# SOOAD

## UNIT 5

## OBJECT ORIENTED ANALYSIS & DESIGN

# UNIT -5 Sequence, Collaboration, Activity & State Chart Diagram

- Sequence Diagram
- Collaboration Diagram
- Activity Diagram
- State Chart Diagram

# COLLABORATION DIAGRAM

# UNIT -5 Collaboration Diagram

- **Collaboration Diagram**
  - Introduction
  - Elements of Collaboration Diagram
  - Guidelines for design of Sequence Diagram
  - Draw the Collaboration Diagram for any case study

# UNIT -5 Collaboration Diagram

- **Introduction**
  - A **Collaboration diagram is a kind of interaction diagram**, called as **communication diagram**.
  - **Describe the interactions among objects** in terms of sequenced messages.
  - Along with sequence diagrams, collaboration are used by designers **to define and clarify the roles of the objects** that perform a particular flow of events of a use case.
  - They are the **primary source of information used to determining class responsibilities and interfaces.**

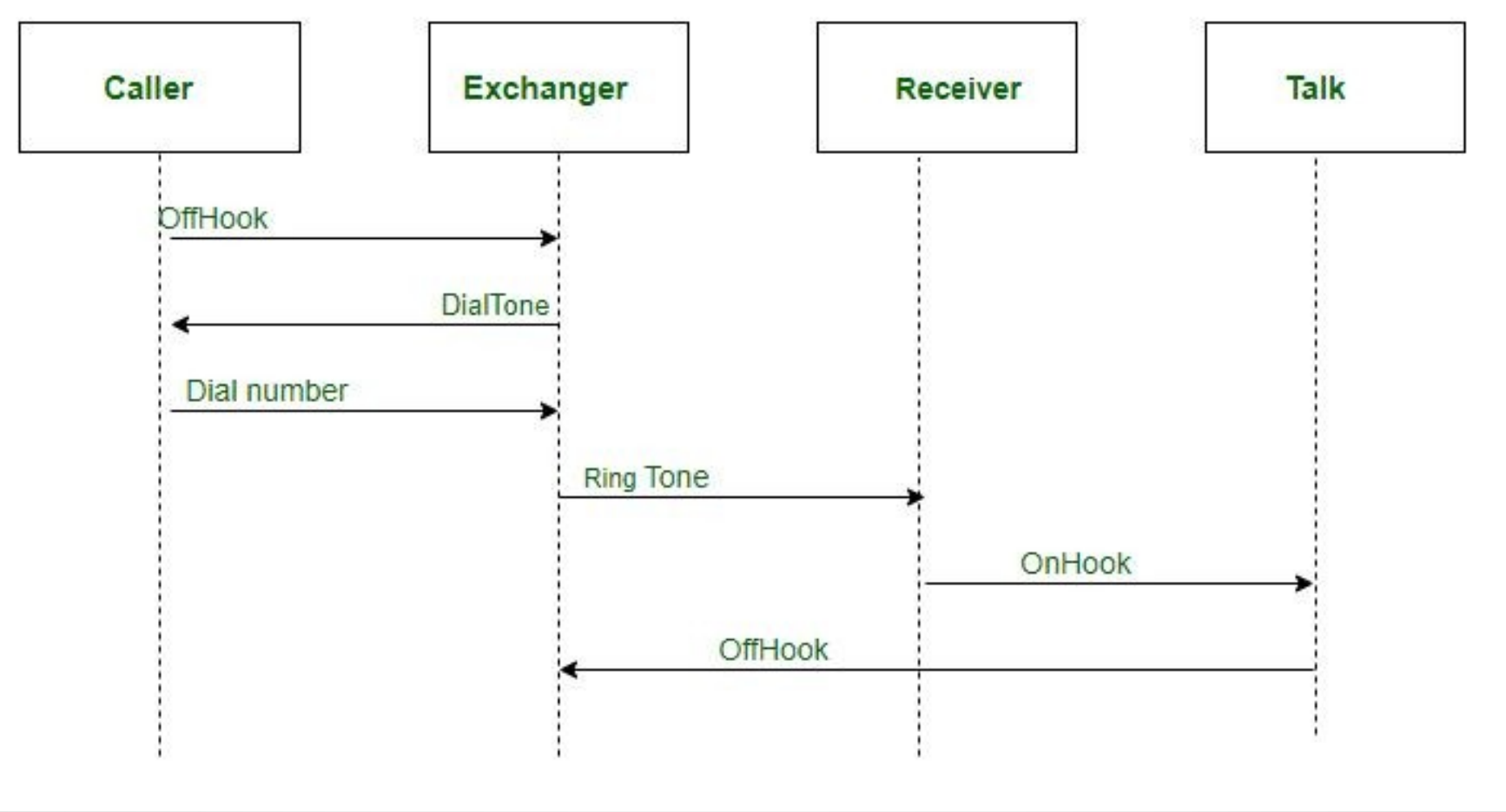
# UNIT -5 Collaboration Diagram

- **Introduction**
  - Used to explore the **dynamic nature of objects.**
  - **Shows the relationship among the objects.**
  - A **collaboration diagram** **does not show time as a separate dimension.**
  - Collaboration diagrams **show the message flow as well as relationships between objects.**
  - Are **used to model the logic of the implementation of a complex operation.**

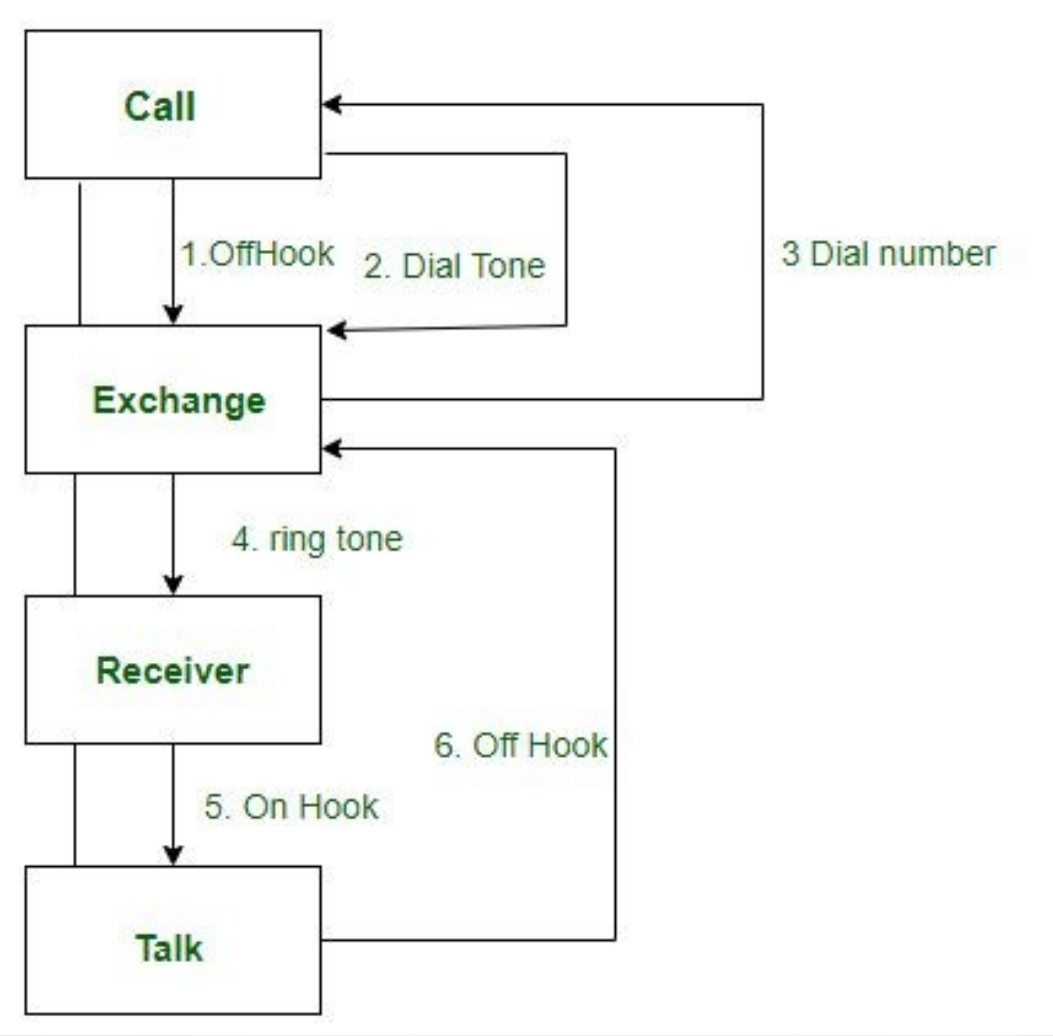
# UNIT -5 Collaboration Diagram

- **Introduction**
  - **Instead of drawing each participant as a lifeline and showing the sequence of mesages by vertical diagram as the sequence diagram does, it allows free placement of participnts, allowing drawing links to show how the participants connect, and use numbering to show the sequence of messages.**
  - **Collaboration diagram – links between the objects**
  - **Sequence diagram – used to emplhasize the sequence of calls**

