**Problem Statements for practice**

1. **Library Management system**

The Library Management System is used to provide the books to the students whenever they ask for it to the librarian. The system will have two important components students and the librarian. The role of the student is to give the books list to the librarian, and the librarian will issue the requested books to the student and update the library details.

The structure of the program is given below.

There will be two text files by name Journals.txt and SubjectBook.txt contains the journal names and the subject book names respectively.

The program contains the 2 interfaces: “Journals” and “SubjectBooks”. The Journals interface contains getJournal() method and SubjectBook interface contains getSubjectBook() method.

There is a class by name “Books” which implements “Journals” and “SubjectBook” interfaces. The class reads the data from the Jornals.txt and SubjectBooks.txt files using the interface methods and stores the data in an ArrayList. There are two more methods in the Book class: getbooks() and updateList(). The getbooks() takes the name of the Books from the students. The updateList() updates the ArrayList i.e. removes the books chosen by the student.

There is a “Person class” which contains name, id, password and email as the data members and getname(), getid() and getmail() as the member functions. The member functions return the values.

There are two classes “Student” and “Librarian” which extends the “Person class” and also implements the “Runnable interface”.

The “Student” class contains the MAX\_COUNT as the data member which is initialized with value 3. It also contains a constructor to initialize the instance variable of the Person class with the relevant data. The member functions in this class are getdetails() which prints the details of the students using the Person class methods. The list of the Books first will be shown to the student. The Student class will call the getbooks() method of “Book” class by creating the thread. The thread will take the 3 books name from the Student and notify the Librarian.

The Librarian then will use the updateList() method of the “Book” class using threads and will remove the students choose books from the Arraylist and update the ArrayList.

**Program flow:**

* The program will start with the Welcome screen.
* Ask student login id and password.
* Show Books to students.
* Ask 3 book names to choose by the student.
* Issue those books to the students with the help of the Librarian.
* At the end of the program the Program will display the Student details and books issued to him with the name of the Librarian.