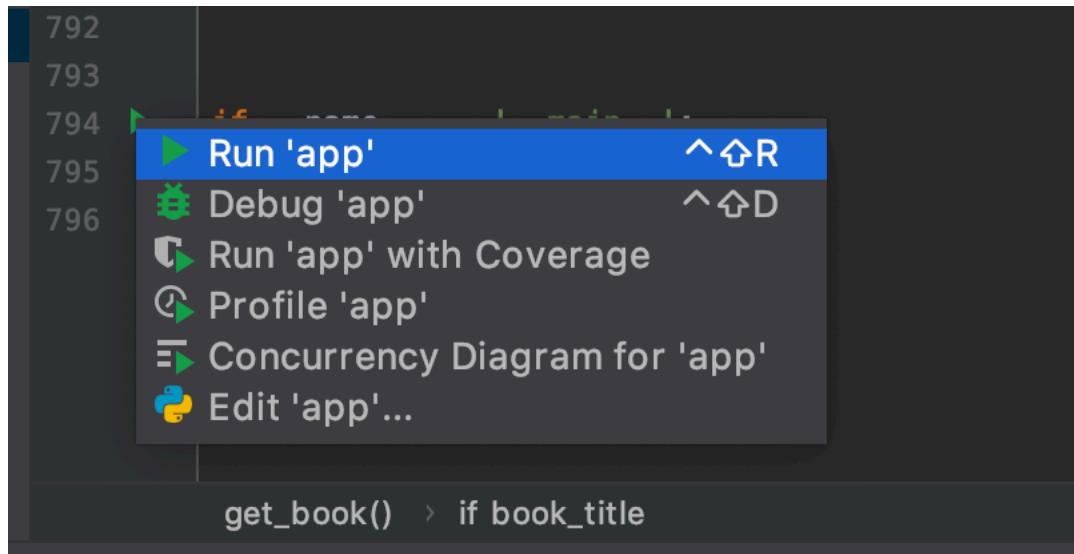


1. Prerequisites:

- PyCharm
Install [PyCharm 2019.3.2 (Professional Edition)]
- MongoDB Atlas
Register for an account on the **MongoDB Atlas** and set up your account by following <https://docs.atlas.mongodb.com/getting-started/>
- pylint
Run “pip install pylint” in Terminal.

2. Environment Setup and configurations:

In file app.py, click in green triangle button, and click on “Run ‘app’”.



Then you can see

```
app ×
↑ /Users/mengwang/Desktop/sp20-cs242-assignment2/venv/bin/python /Users/mengwang/Desktop/sp20-cs242-assignment2/app.py
↓ * Serving Flask app "app" (lazy loading)
  * Environment: production
  WARNING: This is a development server. Do not use it in a production deployment.
  Use a production WSGI server instead.
  * Debug mode: on
  * Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
  * Restarting with stat
  * Debugger is active!
  * Debugger PIN: 361-239-111
```