# Sequence Diagram



# Collaboration diagram



# UNIT -5 Collaboration Diagram

- **Elements of Collaboration Diagram**
  - The **elements used to draw collaboration diagram are almost similar as used in sequence diagrams.**
  - **Elements are**
    - **Links**
    - **Messages**
    - **Objects**

# UNIT -5 Collaboration Diagram

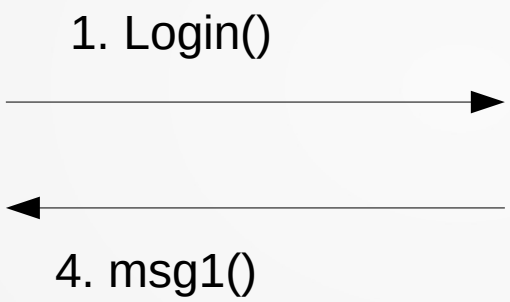
- **Elements of Collaboration Diagram**
  - **Links**
    - It shows the various paths available for message.
    - They donot provide detailed information about the links.

# UNIT -5 Collaboration Diagram

- **Elements of Collaboration Diagram**
  - **Messages**
    - A message define a specific kind of a communication between instances in an interaction.
    - It specify the sender and receiver and define the kind of communication that occurs between lifelines.
    - Carries a message from one object to another along the link.
    - Each message flow is characterized by direction and is numbered starting using 1.

# UNIT -5 Collaboration Diagram

- **Elements of Collaboration Diagram**
  - **Messages**



# UNIT -5 Collaboration Diagram

- **Elements of Collaboration Diagram**
  - **Objects**
    - Actor Objects
    - Boundary Objects
    - Controller Objects
    - Entity Objects

SAME AS SEQUENCE DIAGRAM

# UNIT -5 Collaboration Diagram

- **Guidelines for design of Collaboration Diagrams**
  - **Draw one collaboration diagram for each use – case.**
  - **Derive the collaboration diagrams from the sequence diagrams.**
  - To **derive a collaboration diagram from a sequence diagram.**
    - **Draw each object** from the sequence diagram
    - If the sequence diagram **shows a message between the objects**, draw a line connecting the objects on the collaboration diagram
    - **Label the line** with the message name and number.
  - **Name the actors** consistently with the use case diagrams

# CASE STUDY - 1

# Milton Jewels Pvt. Ltd.

Milton Jewels has specialized in online jewellery retail since 1998, selling wonderful ranges of both children's and women's jewellery. A customer can register online so that he/she can check the status of the placed order. A customer can purchase any jewellery item online either by using his/her existing account or as an anonymous user specifying shipping address and contact information. Customer can only check the status of his/her order if he/she creates an account. The customer will pay online through credit card or debit card and the order will be delivered on the shipping address within one week.

# UNIT -5 Collaboration Diagram – Case study

TABLE 5.3 Objects, links and methods—Milton Jewels Pvt. Ltd.

| *Objects* | *Links* | *Methods (with sequence number)* |
|---|---|---|
| Customer | Customer—LoginScreen | 1. Login() |
| LoginScreen | LoginScreen—SecurityManger | 2. validateUser()<br>6. Result |
| SecurityManager | SecurityManager—SecurityManager | 5. validatUser() |
| Users | SecurityManager—Users | 3. retrieveUserDetail()<br>4. UserDetails |

