Scenario: Library Management System

Introduction: You are tasked with developing a Library Management System, a C++ program that will help a local library efficiently manage its collection of books and magazines. The system should utilise object-oriented programming principles such as classes, inheritance, polymorphism, and encapsulation.

Characters:

- **Library Staff:** The staff members responsible for managing the library's collection of items.
- **Library Patrons:** The library's patrons who visit the library to borrow items.

Scenario Description:

Setting: The project takes place in a local community library, a quiet space where patrons come to borrow books and magazines.

Objectives:

- Create a software system that allows the library staff to add and manage items in the library's collection.
- Ensure that the system displays item details accurately, whether it's a book or a magazine.
- Demonstrate good software design principles and OOP concepts.

Actions:

Initialization:

- The scenario begins with the creation of the Library Management System program.
- A Library object is initialised, representing the library's collection.

Adding Items:

- Library staff use the program to create Book and Magazine objects.
- They provide details such as the title, author, publication year, number of pages (for books), and issue number (for magazines).
- These items are added to the library's collection using the library.addItem method.

Displaying Items:

- Library staff can display the details of all items in the library's collection using the library.displayItems method.

- The program utilises polymorphism to ensure that the correct details are displayed for each item type (book or magazine).
- Patrons can also use this feature to explore the library's collection.

Library Management:

- Over time, more items are added to the library, and the collection grows.
- Library staff can efficiently manage and showcase the collection to patrons.

Benefits:

- The Library Management System streamlines the process of managing the library's collection.
- It ensures that patrons can access accurate and detailed information about each item.
- The use of OOP principles like inheritance and polymorphism makes the system flexible and easy to extend.

Conclusion: The Library Management System project is a valuable tool for the local library, allowing the staff to efficiently manage their collection and providing patrons with an enhanced library experience. As the system evolves, it will continue to support the library's mission of providing knowledge and entertainment to the community.