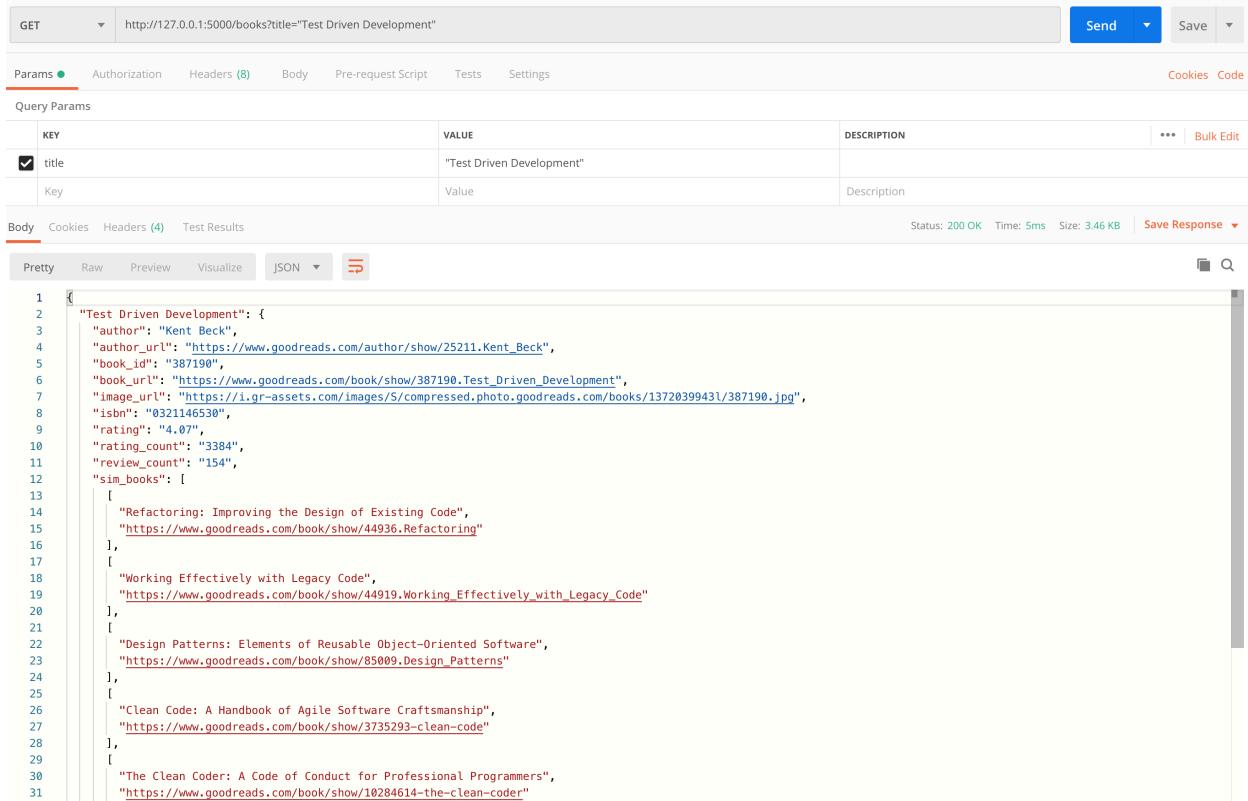
A terminal window titled "app" is shown, displaying the output of running a Flask application. The output includes the path to the Python executable, the serving of the "app" module, the environment (production), a warning about using it in production, debug mode being on, the running port (http://127.0.0.1:5000/), restarting with stat, debugger activation, and the debugger PIN.

3. Operations and the results:

GET

Get book info with title:

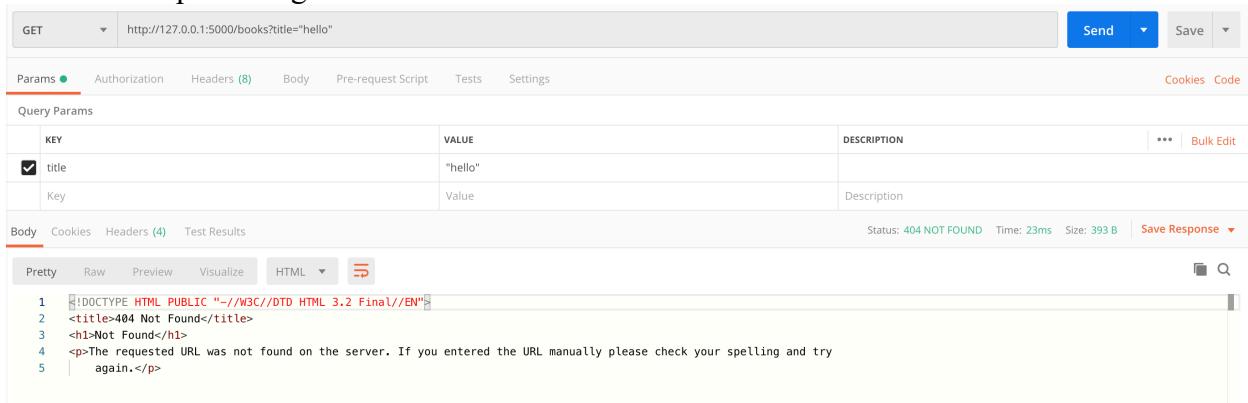
- Input correct title



The screenshot shows a Postman request for a GET method to the URL `http://127.0.0.1:5000/books?title='Test Driven Development'`. The response status is 200 OK, and the JSON body contains detailed information about the book "Test Driven Development" by Kent Beck, including its author, URL, ISBN, rating, and several recommended books.

```
1 {"Test Driven Development": {  
2     "author": "Kent Beck",  
3     "author_url": "https://www.goodreads.com/author/show/25211.Kent_Beck",  
4     "book_id": "387190",  
5     "book_url": "https://www.goodreads.com/book/show/387190.Test_Driven_Development",  
6     "image_url": "https://i.gr-assets.com/images/S/compressed.photo.goodreads.com/books/1372039943l/387190.jpg",  
7     "isbn": "0321146530",  
8     "rating": "4.07",  
9     "rating_count": "3384",  
10    "review_count": "154",  
11    "sim_books": [  
12        [  
13            "Refactoring: Improving the Design of Existing Code",  
14            "https://www.goodreads.com/book/show/44936.Refactoring"  
15        ],  
16        [  
17            "Working Effectively with Legacy Code",  
18            "https://www.goodreads.com/book/show/44919.Working_Effectively_with_Legacy_Code"  
19        ],  
20        [  
21            "Design Patterns: Elements of Reusable Object-Oriented Software",  
22            "https://www.goodreads.com/book/show/85009.Design_Patterns"  
23        ],  
24        [  
25            "Clean Code: A Handbook of Agile Software Craftsmanship",  
26            "https://www.goodreads.com/book/show/3735293-clean-code"  
27        ],  
28        [  
29            "The Clean Coder: A Code of Conduct for Professional Programmers",  
30            "https://www.goodreads.com/book/show/10284614-the-clean-coder"  
31        ]  
1 } }
```

- Input wrong title



The screenshot shows a Postman request for a GET method to the URL `http://127.0.0.1:5000/books?title='hello'`. The response status is 404 NOT FOUND, indicating that the requested URL was not found on the server.

```
1 <!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML 3.2 Final//EN">  
2 <title>404 Not Found</title>  
3 <h1>Not Found</h1>  
4 <p>The requested URL was not found on the server. If you entered the URL manually please check your spelling and try  
5 again.</p>
```

Get book info with author:

- Input correct author name

The author may have several books. In following pictures, you can see Martin Fowler has two books.

GET http://127.0.0.1:5000/books?author="Martin Fowler"

Send Save

Params Authorization Headers (8) Body Pre-request Script Tests Settings Cookies Code

Query Params

KEY	VALUE	DESCRIPTION	*** Bulk Edit
<input checked="" type="checkbox"/> author	"Martin Fowler"		
Key	Value	Description	

Status: 200 OK Time: 8ms Size: 7 KB Save Response

Pretty Raw Preview Visualize JSON

```

1 "Martin Fowler": [
2   {
3     "author": "Martin Fowler",
4     "author_url": "https://www.goodreads.com/author/show/25215.Martin_Fowler",
5     "book_id": "44936",
6     "book_url": "https://www.goodreads.com/book/show/44936.Refactoring",
7     "image_url": "https://l.gr-assets.com/images/S/compressed.photo.goodreads.com/books/1386925632l/44936.jpg",
8     "isbn": "9780485672",
9     "rating": "4.24",
10    "rating_count": "6581",
11    "review_count": "258",
12    "sim_books": [
13      [
14        "Design Patterns: Elements of Reusable Object-Oriented Software",
15        "https://www.goodreads.com/book/show/85009.Design_Patterns"
16      ],
17      [
18        "Clean Code: A Handbook of Agile Software Craftsmanship",
19        "https://www.goodreads.com/book/show/3735293-clean-code"
20      ],
21      [
22        "Working Effectively with Legacy Code",
23        "https://www.goodreads.com/book/show/44919.Working_Effectively_with_Legacy_Code"
24      ],
25      [
26        "The Pragmatic Programmer: From Journeyman to Master",
27        "https://www.goodreads.com/book/show/4099.The_Pragmatic_Programmer"
28      ],
29      [
30        "Test Driven Development: By Example",
31      ]
32    ]
33  ]
34]

