

# UETLib

Service Oriented Architecture



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September 29, 2015

# **Course project**

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# **Requirement**

We are required to build an online library system for students.

Students can use web browser or mobile application to view books' information that the library has.

Librarians have a desktop application to manage books in the library database with many functions such as view book lists, add book to database, remove book from database, and modify book information.

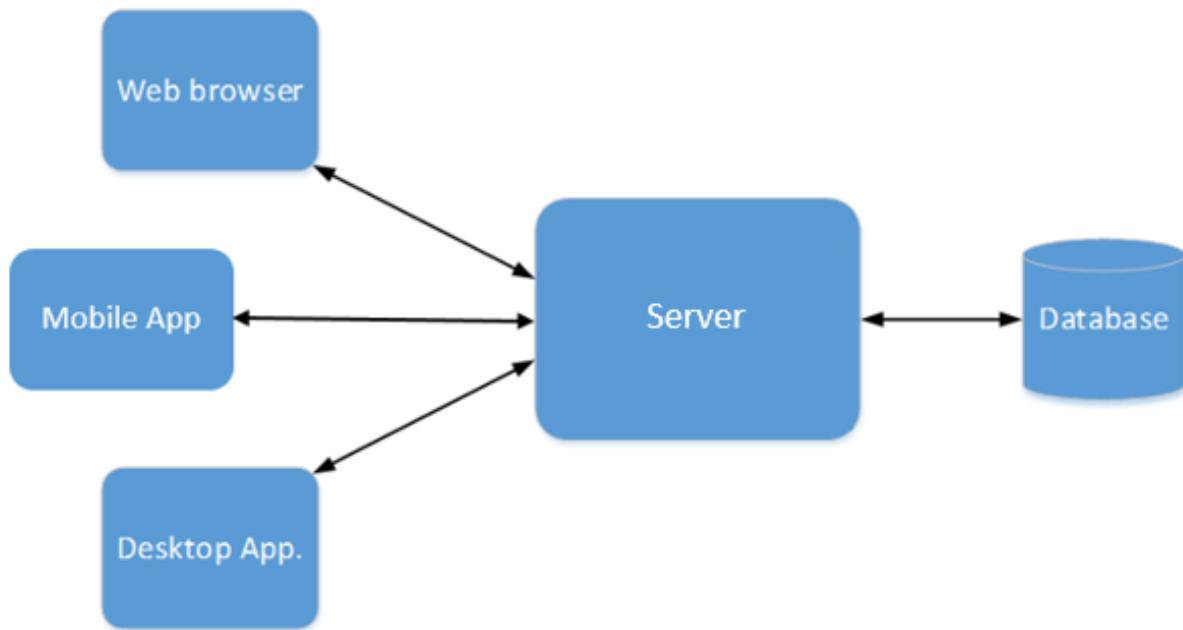
# Overview

UEBLib is an online library system for UET students.

UETlib consists three parts including web application, desktop application and mobile application. The web and mobile application are for students, and the desktop application, with more functions, is for librarians.

This report describes the system requirements, overview and our work on implementation.

Our system will function like the picture below:



We have deployed our system on our private server: <http://128.199.89.183:3000/>  
If you have not had account yet, signup new one to login.

