An-Najah National University
Faculty of Engineering and IT

جامعة النجاح الوطنية
كلية الهندسة وتكنولوجيا المعلومات

Computer Engineering Department
Course Name: Distributed Operating System

Instructor: : Dr. Samer Arendi	Lab1:Bazar.Com
Academic Year: 2022-2023	
Semester:1st	

Students	
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Performed on:	Submitted on:

Objectives:

The purpose of this lab is to learn how to design and employ a two-tier web design a front end and a back end and use micro services at each tier. The front-end tier will accept user requests and perform initial processing. The backend consists of some components.

Introduction:

In this Lab, We asked to design Bazar.com -the World's smallest book store, Bazar.com carries only four books for sale. The system should use a REST client/server architecture. This means creating several endpoints that correspond to the interfaces provided above.

The store will employ a two-tier web design a front-end and a backend and use micro services at each tier.

The front end Tier :

- Accept user requests and perform initial processing.
- No GUIs are required.
- The front end server supports three operations: search(topic) , info(item_number), purchase(item_number).

The Back end Tier:

The backend consists of two components:

- *Catalog Server*:
  query and update. Two types of queries are supported: query-by-subject and query-by-item. In the first case, a topic is specified and the server returns all matching entries. In the second case, an item is specified and all relevant details are returned. The update operation allows the number of items in stock to be increased or decreased
- *Order Server:*
  Supports a single operation: purchase(item_number). Upon receiving a purchase request, the order server must first verify that the item is in stock by querying the catalog server and then decrement the number of items in stock by one. The purchase request can fail if the item is out of stock.

Procedure:

Here is an explanation of some of the steps of building the project:

- We need 3 computer ,So we use ubuntu as a front end server ,Windows Computer as as Catalog server ,another Windows Computer as Order Server , Every 3 computer connected on the same network.
- We use Node Framework, because Node provide Speed, Scalability, Productively. Also we use Visual Studio code as editor , In order to create and test the API we use POSTMAN.
- Order and Catalog Server need a database , So we use SQLITE which is a very simple database.
- We use SQLLITE Studio to browse SQLITE database.

HOW to Run the BAZAR.COM:

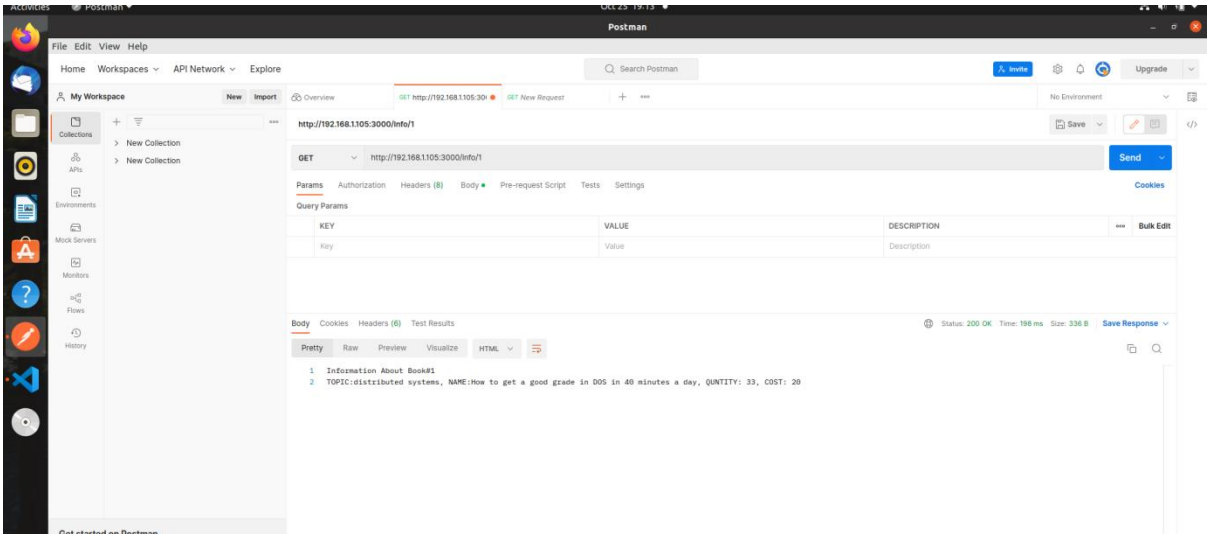
- Each Folder of Different Services, Put it in different computer, and open this folder by using visual code studio.
- We need to install Some libraries to each Server Such : Express.js, SuperAgent, Sqlite, body parser . For example we need Express.js to create sever running at specific port and to build route, also We need SuperAgent to make request.
- In order to install library we need to write visual code terminal in each services :npm intall Eexpress,npm install superagent, npm install sqlite, npm install bodyparser.
- In order to start each services , we need to write at each services terminal node filename.
- open postman in front end services and start to create API and test the result.