```

- Input wrong author name

GET http://127.0.0.1:5000/books?author="some people"

Send Save

Params Authorization Headers (8) Body Pre-request Script Tests Settings Cookies Code

Query Params

KEY	VALUE	DESCRIPTION	*** Bulk Edit
<input checked="" type="checkbox"/> author	"some people"		
Key	Value	Description	

Status: 404 NOT FOUND Time: 8ms Size: 393 B Save Response

Pretty Raw Preview Visualize HTML

```

1 <!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML 3.2 Final//EN">
2 <title>404 Not Found</title>
3 <h1>Not Found</h1>
4 <p>The requested URL was not found on the server. If you entered the URL manually please check your spelling and try
5 again.</p>

```

Get book info with related book:

Maybe lots of books have this specific book as their related book, then GET from

http://127.0.0.1:5000/books?related_book="Working Effectively with Legacy Code" will return a list of books.

- Input correct name of the related book

GET http://127.0.0.1:5000/books?related_book="Working Effectively with Legacy Code"

Send Save

Params Authorization Headers (8) Body Pre-request Script Tests Settings Cookies Code

Query Params

KEY	VALUE	DESCRIPTION	*** Bulk Edit
<input checked="" type="checkbox"/> related_book	"Working Effectively with Legacy Code"		
Key	Value	Description	

Body Cookies Headers (4) Test Results Status: 200 OK Time: 9ms Size: 50.82 KB Save Response

Pretty Raw Preview Visualize JSON

```

1  {
2      "Working Effectively with Legacy Code": [
3          {
4              "author": "Robert C. Martin",
5              "author_url": "https://www.goodreads.com/author/show/45372.Robert_C_Martin",
6              "book_id": "3735293",
7              "book_url": "https://www.goodreads.com/book/show/3735293-clean-code",
8              "image_url": "https://i.gr-assets.com/images/S/compressed.photo.goodreads.com/books/1436202607l/3735293._SX318_.jpg",
9              "isbn": "0132350882",
10             "rating": "4.40",
11             "rating_count": "13423",
12             "review_count": "804",
13             "sim_books": [
14                 [
15                     "The Pragmatic Programmer: From Journeyman to Master",
16                     "https://www.goodreads.com/book/show/4099.The_Pragmatic_Programmer"
17                 ],
18                 [
19                     "Design Patterns: Elements of Reusable Object-Oriented Software",
20                     "https://www.goodreads.com/book/show/85009.Design_Patterns"
21                 ],
22                 [
23                     "Refactoring: Improving the Design of Existing Code",
24                     "https://www.goodreads.com/book/show/44936.Refactoring"
25                 ],
26                 [
27                     "Head First Design Patterns",
28                     "https://www.goodreads.com/book/show/58128.Head_First_Design_Patterns"
29                 ],
30                 [
31                     "Code Complete",
32                 ]
33             ]
34         }
35     ]
36 }
```

- Input wrong name of the related book

GET http://127.0.0.1:5000/books?related_book="idk book name"

Send Save

Params Authorization Headers (8) Body Pre-request Script Tests Settings Cookies Code

Query Params

KEY	VALUE	DESCRIPTION	*** Bulk Edit
<input checked="" type="checkbox"/> related_book	"idk book name"		
Key	Value	Description	

Body Cookies Headers (4) Test Results Status: 404 NOT FOUND Time: 15ms Size: 393 B Save Response

Pretty Raw Preview Visualize HTML

```

1  <!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML 3.2 Final//EN">
2  <title>404 Not Found</title>
3  <h1>Not Found</h1>
4  <p>The requested URL was not found on the server. If you entered the URL manually please check your spelling and try
5  again.</p>
```

Get author info with name:

- Input correct name

GET http://127.0.0.1:5000/author?name="Robert C. Martin"

Send Save

Params Authorization Headers (8) Body Pre-request Script Tests Settings Cookies Code

Query Params

KEY	VALUE	DESCRIPTION	*** Bulk Edit
<input checked="" type="checkbox"/> name	"Robert C. Martin"		
Key	Value	Description	