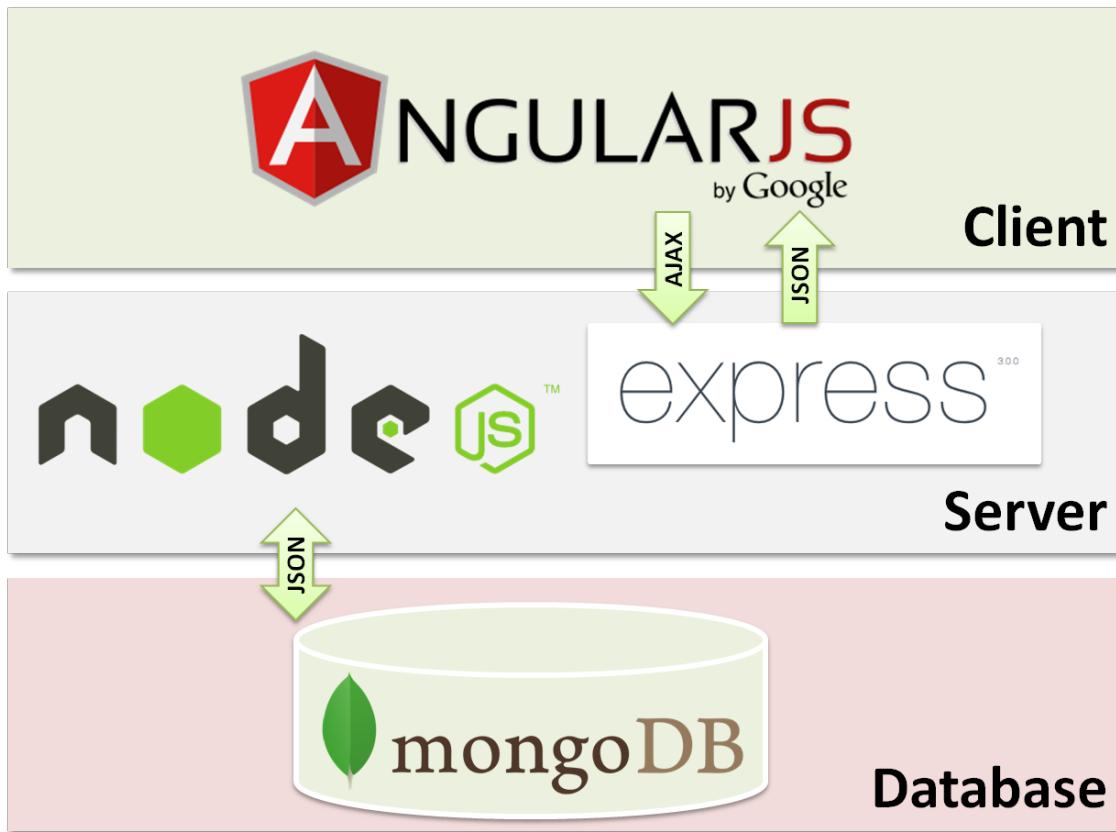
We also public our project on github: <https://github.com/tuantq57/soa-assignment1>

For the mobile application, everyone can download the UETLib.apk file (virus-free) and install in Android smartphone via the following URL if interested:  
<https://github.com/tuantq57/soa-assignment1/releases>

# Implementation

## 1. Server (include website for students)

For the server, we use MEAN Framework ([MongoDB](#), [ExpressJS](#), [AngularJS](#) and [Node.js](#)) to build our system including back-end and front-end (website). MEAN is new technology for full-stack web with many powerful tools and plugins and wide supported community. It also organizes system as MVC model, which is very familiar with every web developer.



We will explain why we choose MEAN Framework for some reasons below:

- Node.js allows us to use JavaScript on the back-end as well as the front-end which can save us from having to learn a separate language.
- The NoSQL nature of MongoDB allows us to quickly and easily manage the data, we can flexibility to create data structures, which is a very valuable attribute when we are trying to build a product without clear specifications.

- Because of using JavaScript to implement front-end and back-end, we use JSON object to communicate all the time between our modules. It is the big plus point of MEAN Framework.
- Finally, these technologies have a lot of community support behind them so finding answers to questions is going to be much easier.

We use [MongoLab](#) which is a database web service to store our data. They provide account with free storage of 500MB and built-in MongoDB server-side tools.

There are some screenshots we took from our website:

- Login form

The screenshot shows a login page with a light gray background. At the top center is a logo consisting of a right-pointing arrow inside a circle followed by the word "Login". Below the logo is a "Username" field containing the text "admin". Below that is a "Password" field containing four dots ("...."). At the bottom of the form is a blue "Login" button with a white hand cursor icon pointing at it. Below the form, centered, is the text "Need an account? [Signup](#)".

