Programming Language: **Python 3** for backend

Framework required:

1. **OAuth 2.0** for authorization
2. **Django** and **Django REST framework** for backend services.

Duration: **1 week**

Assuming you are the president of the programming society and student welfare society in University Xavier. The librarians of the university have asked a favour of you to help to design and implement a system for them to better manage the library. The following are the requirements for the system:

1. The system must provide an authentication mechanism to identify the user.
2. There are 4 types of users: student, teacher, librarian and administrator.
3. The users should be able upload their profile pictures (thumbnail size: 240 x 280).
4. The administrator has all the access rights.
5. The administrator is responsible to create user account. The registration requires the following information:
   1. Type: student/teacher/librarian
   2. ID (student ID should start with “X”, teacher ID should start with “Y” and librarian ID should start with “Z”)
   3. First Name
   4. Last Name
   5. Mobile Number
   6. Email Address
6. The librarian has the access right to add new book(s) into the catalogue. The following information should be entered for the new book:
   1. Author(s)
   2. ISBN
   3. Title
   4. Description
   5. Publisher
   6. Edition
   7. Category
   8. Picture (thumbnail size: 128 x 167)
   9. Bar code
7. The books listing page (support pagination: 20 books per page) is accessible by the public and they can search a book by author name, publisher, and title. However, public user cannot borrow book(s).
8. The student, teacher and librarian have the access right to borrow book(s). A student can borrow up to a maximum of 2 books, while teacher and librarian can borrow up to 3 books.
9. The user can borrow a book for a period of 3 weeks. The borrowed book’s status will be updated from “available” to “borrowed”.
10. The “Borrow a Book” page should have the following information keyed in:
    1. Bar code
11. Once the book is checkout. The status of the book is updated to “borrowed”.
12. Once the user returned the book to the librarian, the librarian will update the book status back to “returned”.
13. The system will track the expiry date for each of the book lent to the user. If the book hasn’t returned 2 days before the expiry date, the system will send an email notification to the user on daily basis. After the lending period has expired, the book’s status will be updated to “expired”.
14. The system will black list a user if the user didn’t return a book on time for 5 times.
15. There are a few conditions where the user cannot borrow a book:
    1. The user has been black listed.
    2. The user has borrowed a book and it has expired, but the user hasn’t return it to the library.
16. Administrator has the access to remove the black-listed user.
17. Once the librarian has put the book back to the corresponding book shelf. The librarian will update the book status back to “available”.