01_Labs

> **"John wants to bake a cake for his friend's birthday. John will prepare the cake and plan the event. The cake will be baked and decorated and his friend will celebrate."**

Identify Nouns: Cake, Friends, John, Birthday

Identify Verbs: Planning, Celebrate, Decorating. Bake

Identify Potential Objects: Cake, Friends, John, Birthday

Define Attributes and Behaviors:
Friends: Attributes: Favorite Dish, Age, Name
Behaviours: Celebrate, decorate, plan, bake cake

Identify Relationships:
Birthday: Attributes: Theme, location, food, music
Behaviours: celebrated, planned, cake is baked, decorated

Cake: Attributes: Flavor, Colors, Size, Shape
Behaviours: Decorated, Baked, Shared, Mixed

John: Attributes: Emotion, Age, Peer Group/Group of friends
Behaviours: PLan, Bake, Decorated, Celebrate

Refresher:
According to Oxford Dictionary:

Noun: a word (other than a pronoun) used to identify any of a class of people, places, or things (common noun), or to name a particular one of these (proper noun).

Verb: a word used to describe an action, state, or occurrence, and forming the main part of the predicate of a sentence, such as hear, become, happen.

Problem Statement: Library Management System

This project aims to develop a comprehensive library management system designed to streamline the process of browsing, borrowing, and returning books for patrons, ultimately enhancing the overall user experience. The system will focus on efficient management of library resources, aiming to optimize operations and improve accessibility for both library staff and patrons.

For the books within the library things such as title, author, ISBN (International Standard Book Number), and availability status indicating whether the book is currently available for borrowing. Books can be checked out by patrons, making them unavailable for further borrowing until returned.

The library will maintain a collection of books, each identified by its unique ISBN. Additionally, the system will keep track of registered patrons. Library functionalities will include adding and removing books from the collection, as well as registering and unregistering patrons.

Patrons of the library will be identified by their name and a unique member ID. The system will also maintain a list of books currently borrowed by each patron. Patrons will have the capability to borrow books from the library, with the system ensuring availability for checkout and updating the list of borrowed books accordingly.

By implementing this library management system, the goal is to provide an efficient and user-friendly solution for both library staff and patrons. The system aims to optimize the borrowing process, enhance overall library operations, and improve accessibility to library resources.

Nouns

- Library

- Book
- Patron (the person
- Staff?

Verbs

Borrow, manage, return, register, track

Objects

Book
LIbrary
Patron (staff and patrion)

Attributes and Behaviours

Book

Attributes

- title
- author
- IBSN
- availability_status
- category

Behaviours

- Check availability
- Get number available
- Get category
- Get name
- Get author
-

Library

Attributes

- total number of books
- total number of borrowed books
- total number of outstanding books
- number of patrons (registered)

- number of patrons (unregistered)
- number of categories

Behaviors

- Register patron
- Unregister patron
- Add book
- Borrow book
  - ~~Black list patron~~

Patron

Attributes

- name,
- patron id,
- current_books_currently_borrowed,
- total number of books borrowed,
- number of books not returned,
- registration status

Behaviours

- Borrow book
- Return book
- Get current outstanding books
- Get borrowed books
- Get total borrowed books
- Browse catelogue
- Get remaining time

Relationships

1 library --> 1 or many books (a library can have many books)

1 library --> 1 or many patrons (a library can have many patrons)

1 patron --> library (a patron can only be registered once)

1 patron --> 1 or many books (a patron can borrow many books)