Body Cookies Headers (4) Test Results Status: 200 OK Time: 10ms Size: 6.54 KB Save Response

Pretty Raw Preview Visualize JSON

```

1  {
2   "Robert C. Martin": {
3     "author_books": [
4       [
5         "Clean Code: A Handbook of Agile Software Craftsmanship",
6         "https://www.goodreads.com/book/show/3735293-clean-code"
7       ],
8       [
9         "The Clean Coder: A Code of Conduct for Professional Programmers",
10        "https://www.goodreads.com/book/show/10284614-the-clean-coder"
11      ],
12      [
13        "Clean Architecture",
14        "https://www.goodreads.com/book/show/18043011-clean-architecture"
15      ],
16      [
17        "The Art of Unit Testing: Deutsche Ausgabe",
18        "https://www.goodreads.com/book/show/25099258-the-art-of-unit-testing"
19      ],
20      [
21        "Agile Software Development, Principles, Patterns, and Practices",
22        "https://www.goodreads.com/book/show/84985.Agile\_Software\_Development\_Principles\_Patterns\_and\_Practices"
23      ],
24      [
25        "Agile Principles, Patterns, and Practices in C#",
26        "https://www.goodreads.com/book/show/84983.Agile\_Principles\_Patterns\_and\_Practices\_in\_C"
27      ],
28      [
29        "The Robert C. Martin Clean Code Collection",
30        "https://www.goodreads.com/book/show/13136186-the-robert-c-martin-clean-code-collection"
31      ],
31    ]
  }

```

- Input wrong name

GET http://127.0.0.1:5000/author?name="wrong name"

Send Save

Params Authorization Headers (8) Body Pre-request Script Tests Settings Cookies Code

Query Params

KEY	VALUE	DESCRIPTION	*** Bulk Edit
<input checked="" type="checkbox"/> name	"wrong name"		
Key	Value	Description	

Body Cookies Headers (4) Test Results Status: 404 NOT FOUND Time: 9ms Size: 393 B Save Response

Pretty Raw Preview Visualize HTML

```

1  <!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML 3.2 Final//EN">
2  <title>404 Not Found</title>
3  <h1>Not Found</h1>
4  <p>The requested URL was not found on the server. If you entered the URL manually please check your spelling and try again.</p>
5

```

4. Operations and the results:

PUT

Update title

```
_id: ObjectId("5e5c66239e42d596332eab8d")
book_url: "https://www.goodreads.com/book/show/43923951-such-a-fun-age"
title: "here is a new title"
book_id: "43923951"
isbn: "052554190X"
author_url: "https://www.goodreads.com/author/show/18257829.Kiley_Reid"
author: "Kiley Reid"
rating: "3.88"
rating_count: "36084"
review_count: "4789"
image_url: "https://i.gr-assets.com/images/S/compressed.photo.goodreads.com/books/..."
> sim_books: Array
```

Update id

```
_id: ObjectId("5e5c66239e42d596332eab5b")
book_url: "https://www.goodreads.com/book/show/44919.Working_Effectively_with_Leg..."
title: "Working Effectively with Legacy Code"
book_id: "here is a new id"
isbn: "0131177052"
author_url: "https://www.goodreads.com/author/show/25201.Michael_C_Feathers"
author: "Michael C. Feathers"
rating: "4.14"
rating_count: "3733"
review_count: "205"
image_url: "https://i.gr-assets.com/images/S/compressed.photo.goodreads.com/books/..."
> sim_books: Array
```

Update isbn

```
_id: ObjectId("5e5c66239e42d596332eab8e")
book_url: "https://www.goodreads.com/book/show/45294613-dear-edward"
title: "Dear Edward"
book_id: "45294613"
isbn: "here is a new isbn"
author_url: "https://www.goodreads.com/author/show/347770.Ann_Napolitano"
author: "Ann Napolitano"
rating: "4.27"
rating_count: "16469"
review_count: "2935"
image_url: "https://i.gr-assets.com/images/S/compressed.photo.goodreads.com/books/..."
> sim_books: Array
```