- After login, students can access the main page

The screenshot shows the homepage of the UETlib website. On the left is a sidebar titled "Category" with a list of book types. To the right is a "Book List" section displaying eight book covers in a grid. The sidebar categories include: Sách Giáo Khoa - Tham Khảo, Sách Kinh Tế, Sách Truyện Thiếu Nhi, Sách Thúơng Thức - Đời Sống, Sách Học Ngoại Ngữ - Từ Điển, Sách Văn Hoá - Nghệ Thuật - Du Lịch, Truyện Tranh, Manga, Comic, Tạp Chí, Sách Chuyên Ngành, Sách Cho Tuổi Mới Lớn, Sách Nuôi Dạy Con, Sách Cũ Giá Tốt, Sách Tiếng Anh, and Combo - Series Sách Đặc Sắc.

- Modern Pagination system

The screenshot shows a modern pagination system where each page displays four items. The items are arranged in a grid and include: Adam Bede by George Eliot, Northanger Abbey by Jane Austen, Mansfield Park by Jane Austen, and The Professor by Charlotte Brontë. Below each item is its title and a subtitle indicating the edition type (e.g., PAPERBACK). At the bottom of the page, there is a navigation bar with links for "First", "Previous", "1", "2", "3", "4", "Next", and "Last".

- View book by category

The screenshot shows a library catalog interface. On the left, a sidebar lists categories such as 'Sách Giáo Khoa - Tham Khảo', 'Sách Kinh Tế', and 'Sách Truyện Thiếu Nhi' (which is highlighted with a mouse cursor). The main area is titled 'Book List' and displays several book covers. The visible books include:

- GRAM GRAM - ĐỘI THÁM HIỂM TỪ VỰNG TIẾNG ANH** (Tập 5) by Jang Young Jun
- GRAM GRAM - ĐỘI THÁM HIỂM TỪ VỰNG TIẾNG ANH** (Tập 6) by Jang Young Jun
- VÌ SAO TỔ KHÔNG NÊN CHƠI ĂN GIẢ?** by Quỳnh Liên - Kim Duyên
- BÉ VÀO LỚP MỘT - Tập Tô Tập Việt** (Tập VI) by Hương Giang
- accototo** (Là những bạn thân)

- View book detail

The screenshot shows a detailed view of a specific book entry. The book cover for 'Gram Gram - Đội Thám Hiểm Từ Vựng Tiếng Anh (Tập 5)' is displayed prominently. To the right of the cover, the book's title and author information are listed:

**Gram Gram - Đội Thám Hiểm Từ Vựng Tiếng Anh (Tập 5)**  
Tác giả: Jang Young Jun  
Nhà xuất bản: NXB Đại Học Quốc Gia Hà Nội  
Ngày xuất bản: 09-2015  
Số trang: 227  
Thể loại: Sách Truyện Thiếu Nhi

Below the book details, there is a section titled 'Giới thiệu sách:' (Book introduction) containing a descriptive paragraph about the book's content and themes.

- Students can also search title and author of the books

The screenshot shows a web browser window for the UETlib website. At the top right, there is a user icon labeled "WELCOME GIAPLV" and a search bar containing the text "napoleon". To the right of the search bar is a red magnifying glass icon with a hand cursor over it. On the left, there is a sidebar titled "Category" with a list of book types: Sách Giáo Khoa - Tham Khảo, Sách Kinh Tế, Sách Truyện Thiếu Nhi, Sách Thương Thực - Đời Sống, Sách Học Ngoại Ngữ - Từ Điển, Sách Văn Hoá - Nghệ Thuật - Du Lịch, Truyền Tranh, Manga, Comic, Tạp Chí, Sách Chuyên Ngành, Sách Cho Tuổi Mới Lớn, Sách Nuôi Dạy Con, Sách Cũ Giá Tốt, Sách Tiếng Anh, and Combo - Series Sách Đặc Sắc. The main content area is titled "Book List" and displays three book covers: "BÍ QUYẾT LÀM GIÀU CỦA NAPOLEON HILL" by Napoleon Hill, "LÀM THẾ NÀO ĐỂ TĂNG LƯƠNG" by Napoleon Hill, and a "COMBO NHỮNG NGUYỄN TẮC LÀM GIÀU" which includes several books by Napoleon Hill. Below the book covers is a navigation bar with buttons for First, Previous, 1 (highlighted in blue), Next, and Last.

