

DOS-Project
Part 1

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The Used Technologies

Server Frameworks : PHP-Laravel MVC(Model-View-Controller)

Database : SQLite

Virtualization Technology : Docker

{ Catalog Server => catalog:4000

Order Server => order : 4001

Front-end Server => Front:4002 }

three services

1- Catalog server

2 - Order Server

2 - Front-end Server

Two micro services:

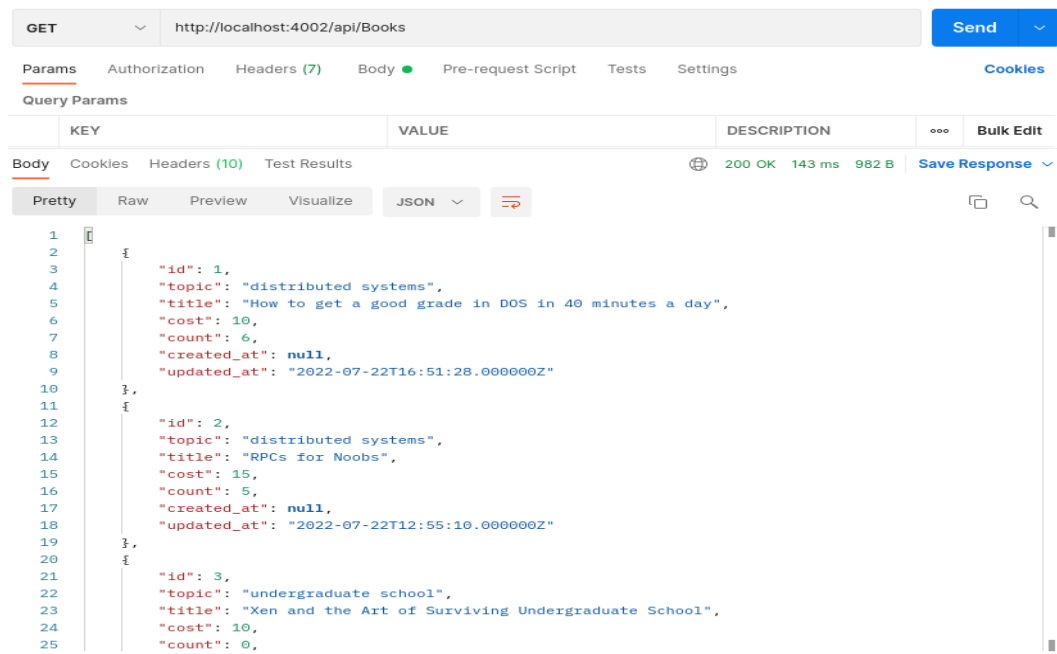
the first one is the Catalog Server , this server hold the responsibility of all action related to book (Search,Add and info) and the second micro service is the Order Server which hold the responsibility of handling the ordering request like Purchase request
Also the Front-end server to forward the requests to the Catalog and Order services

the routes :

GET method to get info, PUT method to edit info such as count and cost, POST method to add new data such as purchase order
localhost:4002/...

```
Route::post('/Books/{id}/buy', [OrderController::class,'store']);
Route::put('/Books/{id}/cost', [CatalogController::class,'update']);
Route::put('/Books/{id}/add', [CatalogController::class,'countI']);
Route::get('/Books/{id}', [CatalogController::class,'show']);
Route::get('/Books', [CatalogController::class,'index']);
Route::get('/search/{topic}', [CatalogController::class,'search']);
```

EX: localhost:4002/Books response :