Update rating

```
>   _id: ObjectId("5e5c66239e42d596332eab5e")
>   book_url: "https://www.goodreads.com/book/show/23215733-the-software-craftsman"
>   title: "The Software Craftsman: Professionalism, Pragmatism, Pride"
>   book_id: "23215733"
>   isbn: "English"
>   author_url: "https://www.goodreads.com/author/show/7127583.Sandro_Mancuso"
>   author: "Sandro Mancuso"
>   rating: "here is a new rating"
>   rating_count: "615"
>   review_count: "90"
>   image_url: "https://i.gr-assets.com/images/S/compressed.photo.goodreads.com/books/..."
>   sim_books: Array
```

Updating rating count

```
_id: ObjectId("5e5c66239e42d596332eab85")
book_url: "https://www.goodreads.com/book/show/43582376-the-body"
title: "The Body: A Guide for Occupants"
book_id: "43582376"
isbn: "0385539304"
author_url: "https://www.goodreads.com/author/show/7.Bill_Bryson"
author: "Bill Bryson"
rating: "4.33"
rating_count: "here is a new rating count"
review_count: "1746"
image_url: "https://i.gr-assets.com/images/S/compressed.photo.goodreads.com/books/..."
> sim_books: Array
```

Updating review count

```
_id: ObjectId("5e5c66239e42d596332eab72")
book_url: "https://www.goodreads.com/book/show/89969.Getting_Everything_You_Can_0..."
title: "Getting Everything You Can Out of All You've Got: 21 Ways You Can Out-..."
book_id: "89969"
isbn: "0312284543"
author_url: "https://www.goodreads.com/author/show/51660.Jay_Abraham"
author: "Jay Abraham"
rating: "3.98"
rating_count: "7137"
review_count: "here is a new review count"
image_url: "https://i.gr-assets.com/images/S/compressed.photo.goodreads.com/books/..."
> sim_books: Array
```

5. Dashboard

List of books

The screenshot shows a MongoDB Atlas dashboard titled "CS242 Assignment2.1". The left sidebar has a "DASHBOARD" section with a "DATA" dropdown menu. Under "DATA", there are links for "author list" and "book list". Below these are "manipulate book" and "manipulate author" options. The main content area displays a table of book data with columns: title, book_url, book_id, isbn, and author_url. The table lists several books, each with a detailed description in the "title" column.

title	book_url	book_id	isbn	author_url
Dear Edward	https://www.goodreads.com/book/show/45294613-dear-edward	45294613	here is a new isbn	https://www.goodreads.com/author/show/347770.Ann_Najim
Getting Everything You Can Out of All You've Got: 21 Ways You Can Out-Think, Out-Perform, and Out-Earn the Competition	https://www.goodreads.com/book/show/89969.Getting_Everything_You_Can_Out_of_All_You_ve_Got	89969	0312284543	https://www.goodreads.com/author/show/51660.Jay_Abrams
Managing Humans: Bitting and Humbling Tales of a Software Engineering Manager	https://www.goodreads.com/book/show/1317946.Managing_Humans	1317946	159059844X	https://www.goodreads.com/author/show/629966.Michael_Silberberg
High Output Management	https://www.goodreads.com/book/show/324750.High_Output_Management	324750	0679762884	https://www.goodreads.com/author/show/37708.Andrew_Sullivan
here is a new title	https://www.goodreads.com/book/show/40672036-digital-minimalism	40672036	B07DBRBP7G	https://www.goodreads.com/author/show/147891.Cal_Newman
Long Bright River	https://www.goodreads.com/book/show/43834909-long-bright-river	43834909	0525540679	https://www.goodreads.com/author/show/6879446.Liz_Morales
Clean Architecture	https://www.goodreads.com/book/show/18043011-clean-architecture	18043011	English	https://www.goodreads.com/author/show/45372.Robert_Carpenter
SPIN Selling: Situation Problem Implication Need-payoff	https://www.goodreads.com/book/show/833015.SPIN_Selling	833015	0070511136	https://www.goodreads.com/author/show/27275.Neil_Rackham
She Said: Breaking the Sexual				