## 2. Desktop application

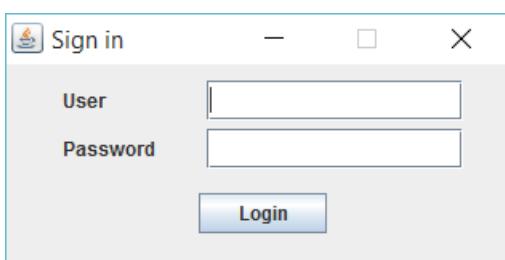
We built our desktop application, which allows the library staffs to manage the books, on Java platform. This app has these main functions: view all books of the library, edit the details of books, add a new book and delete books.

We use the standard HTTP requests to make communication between the app and the server.

The user interface of the app is built by the library Java Swing.

Here are some screen shots of our desktop application:

- Log-in form



- After logging in, the staff will be able to see all the books of the library

Library Manager

Option						
Title	Author	Category	Page	Publisher	Date	
The Dark Tower VI - Song Of Susannah	Stephen King	Sách Tiếng Anh	413		01-2004	<a href="#">More info...</a> <a href="#">Edit</a> <a href="#">Delete</a>
Mary Barton	Elizabeth Cleghorn Gaskell	Sách Tiếng Anh	414		12-2012	<a href="#">More info...</a> <a href="#">Edit</a> <a href="#">Delete</a>
Tender Is The Night	F. Scott Fitzgerald	Sách Tiếng Anh	413		12-2011	<a href="#">More info...</a> <a href="#">Edit</a> <a href="#">Delete</a>
Billy Budd And Other Stories	Herman Melville	Sách Tiếng Anh	300		12-1998	<a href="#">More info...</a> <a href="#">Edit</a> <a href="#">Delete</a>
The Runaway Jury	John Grisham	Sách Tiếng Anh	550		01-1997	<a href="#">More info...</a> <a href="#">Edit</a> <a href="#">Delete</a>
Happy Birthday: A Novel	Danielle Steel	Sách Tiếng Anh	416		07-2012	<a href="#">More info...</a> <a href="#">Edit</a> <a href="#">Delete</a>
Gone Tomorrow	Lee Child	Sách Tiếng Anh	543		01-2010	<a href="#">More info...</a> <a href="#">Edit</a> <a href="#">Delete</a>
A Wanted Man: A Jack Reacher Novel	Lee Child	Sách Tiếng Anh	606		03-2013	<a href="#">More info...</a> <a href="#">Edit</a> <a href="#">Delete</a>
The Affair: A Jack Reacher Novel	Lee Child	Sách Tiếng Anh	542		03-2012	<a href="#">More info...</a> <a href="#">Edit</a> <a href="#">Delete</a>
The Chamber	John Grisham	Sách Tiếng Anh	676		04-1995	<a href="#">More info...</a> <a href="#">Edit</a> <a href="#">Delete</a>
The Rainmaker	John Grisham	Sách Tiếng Anh	598		09-2003	<a href="#">More info...</a> <a href="#">Edit</a> <a href="#">Delete</a>
Highlander Most Wanted: The Montgomerys And Armstrongs	Maya Banks	Sách Tiếng Anh	351		03-2013	<a href="#">More info...</a> <a href="#">Edit</a> <a href="#">Delete</a>
Seduction Of A Highland Lass (The Highlanders)	Maya Banks	Sách Tiếng Anh	343		09-2011	<a href="#">More info...</a> <a href="#">Edit</a> <a href="#">Delete</a>
Never Seduce A Scot: The Montgomerys And Armstrongs	Maya Banks	Sách Tiếng Anh	410		09-2012	<a href="#">More info...</a> <a href="#">Edit</a> <a href="#">Delete</a>
The Necromancer: Book 4	Michael Scott	Sách Tiếng Anh	396		06-2011	<a href="#">More info...</a> <a href="#">Edit</a> <a href="#">Delete</a>
Death Angel: A Novel	Linda Howard	Sách Tiếng Anh	377		04-2009	<a href="#">More info...</a> <a href="#">Edit</a> <a href="#">Delete</a>
Tom Jones	Henry Fielding	Sách Tiếng Anh			05-1992	<a href="#">More info...</a> <a href="#">Edit</a> <a href="#">Delete</a>
Digital Fortress	Dan Brown	Sách Tiếng Anh			08-2009	<a href="#">More info...</a> <a href="#">Edit</a> <a href="#">Delete</a>
The Diamond As Big As The Ritz And Other Stories	F. Scott Fitzgerald	Sách Tiếng Anh			12-1999	<a href="#">More info...</a> <a href="#">Edit</a> <a href="#">Delete</a>
Deception Point		Sách Tiếng Anh			12-2009	<a href="#">More info...</a> <a href="#">Edit</a> <a href="#">Delete</a>
Lethal Legacy (Alexandra Cooper)	Linda Fairstein	Sách Tiếng Anh	404		12-2009	<a href="#">More info...</a> <a href="#">Edit</a> <a href="#">Delete</a>
The High Lord: Book 3 Of The Black Magician	Trudi Canavan	Sách Tiếng Anh	647		03-2010	<a href="#">More info...</a> <a href="#">Edit</a> <a href="#">Delete</a>
Excession		Sách Tiếng Anh	451		05-1997	<a href="#">More info...</a> <a href="#">Edit</a> <a href="#">Delete</a>
The Gambler And The House Of The Dead	Fyodor Dostoyevsky	Sách Tiếng Anh	454		05-2010	<a href="#">More info...</a> <a href="#">Edit</a> <a href="#">Delete</a>

