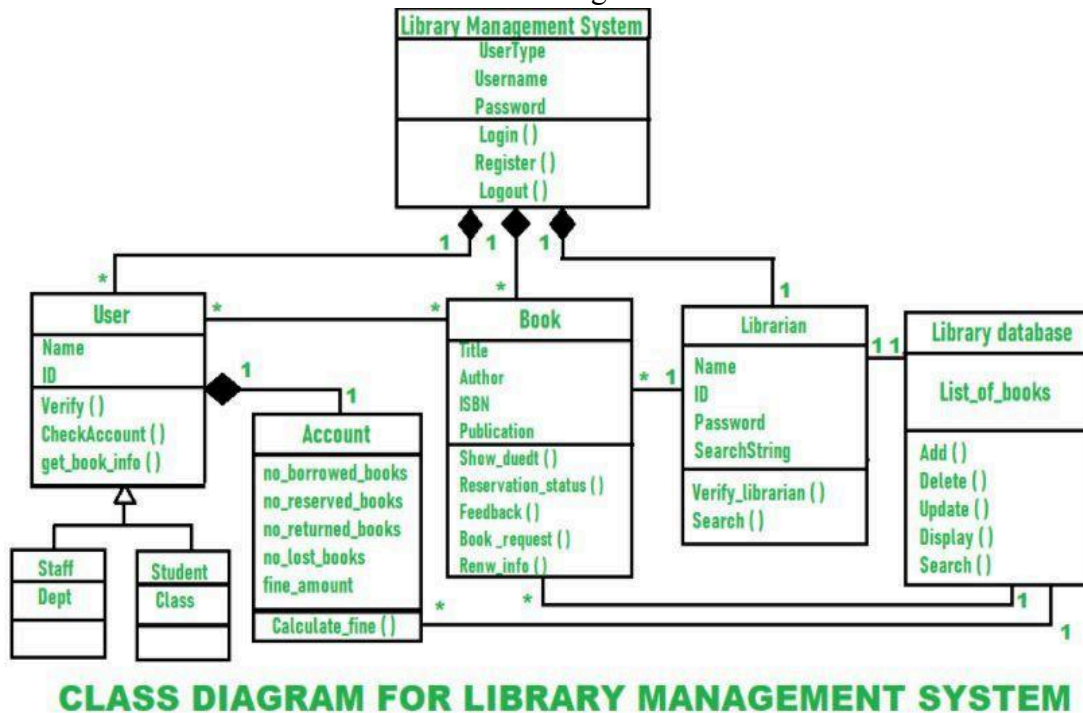


Experiment – 16: Draw complete class diagram and object diagrams using rational tools

Class diagram is a static diagram. It represents the static view of an application. Class diagram is not only used for visualizing, describing, and documenting different aspects of a system but also for constructing executable code of the software application.

Class diagram describes the attributes and operations of a class and also the constraints imposed on the system. The class diagrams are widely used in the modeling of object-oriented systems because they are the only UML diagrams, which can be mapped directly with object-oriented languages.

Class diagram shows a collection of classes, interfaces, associations, collaborations, and constraints. It is also known as a structural diagram.



CLASS DIAGRAM FOR LIBRARY MANAGEMENT SYSTEM

Class Diagram for Library Management System simply describes structure of Library Management System class, attributes, methods or operations, relationship among objects.

Classes of Library Management System :

- **Library Management System class –**
It manages all operations of Library Management System. It is central part of organization for which software is being designed.
- **User Class –**
It manages all operations of user.
- **Librarian Class –** It manages all operations of Librarian.
- **Book Class –**
It manages all operations of books. It is basic building block of system.
- **Account Class –**
It manages all operations of account.
- **Library database Class –**
It manages all operations of library database.
- **Staff Class –**
It manages all operations of staff.

- **Student Class –**
It manages all operations of student.

Attributes of Library Management System :

- **Library Management System Attributes –**
UserType, Username, Password
- **User Attributes –**
Name, Id
- **Librarian Attributes –**
Name, Id, Password, SearchString
- **Book Attributes –**
Title, Author, ISBN, Publication
- **Account Attributes –**
no_borrowed_books, no_reserved_books, no_returned_books, no_lost_books
fine_amount
- **Library database Attributes –**
List_of_books
- **Staff Class Attributes –**
Dept
- **Student Class Attributes –**
Class

Methods of Library Management System :

- **Library Management System Methods –**
Login(), Register(), Logout()
- **User Methods –**
Verify(), CheckAccount(), get_book_info()
- **Librarian Methods –**
Verify_librarian(), Search()
- **Book Methods –**
Show_duedt(), Reservation_status(), Feedback(), Book_request(), Renew_info()
- **Account Methods –**
Calculate_fine()
- **Library database Methods –**
Add(), Delete(), Update(), Display(), Search()

Object diagrams are derived from class diagrams so object diagrams are dependent upon class diagrams.

Object diagrams represent an instance of a class diagram. The basic concepts are similar for class diagrams and object diagrams. Object diagrams also represent the static view of a system but this static view is a snapshot of the system at a particular moment.

Object diagrams are used to render a set of objects and their relationships as an instance.