

What are use cases?

Things actors do with the system

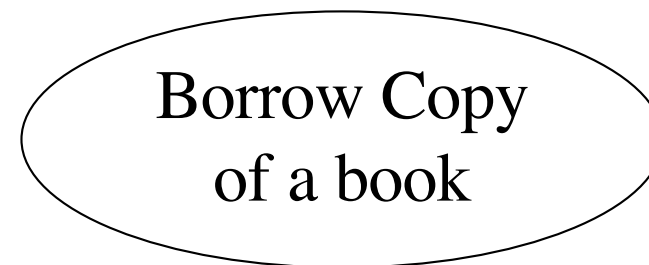
A **task** which an actor needs to perform with the help of a system (e.g., Borrow a book)

An **interaction** with another specific kind of a system

Describe the behaviour of the system from a **user's standpoint**

A role an actor takes in using the system.

Represented by **ellipses**



How to find Use Cases?

Scenario-based analysis

Write system processes (or services) as scenarios. Identify interactions with the system, each interaction is a potential use case!

Actor-based analysis

Identify actors, based on system users (and/or stakeholders).
Then start with the list of actors and consider
What they **need** from the system (i.e. what use cases that have value for each actor)
Any **other interactions** they expect to interact with the system (i.e. which use cases they might take part in for **someone's else benefit**)

How do you know what is a use case?

Estimate frequency of use, examine differences between use cases, distinguish between “normal” and “alternative” course of events & create new uses when necessary

Describing use cases

Semantics should be described fully!
Always start a *use case* with a **verb**!

Example:

Use case: **Borrow copy of a book**

A book borrower presents a book. The system checks that the potential borrower is a member of the library & that s/he does not have the maximum number of books.



Borrow Copy
of a book

Example: Library System

Books and journals:

The library contains books and journals. It may have several copies of a given book. Some of the books are for short term loans only. All other books may be borrowed by any library member for three weeks. Members of the library can normally borrow up to six items at a time, but members of staff may borrow up to 12 items at one time. Only members of staff may borrow journals. Members of the public, who are not members of the library, can use the library and browse/search for books, but cannot borrow books.

Borrowing/Returning/Renewing books:

The system must keep track of when books and journals are borrowed and returned, enforcing the rules described above.

Managing books:

The system must enable library staff/librarian to manage:
add/update/catalog/remove existing and add new books and journals

=> Highlight **Nouns** and **Verbs**, using different colours.

Apply these rules:

-Discard: redundant nouns & verbs; omnipotent nouns; meta-language; constraints or events.

Example: Library System

Books and journals:

The library contains **books** and **journals**. It may have several **copies** of a given book. Some of the books are for short term loans only. All other books may be **borrowed** by any **library member** for three weeks. **Members of the library** can normally borrow up to six items at a time, but **members of staff** may borrow up to 12 items at one time. Only members of staff may borrow journals. **Members of the public**, who are not members of the library, can use the library and browse/search for books, but cannot borrow books.

Borrowing/Returning/Renewing books:

The system must keep track of when books and journals are borrowed, **renewed** and **returned**, enforcing the rules described above.