# UNIT - 5 Collaboration Diagram – Case study

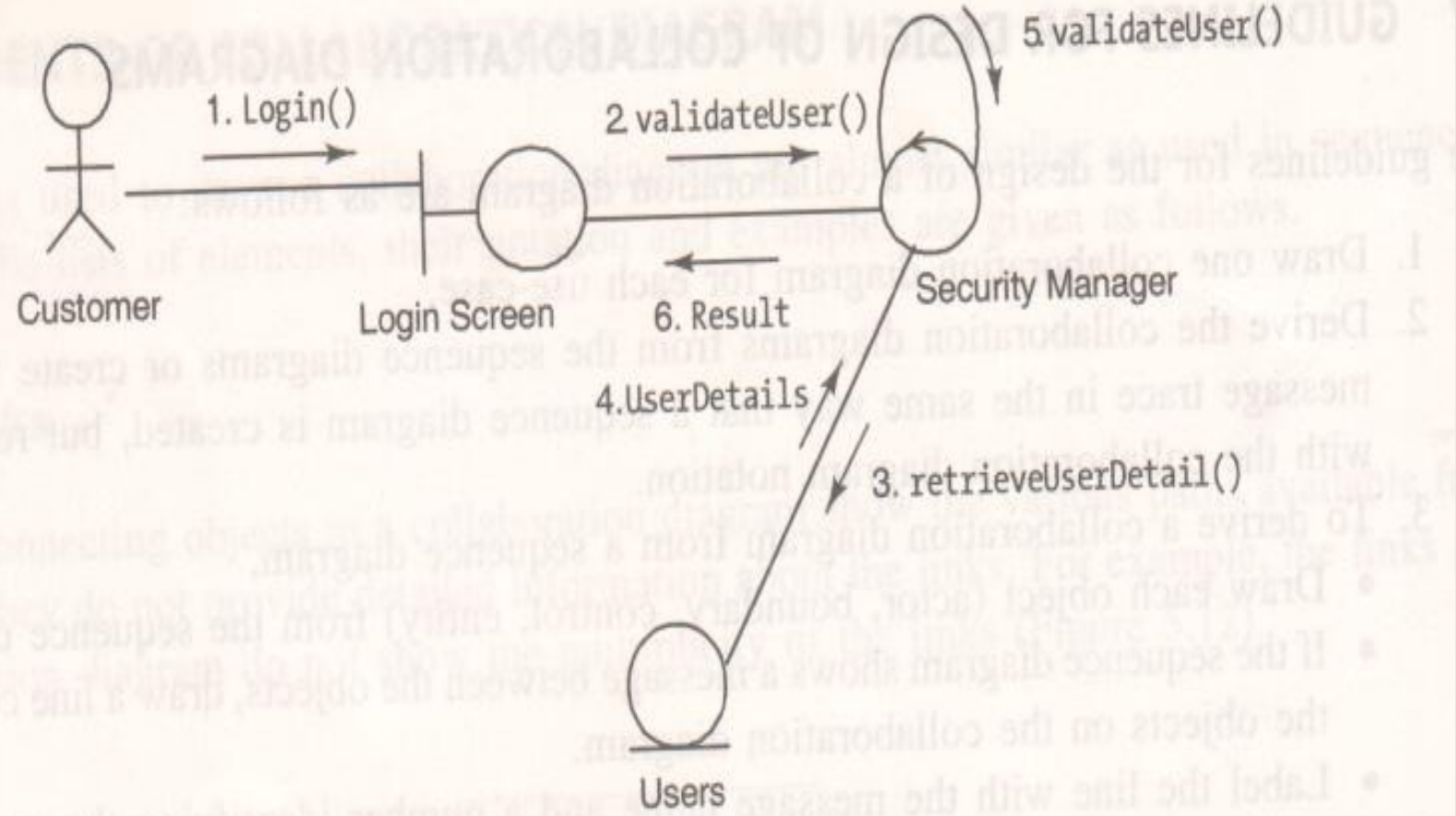



FIGURE 5.14 Collaboration diagram—Milton Jewels Pvt. Ltd. for Login use-case

# CASE STUDY - 2

# STUDENT LOAN SYSTEM

- A University gives loans to students. Before getting a loan, there is an evaluation process after which if the loan is approved, agreement is reached. A transaction records each step of the evaluation process, and another transaction records the overall loan agreement. A student can take any number of loans, but only one can be active at any time. Each loan is initiated by a seperate transaction. Then, the student repays the loan with a series of repayments. Each repayment transaction is recorded. After the complete settlement, finally the loan account is closed.

