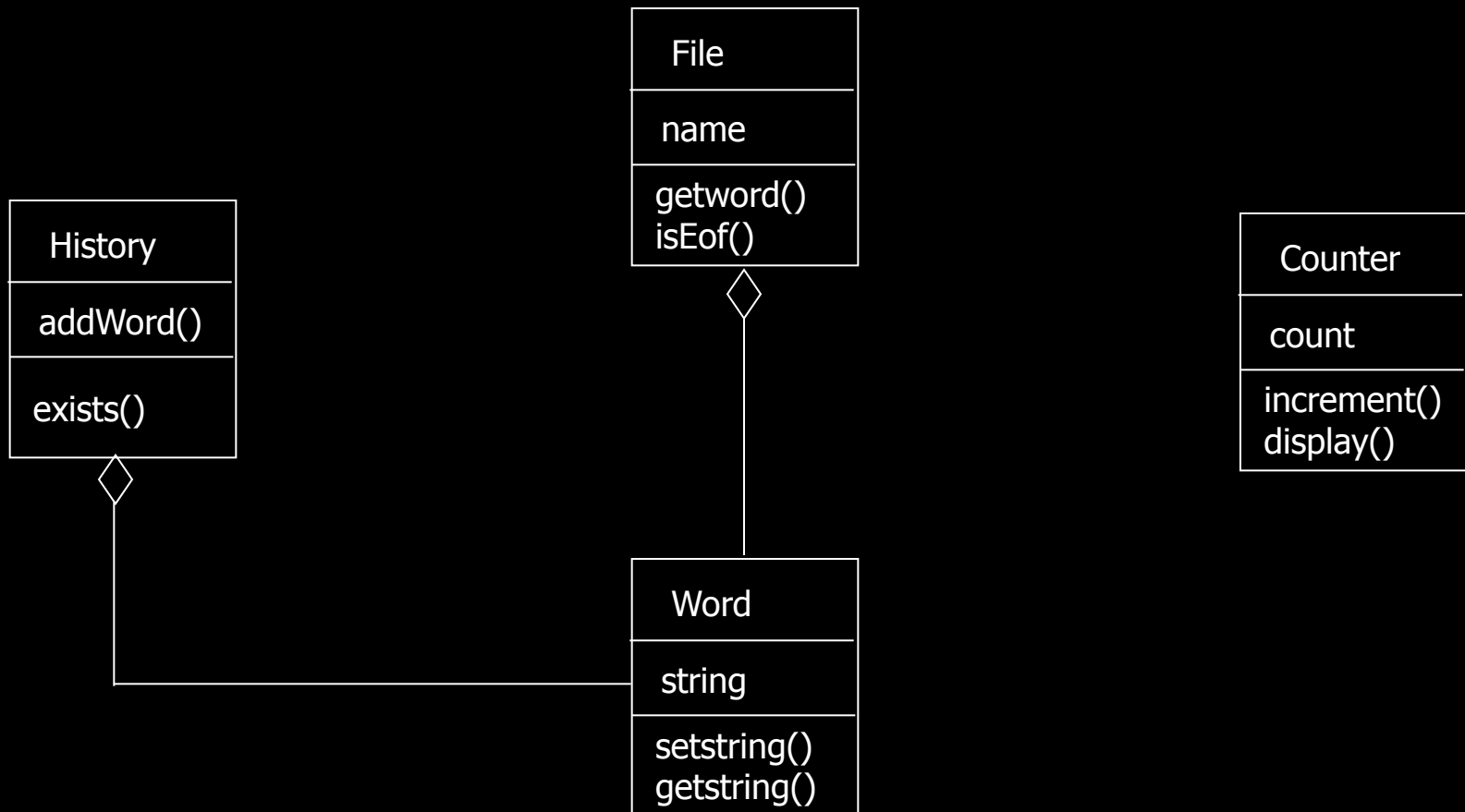
Restaurant example: a sequence diagram



Example: Word Count Problem

- System prompts for the file name; user enters the file name
- System checks for existence of file
- System reads the words from the file
- Systems prints the count

Example: Word Count Problem...



Example: Word Count Problem...