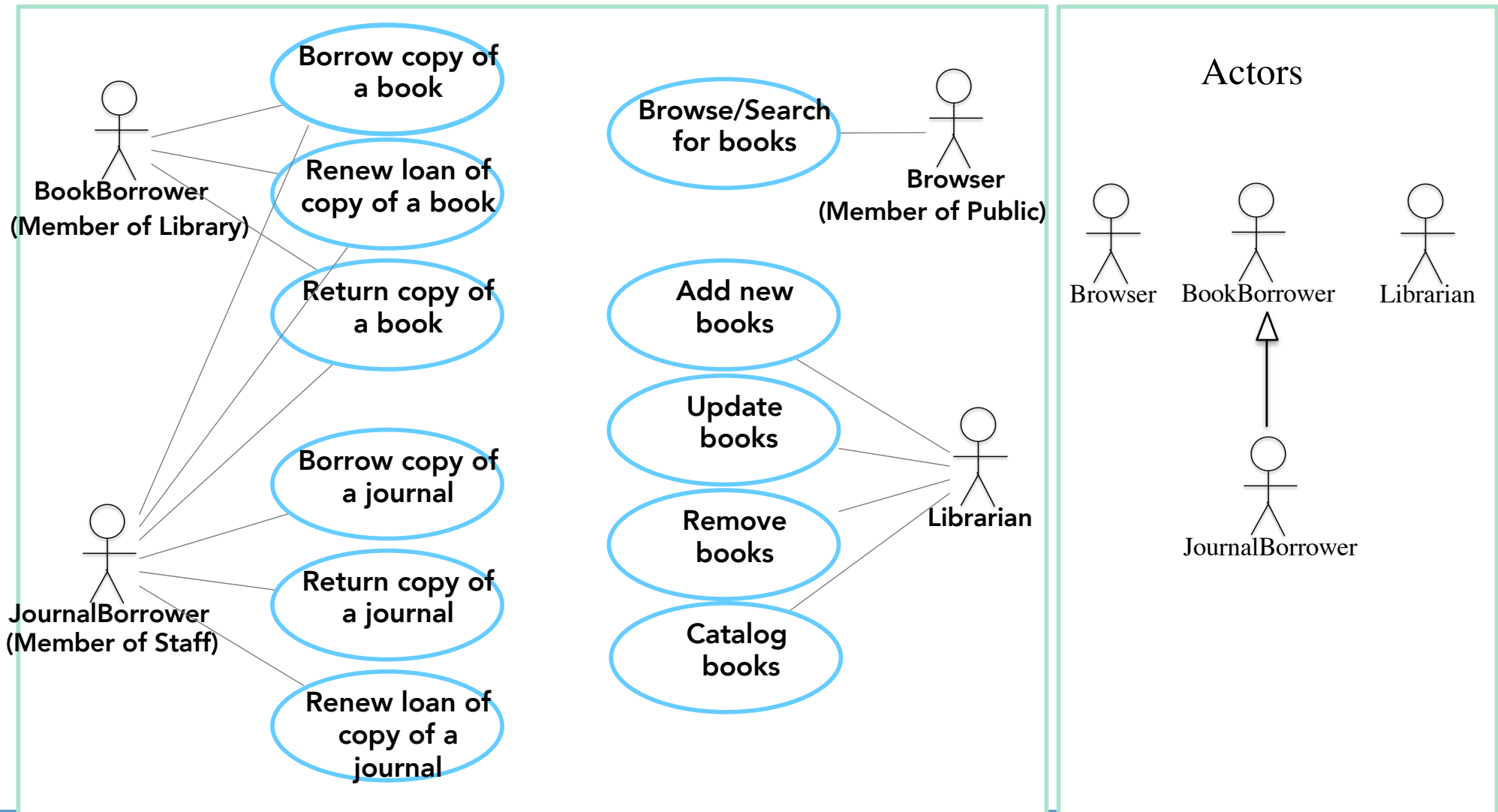
Managing books:

The system must enable library **staff/librarian** to **manage**: **update/catalog/remove** existing and **add** new books and journals

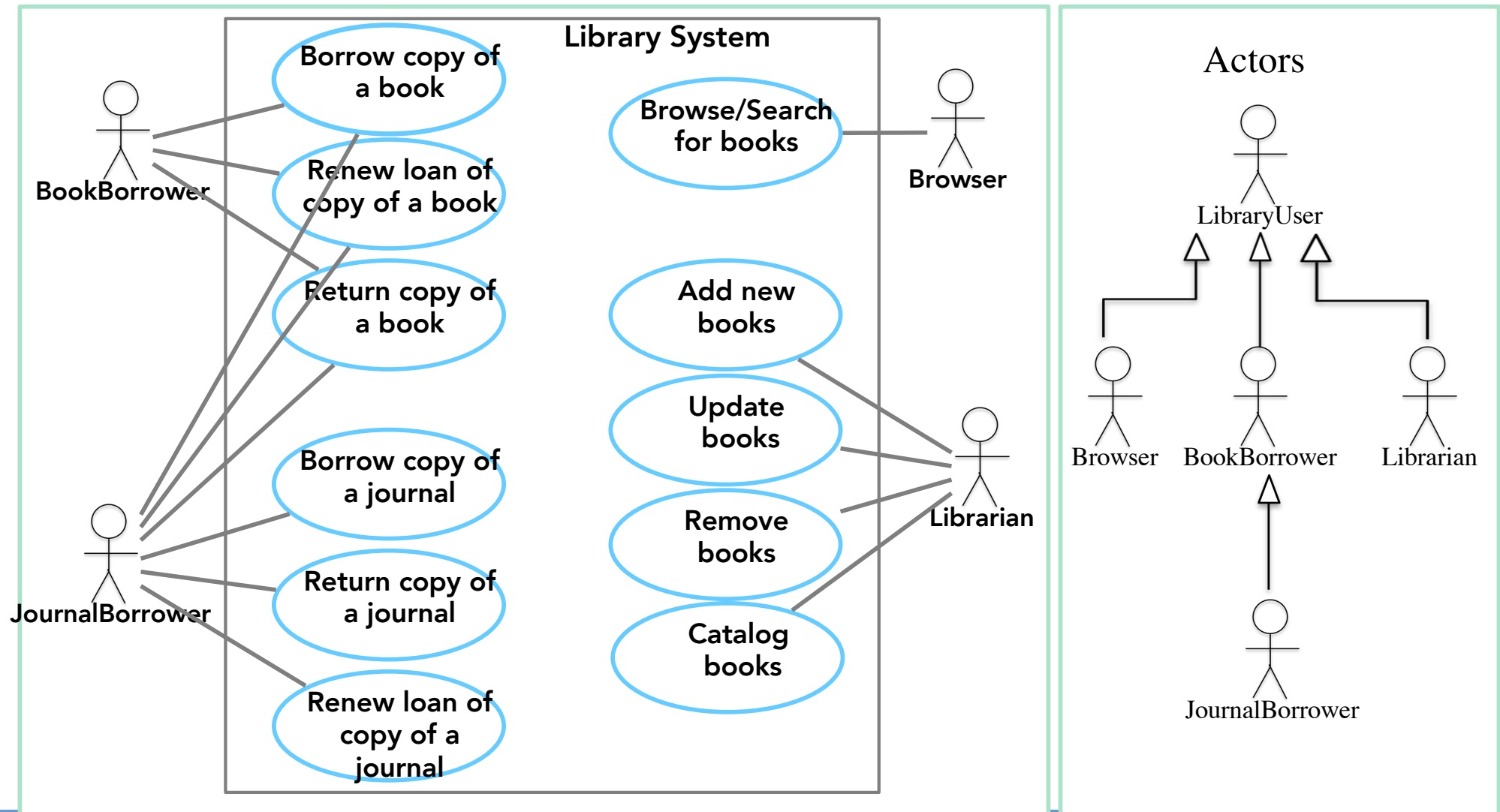
=> Identify noun-verb unique interactions.