  Two output functions are desired:

  1. an inquiry function that prints out the loan balance for any student

# STUDENT LOAN SYSTEM

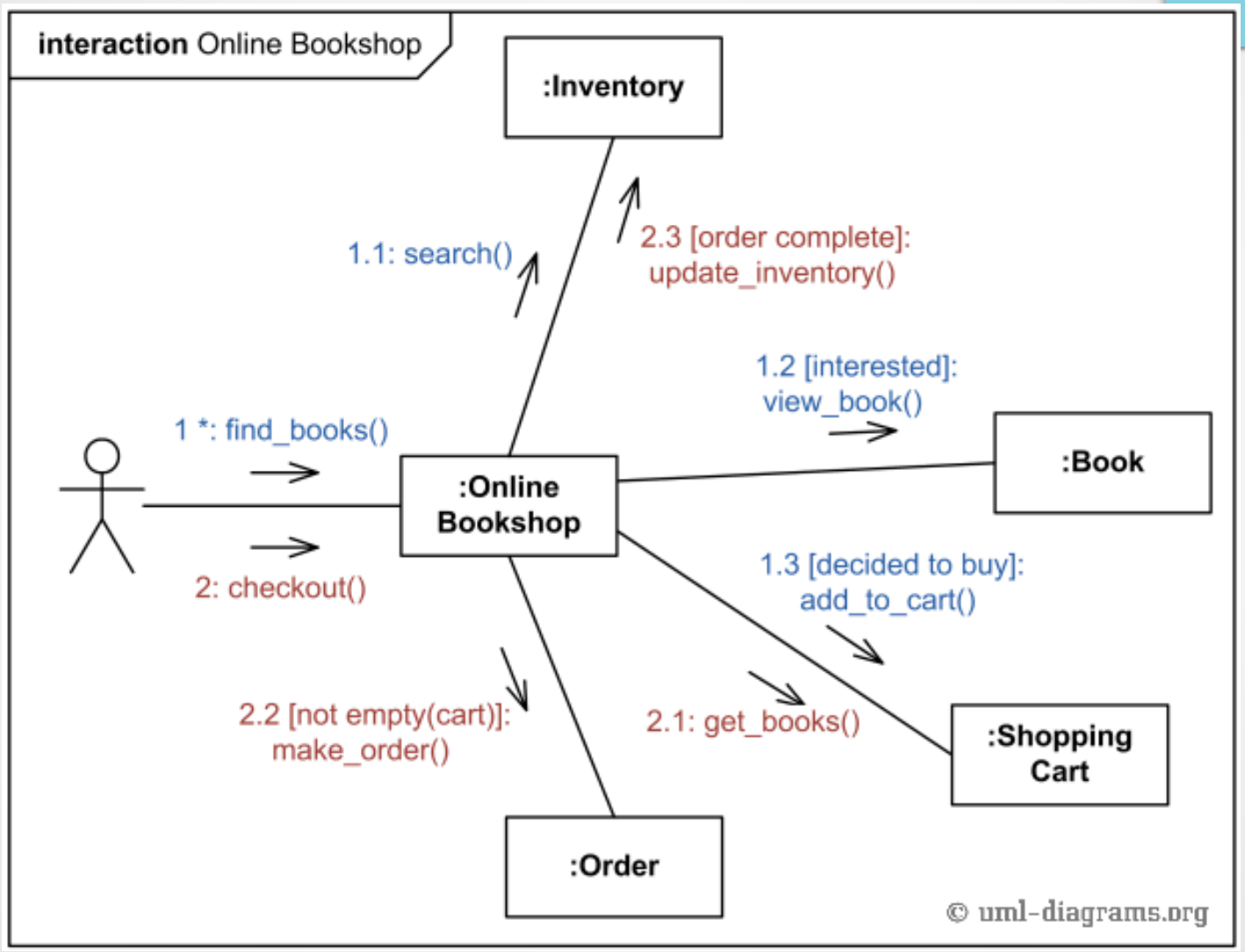
2. a repayment acknowledgement sent to each student after payment is received by the university.

The university loan office decides to implement the student loans on a single processor. Inquires should be processed as soon as they are received. However, repayment acknowledgements need only be processed at the end of each day.

For the above application,create appropriate diagrams.

REFER PDF FOR SOLUTION

# CASE STUDY - 3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:Inventory
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2.3 [order complete]:
update_inventory()
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2.1: get_books()
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Cart
:Order
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