

# Activity Diagram for the Library Management System

Create some activity diagrams for the library management system problem.

## We'll cover the following



- Check out a book from the library
  - States
  - Actions
- Return a book to the library
  - States
  - Actions
- Activity challenge: Renew a book from the library

Activities diagrams are a great way to visualize the flow of messages from one activity to the other in the system. There can be different activity diagrams that we can create for our LMS. For the sake of this lesson, we will create activity diagrams for the following three activities:

- Check out a book from the library.
- Return a book to the library.
- **Activity challenge:** Renew a book from the library.

## Check out a book from the library

The following are the states and actions involved in this activity diagram.

### States

**Initial state:** The member selects a book and initiates checkout.

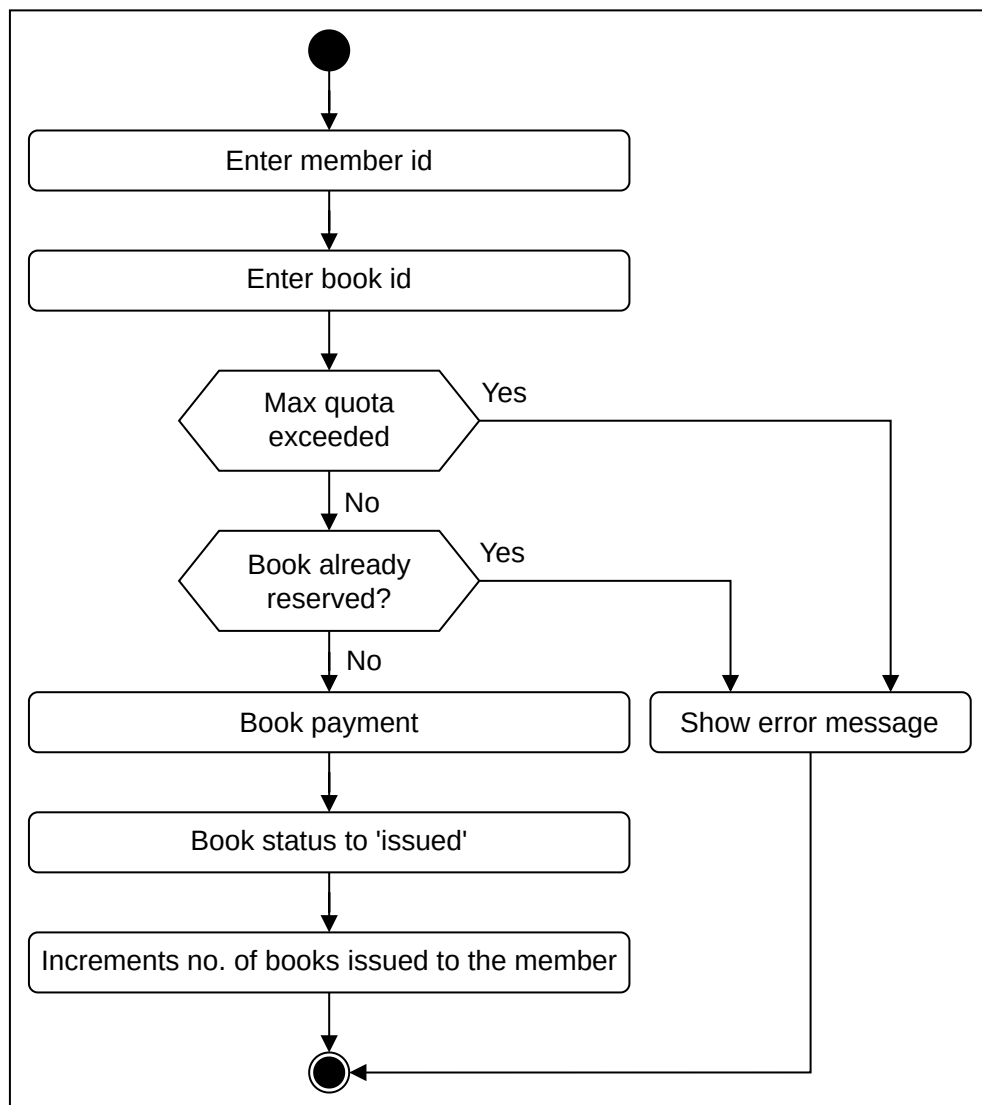
**Final state:** There are two final states present in this activity diagram, shown below:

- The member completes the checkout process successfully, and the book will be allocated to the member.
- An error occurred during the checkout process due to book unavailability or issue book limit exceeds.

## Actions

The member selects a book and enters the ID. The system will perform a few checks like book availability, the max limit of the member, and book reservations. If all checks are clear, then the book will be issued. Otherwise, the system will show an error message.