Result :

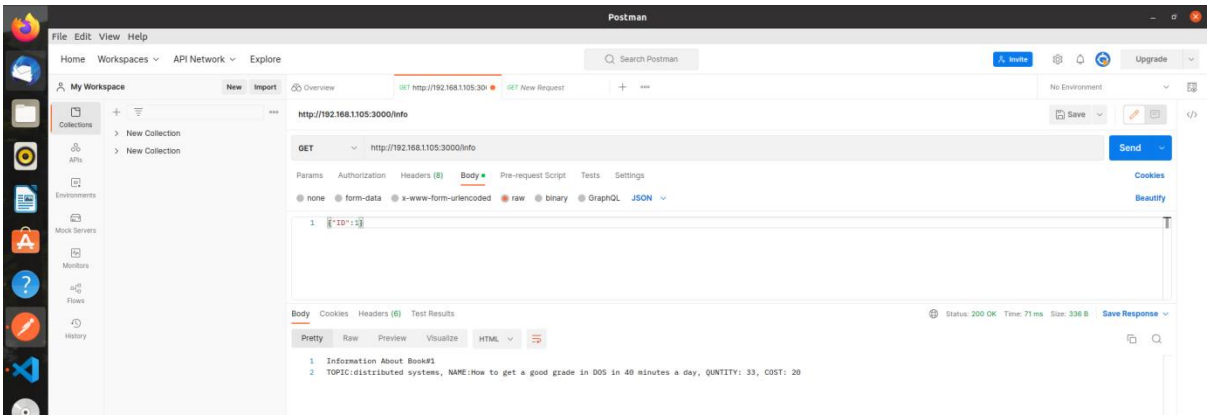
We need to test 3 operations:

Info(ITEM_NUMBER):