- And use the functions of the app

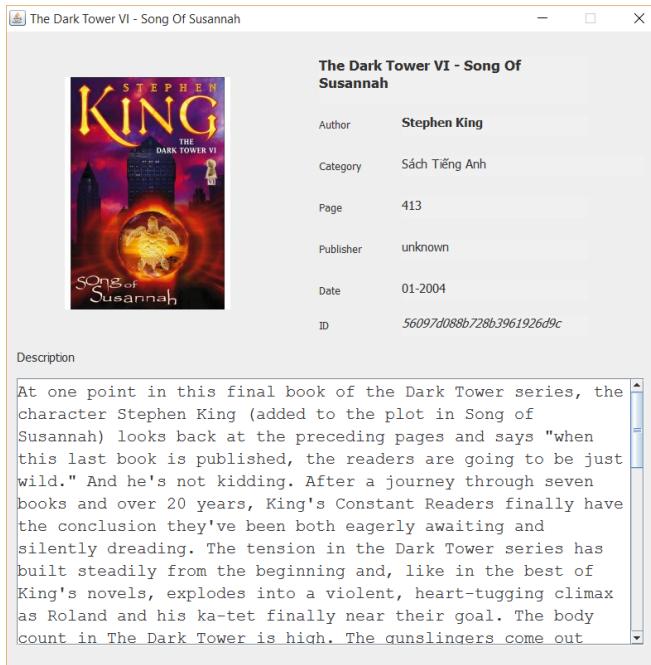
Library Manager

Option

Refresh Add book Log out

Title
Tower VI - Song Of Susannah
Mary Barton
Tender Is The Night

- Function – view all the details of a book



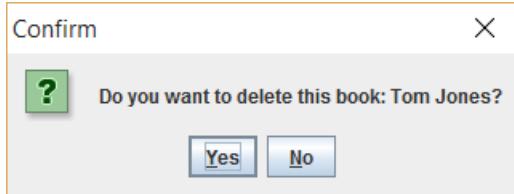
- Function – edit a book

Edit book

Title	The Dark Tower VI - Song Of Susannah
Author	Stephen King
Category	Sách Tiếng Anh
Page	413
Publisher	
Date	01-2004
Image	m/cache/200x280/media/catalog/product/9/6/9605817.jpg
Description	story was creating itself as it went along. Wherever that woman is now (the clearing at the end of the path, perhaps?), let's hope she has a copy of The Dark Tower. Surely she would agree it's been worth the wait. (Benjamin Reese)

**Submit**

- Function – delete a book – the confirm dialog



- Function – add a new book

The form fields are:

- Title
- Author
- Category (dropdown menu showing "Sách Tiếng Anh")
- Page
- Publisher
- Date
- Image
- Description

**Submit**

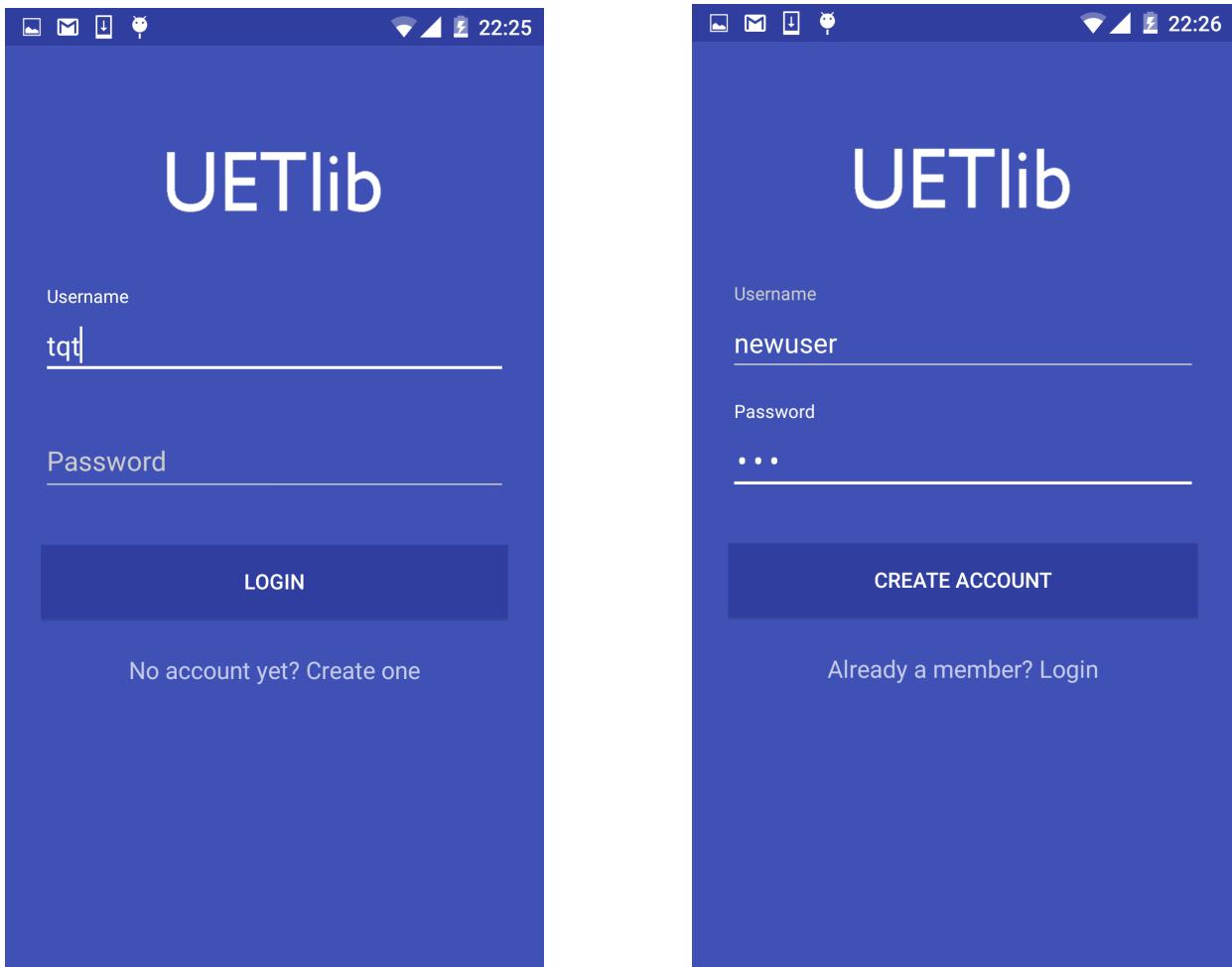
### 3. Mobile application

We have website for students and desktop application for library staffs to access our system. Besides, we also build an Android mobile application for students to easily search and view books' information on their smartphone.