Based on the order shown above, the activity diagram of a checkout book from the library is given below.



The activity diagram to check out a book from the library

# Return a book to the library

The following are the states and actions involved in this activity diagram.

## States

**Initial state:** The member returns a book back to the library.

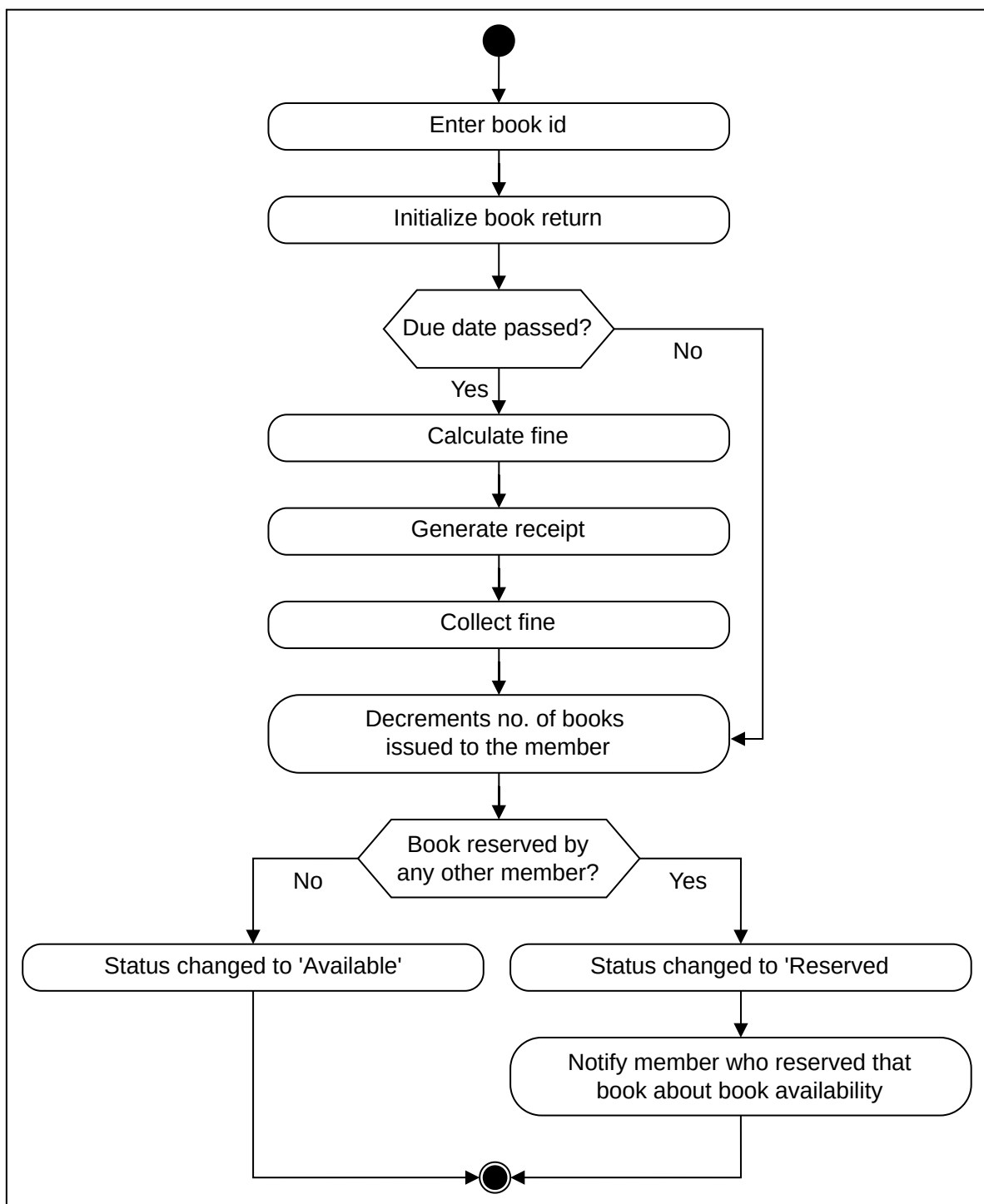
**Final state:** There are two final states present in this activity diagram, shown below:

- The member completes the return process and pays a fine, if any.
- The system allocates a book to someone who reserved that book.

## Actions

The member enters the book ID. The system will check if the book is returned within the due date, and the member will pay a fine, if any. Then, the book will be allocated to someone who has reserved the book.

Based on the order above, the activity diagram below demonstrates returning a book to the library.

