

Big Data Architecture Lab 1

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Setup information

The programming language used is JavaScript, more precisely, Node.JS. To use a redis client and get all packages needed installed, a few steps are needed: Firstly install the server by `sudo apt-get install redis-server`, and if `npm` is already installed in the computer, run

```
npm install redis
```

to install the Node.JS package for Redis. Moreover, in order to run the code, certain Node.JS packages are required, which can be installed by

```
npm install express  
npm install express-handlebars
```

Then, to run the code, after having launched Redis server, just go to the folder with the code, and run the Node.JS server with

```
node app.js
```

And then open the browser, go to <http://localhost:3000/> to use the application.

Supported Scenarios

To publish a book (<http://localhost:3000/>), borrow a book or return a book (<http://localhost:3000/user/sub>), just use the webpage. But to subscribe the channel, as the client side JavaScript cannot use external packages, it's not practical to integrate it inside the Webpage, so you need to go back to terminal, and run

```
node subscriber.js $channel_name
```

to begin the subscription and monitor the status. As to detect an expired book, the `notify-keyspace-events` is used with a subscription function to receive the notification as below:

```
client.send_command('config', ['set','notify-keyspace-events','Ex'], Subscr
function SubscribeExpired(e,r){
  let sub = redis.createClient();
  const expired_subKey = '__keyevent@0__:expired';
  sub.subscribe(expired_subKey,function(){
    console.log(' [i] Subscribed to "'+expired_subKey+'" event channel : '+
    sub.on('message',function (chan,msg){console.log('[expired]',msg)}));
  })
}
```

Example of program execution

For the publication of book and the borrow and return of books, they are all through the webpage at <http://localhost:3000/>. For the subscription, the typical output is

```
new book added to channel bio with ID 12344
{"isbn":"23435678","title":"The Great Xin","author":"Xin Zhang","number":"1
```

Firstly there is the notification of newly added book, then the information of the book is displayed by requesting the server with the ID extracted.

For a typical run of testing the expiration of a book, the output is like this.

```
Server started on port 3000
Connected to Redis...
[i] Subscribed to "__keyevent@0__:expired" event channel : OK
OK
New Channel: bio
{"isbn":"23435678","title":"The Great Xin","author":"Xin Zhang","number":"1
[expired] 12344
```