List of authors

CS242 Assignment2.1

DASHBOARD		Data Atlas: MongoDB Atlas						127.0.0.1		SAVE-OUR-CHILDREN	
		name	author_url	author_id	rating	rating_count	review_count	image_url	related_aus		
DATA		Michael C. Feathers	https://www.goodreads.com/author/show/25201.Michael_C_Feathers	25201	4.03	5291	283	https://images.gr-assets.com/authors/1442450392p5/25201.jpg	[Chad Fow	'https://wv	
author list		Alice - test image url	https://www.goodreads.com/author/show/7327369.James_Clear	7327369	4.34	60687	5538	https://images.gr-assets.com/authors/1393075384p5/7327369.jpg	[Napoleon	'https://wv	
book list		Nir Eyal	https://www.goodreads.com/author/show/7284116.Nir_Eyal	7284116	4.03	25014	1981	https://images.gr-assets.com/authors/1555434805p5/7284116.jpg	[John C. N	'https://wv	
manipulate book		Alice - test review count	https://www.goodreads.com/author/show/18257829.Kiley_Reid	18257829	3.88	35976	4780	https://s.gr-assets.com/assets/nophoto/user/u_200x266-3061b784cc8e7f021c6430c9aba94587.png	[Anita Shri	'https://wv	
manipulate author		Peter Thiel	https://www.goodreads.com/author/show/8474721.Peter_Thiel	8474721	4.16	148185	5098	https://images.gr-assets.com/authors/1532597901p5/8474721.jpg	[Napoleon	'https://wv	
review count		Matthew Dixon	https://www.goodreads.com/author/show/3310863.Matthew_Dixon	3310863	3.96	6377	448	https://s.gr-assets.com/assets/nophoto/user/u_200x266-e183445fd1a1b5cc7075bb1cf7043306.png	[Robert T.	'https://wv	
book		Jeb Blount	https://www.goodreads.com/author/show/879098.Jeb_Blount	879098	4.23	3413	306	https://s.gr-assets.com/assets/nophoto/user/u_200x266-e183445fd1a1b5cc7075bb1cf7043306.png	[Scott Ad	'https://wv	
manipulate		Bill Bryson	https://www.goodreads.com/author/show/7.Bill_Bryson	7	4.02	1245541	74736	https://images.gr-assets.com/authors/157859752p5/7.jpg	[Ewan Mc	'https://wv	
author		Brian Goetz	www.google.com	73409	4.9	2362	118	https://s.gr-assets.com/assets/nophoto/user/u_200x266-e183445fd1a1b5cc7075bb1cf7043306.png	[Andy Hun	'https://wv	
list		Eric Evans	https://www.goodreads.com/author/show/104368.Eric_Evans	104368	4.14	3934	181	https://s.gr-assets.com/assets/nophoto/user/u_200x266-e183445fd1a1b5cc7075bb1cf7043306.png	[Chad Fow	'https://wv	
test		Michael Lopp	https://www.goodreads.com/author/show/629966.Michael_Lopp	629966	3.9	3730	346	https://images.gr-assets.com/authors/1338988149p5/629966.jpg	[Esther De	'https://wv	
image url		Eric Ries	https://www.goodreads.com/author/show/278960.Eric_Ries	278960	4.08	203085	3101	https://images.gr-assets.com/authors/1329162523p5/278960.jpg	[Clayton M	'https://wv	
url		Liz Moore	https://www.goodreads.com/author/show/6879446.Liz_Moore	6879446	4.08	37032	6062	https://images.gr-assets.com/authors/1484153944p5/6879446.jpg	[Anne Tyle	'https://wv	

6. Manipulate

Manipulate books

The top portion of the image shows a MongoDB Atlas interface with four panels:

- Insert:** A panel with a single input field labeled "image_url" and a blue "Insert" button.
- Search with book id:** A panel with a search bar labeled "search_book_id" and a blue "Search" button.
- Delete with book id:** A panel with a search bar labeled "deleted_book_id" and a blue "Delete" button.
- update with book id:** A panel with a search bar labeled "input_book_id".