=> **Nouns** become **ACTORS**, **Verbs** become **USE-CASES**, and noun-verb interactions become **ASSOCIATIONS**.

Possible Use Cases



Possible Use Cases- with system boundary

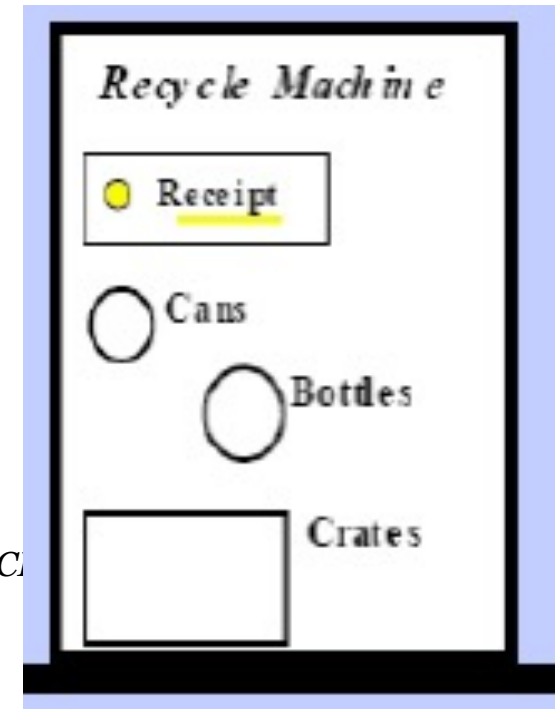


Recycle Machine Requirement Example

Multi-purpose recycling machine must:

- receive & check items for customers,
- print out receipt for items received,
- print total received items for operator,
- change system information,
- signal alarm when problems arise.

Reference: Anthony Finkelstein, UC



Example: General Scenario

Counting returning items is started by Customer when they want to return cans, bottles or crates. With each item that the Customer places in the recycling machine, the system will increase the received number of items from the Customer as well as the daily total of this particular type.

When a Customer has deposited all their items, they will press a receipt button to get a receipt on which returned items have been printed, as well as the total return sum. Operator can change machine information and print reports of returned items.

Example: Instance Scenarios

1. After the party Sarah goes to the recycling machine with three crates containing 5 cans and 3 bottles. Sarah deposits the cans and the bottles in the machine. Sara presses the “print receipt” button, the machine prints receipt containing number of bottles and cans and the total number of deposited items.

2. At the end of day, Adam, the operator, checks the recycling machine. Adams opens the machine with a key, and presses “print stats” button inside the machine. The machine print a report, that shows, the daily total of deposited items, and the grand total of deposited items for the current month, year and since its start.

Exercise

Draw the use case diagram for the recycling machine, using the scenario-based analysis technique.