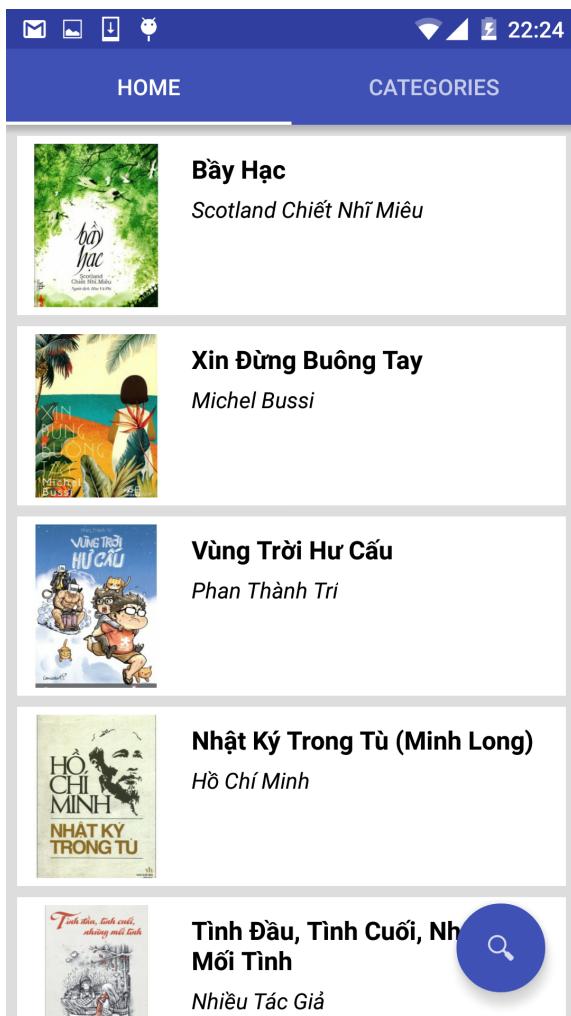
This application has all functions that we implemented on the website. We also use standard HTTP requests to communicate between mobile app and server like on the desktop application and the website.

There are some screenshots that we took one the real mobile running out application:

- Login and signup



- Home and book's information



### Description

Nhật ký trong tù là một tập thơ chữ Hán, gồm hơn một trăm bài thơ, phần cuối có một số ghi chép về quân sự và thời sự, được Chủ tịch Hồ Chí Minh sáng tác trong thời gian hơn một năm (từ 29-8-1942 đến 10-9-1943) Người bị chính quyền địa phương của Tưởng Giới Thạch bắt giam trái phép tại các nhà tù ở tỉnh Quảng tây, Trung Quốc. Nhật ký trong tù lén án chế độc nhà tù hà khắc của chính quyền Quốc dân Đảng, thể hiện tinh thần lạc quan cách mạng và tình cảm nhân đạo cộng sản chủ nghĩa cao đẹp của Chủ tịch Hồ Chí Minh. Tập thơ được đánh giá là một văn kiện lịch sử quan trọng, một tác phẩm văn học xuất sắc, có tác dụng giáo dục sâu sắc phẩm chất và đạo đức cách mạng cho

- We also can view books by category



- ▶ Sách Tiếng Anh
- ▶ Sách Văn Học - Tiểu Thuyết
- ▶ Sách Kinh Tế
- ▶ Sách Chuyên Ngành
- ▶ Sách Kỹ Năng Sống - Nghệ Thuật Sống
- ▶ Sách Giáo Khoa - Tham Khảo
- ▶ Sách Học Ngoại Ngữ - Từ Điển
- ▶ Sách Cho Tuổi Mới Lớn
- ▶ Sách Truyện Thiếu Nhi



Book Title	Author
Dances With Wolves (Mass Market Paperback)	Michael Blake
Dark Places (Mass Market Paperback)	Gillian Flynn
The Virgin and the Gipsy & Other Stories (Paperback)	D.H. Lawrence
Rob Roy	Walter Scott
Goldfinger (Penguin Viking Lit Fiction)	Ian Fleming

- The most useful function is searching, students can search title and author of the books.