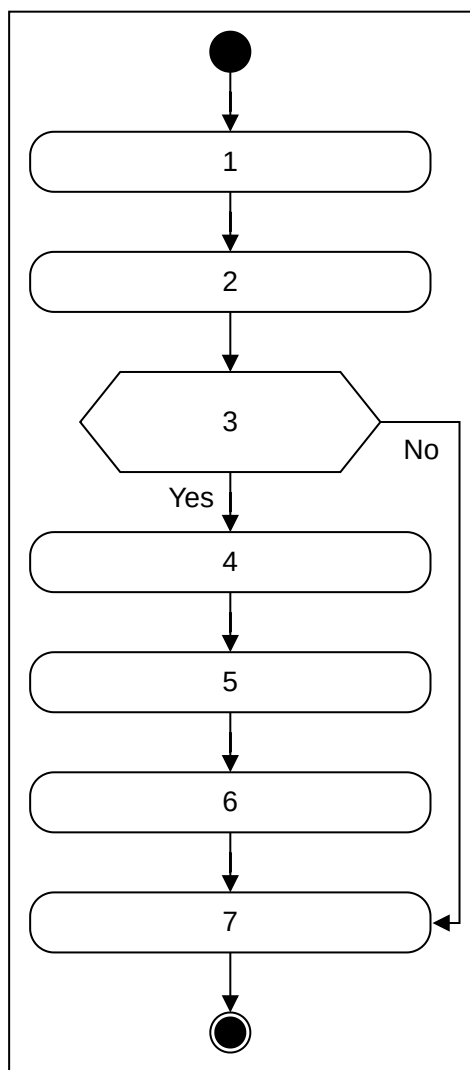


The activity diagram to return a book to the library

## Activity challenge: Renew a book from the library

You will create an activity diagram of a member renewing a book from the library.

The skeleton of the activity diagram given below demonstrates a customer looking for book renewal from the library.



The activity diagram to renew a book to the library

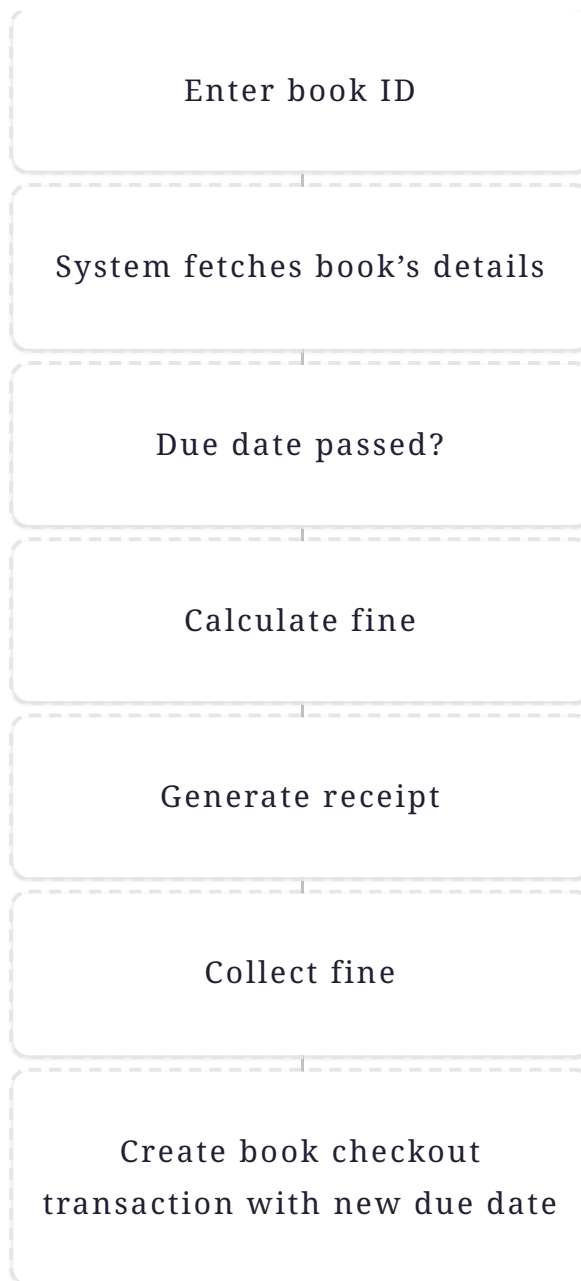
Notice that the actions in the above diagram are numbered from 1 to 7. The slots shown below represent the activities, and the arrows represent the flow from one activity to the other. Can you rearrange the slots provided below in the correct order they should appear in the activity diagram given above?

Based on the description above, can you fill in the missing slots with the correct sequence of actions in the activity diagram?

**Note:** If you get stuck, just click the “Show Solution” button to check the correct answer.



Fill the missing slots with the correct actions to renew a book from the library.



**Reset**

**Show Solution**

**Submit**

Alternatively, you can click the "Show complete diagram" button below to see the complete activity diagram.

**Hide complete diagram**