The bottom portion of the image shows a screenshot of a web application titled "CS242 Assignment2.1" with a sidebar menu:

- DASHBOARD**
- DATA** (selected)
- author list
- book list
- manipulate book** (selected)
- manipulate author

The main content area is titled "Insert data" and contains seven input fields:

- title
- book_url
- book_id
- isbn
- author_url
- author
- rating
- rating_count

127.0.0.1

Data | Atlas: MongoDB Atlas

SAVE-OUR-CHILDREN

Delete

update with book id

update data inside database

input_book_id

update_book_url

update_title

update_book_id

update_isbn

update_author_url

update_author

...

This screenshot shows a web-based interface for updating data in a MongoDB database. The title bar indicates the connection is to 'Data | Atlas: MongoDB Atlas' via port '127.0.0.1'. The main page is titled 'SAVE-OUR-CHILDREN'. At the top left, there is a 'Delete' button. Below it, the heading 'update with book id' is displayed, followed by the sub-instruction 'update data inside database'. There are seven input fields, each preceded by a small icon of a document with a pencil. The fields are labeled: 'input_book_id', 'update_book_url', 'update_title', 'update_book_id' (repeated), 'update_isbn', 'update_author_url', and 'update_author'. Below these fields is a horizontal ellipsis (...).

Manipulate authors

The screenshot shows a web-based interface for managing author data. The top navigation bar indicates the URL is 127.0.0.1 and the database is SAVE-OUR-CHILDREN. The left sidebar, titled 'CS242 Assignment2.1', includes a 'DASHBOARD' section and a 'DATA' section with options: 'author list', 'book list', 'manipulate book', and 'manipulate author'. The main content area contains four sections:

- Insert data**: A form for inserting new author documents. It includes fields for name, author_url, author_id, rating, rating_count, review_count, and image_url. A blue 'Insert' button is at the bottom.
- Search with author id**: A form for searching by author_id. It has a search input field for search_author_id and a blue 'Search' button.
- Delete with author id**: A form for deleting data by author_id. It has a search input field for deleted_author_id and a blue 'Delete' button.
- update with author id**: A form for updating data by author_id. It has a search input field for input_author_id and a blue 'Update' button.

Data | Atlas: MongoDB Atlas

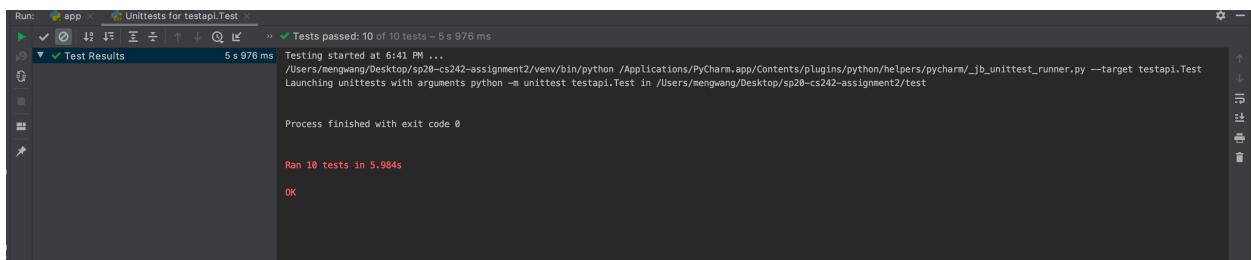
127.0.0.1

SAVE-OUR-CHILDREN

update with author id

update data inside database

7. Test cases



The screenshot shows the PyCharm IDE's Run tool window. The title bar says "Run: app x Untests for testapi.Test x". The main area displays the output of a test run:

```
Tests passed: 10 of 10 tests - 5 s 976 ms
Testing started at 6:41 PM ...
/Users/mengwang/Desktop/sp20-cs242-assignment2/venv/bin/python /Applications/PyCharm.app/Contents/plugins/python/helpers/pycharm/_jb_unittest_runner.py --target testapi.Test
Launching unittests with arguments python -m unittest testapi.Test in /Users/mengwang/Desktop/sp20-cs242-assignment2/test
Process finished with exit code 0

Ran 10 tests in 5.984s
OK
```