Logs: terminal and logs file

```
front_1 | [Fri Jul 22 17:10:10 2022] 172.23.0.1:49754 Accepted
front_1 | [Fri Jul 22 17:10:10 2022] 172.23.0.1:49756 Accepted
front_1 | [Fri Jul 22 17:10:10 2022] 172.23.0.1:49754 Closed without sending a request;
it was probably just an unused speculative preconnection
front_1 | [Fri Jul 22 17:10:10 2022] 172.23.0.1:49754 Closing
catalog_1 | [Fri Jul 22 17:10:10 2022] 172.23.0.4:43704 Accepted
catalog_1 | [2022-07-22 17:10:10] local.INFO: (Catalog Server) -> getting all books -> [{"id":1,"topic":"distributed systems","title":"How to get a good grade in DOS in 40 minutes a day","cost":10,"count":6,"created_at":null,"updated_at":"2022-07-22T16:51:28.000000Z"}, {"id":2,"topic":"distributed systems","title":"RPCs for Noobs","cost":15,"count":5,"created_at":null,"updated_at":"2022-07-22T12:55:10.000000Z"}, {"id":3,"topic":"undergraduate school","title":"Xen and the Art of Surviving Undergraduate School","cost":10,"count":0,"created_at":null,"updated_at":"2022-07-22T16:24:51.000000Z"}, {"id":4,"topic":"undergraduate school","title":"Cooking for the Impatient Undergrad","cost":20,"count":0,"created_at":null,"updated_at":"2022-07-22T16:35:46.000000Z"}]
catalog_1 |
catalog_1 | [Fri Jul 22 17:10:10 2022] 172.23.0.4:43704 Closing
front_1 | [2022-07-22 17:10:10] local.INFO: (Front-end Server) -> getting all books -> [{"id":1,"topic":"distributed systems","title":"How to get a good grade in DOS in 40 minutes a day","cost":10,"count":6,"created_at":null,"updated_at":"2022-07-22T16:51:28.000000Z"}, {"id":2,"topic":"distributed systems","title":"RPCs for Noobs","cost":15,"count":5,"created_at":null,"updated_at":"2022-07-22T12:55:10.000000Z"}, {"id":3,"topic":"undergraduate school","title":"Xen and the Art of Surviving Undergraduate School","cost":10,"count":0,"created_at":null,"updated_at":"2022-07-22T16:24:51.000000Z"}, {"id":4,"topic":"undergraduate school","title":"Cooking for the Impatient Undergrad","cost":20,"count":0,"created_at":null,"updated_at":"2022-07-22T16:35:46.000000Z"}]
front_1 |
front_1 | [Fri Jul 22 17:10:10 2022] 172.23.0.1:49756 Closing
```

```
[2022-07-22 18:02:22] local.INFO: (Catalog server) book found. {"id":1}
[2022-07-22 18:02:22] local.INFO: (Front-end server) book was found {"id":1}
[2022-07-22 18:05:36] local.ERROR: (Front-end server) the book has been updated, the new cost is 20 {"id":1}
[2022-07-22 18:05:36] local.ERROR: (Front-end server) the book has been updated, the new cost is 20 {"id":1}
[2022-07-22 18:06:27] local.ERROR: (Front-end server) the book has been updated, the new cost is 20 {"id":1}
[2022-07-22 18:08:22] local.ERROR: (Catalog server) the book has been updated, the new cost is 20 {"id":1}
[2022-07-22 18:08:22] local.ERROR: (Front-end server) the book has been updated, the new cost is 20 {"id":1}
[2022-07-22 18:08:57] local.ERROR: (Catalog server) the book has been updated, the new cost is 20 {"id":1}
[2022-07-22 18:08:57] local.INFO: (Front-end server) the book has been updated, the new cost is 20 {"id":1}
[2022-07-22 18:09:23] local.INFO: (Catalog server) the book has been updated, the new cost is 20 {"id":1}
[2022-07-22 18:09:23] local.INFO: (Front-end server) the book has been updated, the new cost is 20 {"id":1}
[2022-07-22 18:10:25] local.INFO: (Catalog Server) -> getting all books -> [{"id":1,"topic":"distributed systems","title":"How to get a good grade in DOS in 40 minutes a day","cost":10,"count":6,"created_at":null,"updated_at":"2022-07-22T16:51:28.000000Z"}, {"id":2,"topic":"distributed systems","title":"RPCs for Noobs","cost":15,"count":5,"created_at":null,"updated_at":"2022-07-22T12:55:10.000000Z"}, {"id":3,"topic":"undergraduate school","title":"Xen and the Art of Surviving Undergraduate School","cost":10,"count":0,"created_at":null,"updated_at":"2022-07-22T16:24:51.000000Z"}, {"id":4,"topic":"undergraduate school","title":"Cooking for the Impatient Undergrad","cost":20,"count":0,"created_at":null,"updated_at":"2022-07-22T16:35:46.000000Z"}]
[2022-07-22 18:10:25] local.INFO: (Front-end Server) -> getting all books -> [{"id":1,"topic":"distributed systems","title":"How to get a good grade in DOS in 40 minutes a day","cost":10,"count":6,"created_at":null,"updated_at":"2022-07-22T16:51:28.000000Z"}, {"id":2,"topic":"distributed systems","title":"RPCs for Noobs","cost":15,"count":5,"created_at":null,"updated_at":"2022-07-22T12:55:10.000000Z"}, {"id":3,"topic":"undergraduate school","title":"Xen and the Art of Surviving Undergraduate School","cost":10,"count":0,"created_at":null,"updated_at":"2022-07-22T16:24:51.000000Z"}, {"id":4,"topic":"undergraduate school","title":"Cooking for the Impatient Undergrad","cost":20,"count":0,"created_at":null,"updated_at":"2022-07-22T16:35:46.000000Z"}]
```

possible improvements :

PHP-Laravel has been used which is heavy framework to improve we could use lighter frameworks such as PHP-Lumen, Python-FLASK since we use microservices arch. also replication for the servers and load balancing in case of heavy loading on the servers, also we could use cache server to make the system faster

to run the program:

using the following command in the terminal to run the containers

``docker-compose up`` or ``docker compose up``