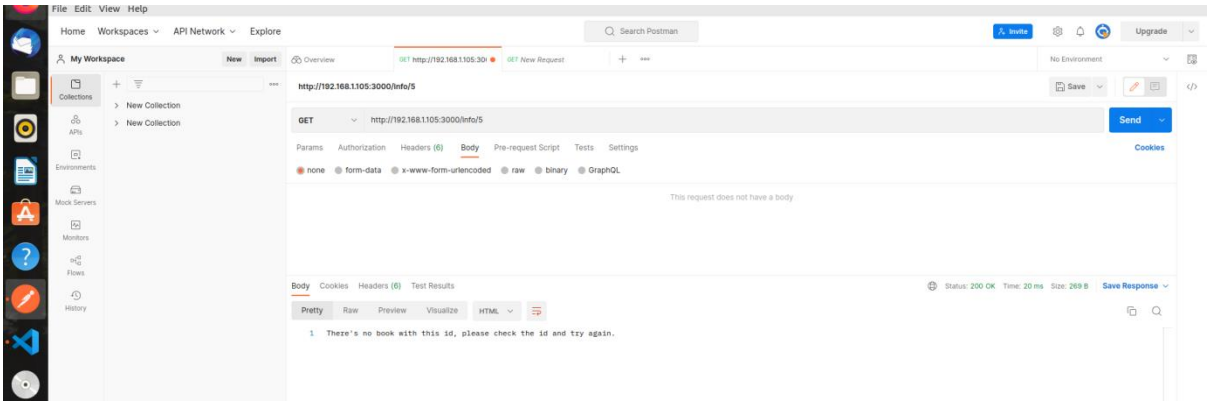
1-Send the ID in header



2-Send the ID in Body

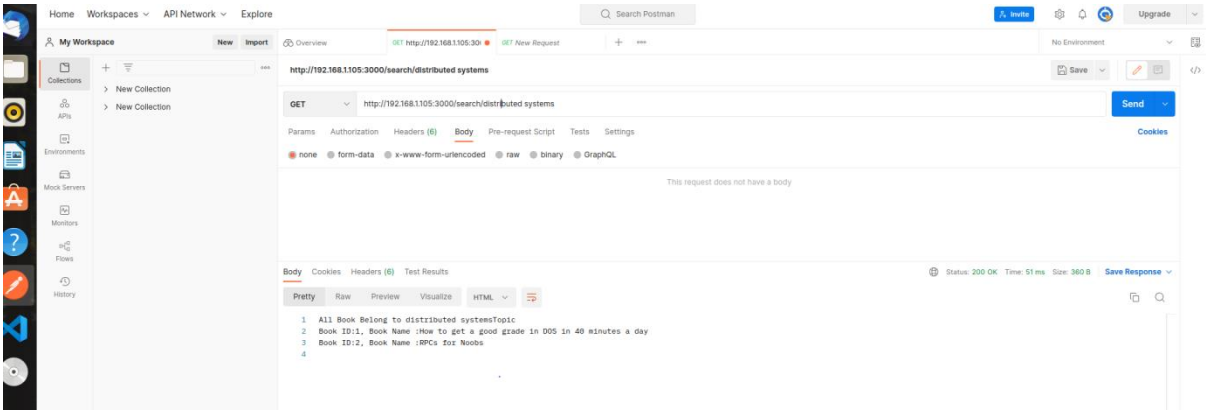


3- INFO About Not found ID in database.

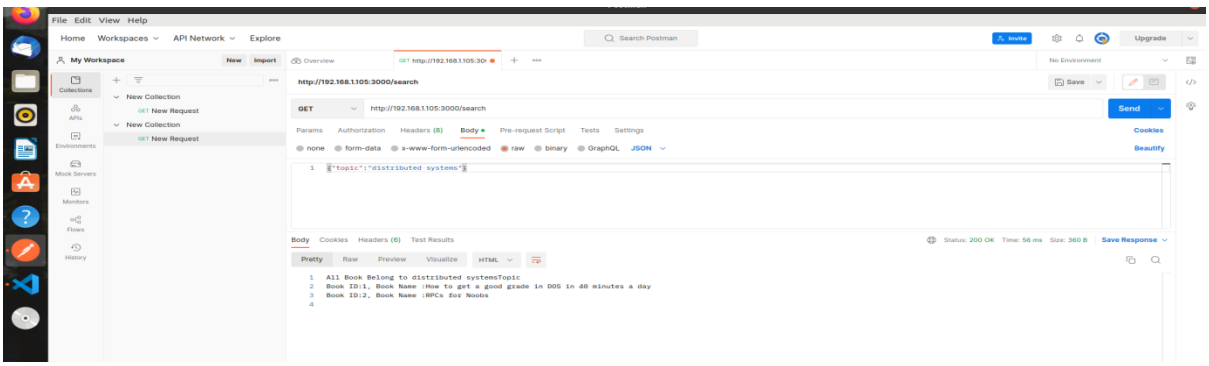


Search(Topic):

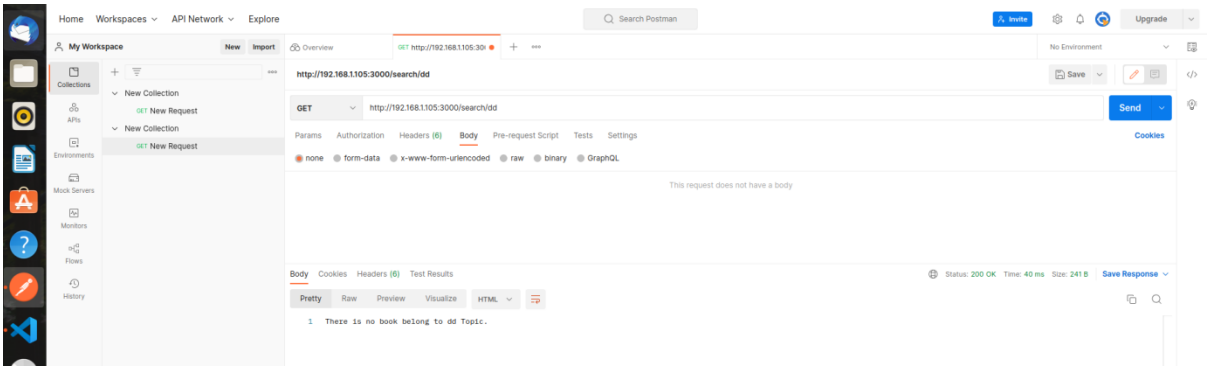
1-Send Topic in header



2-Send Topic in Body

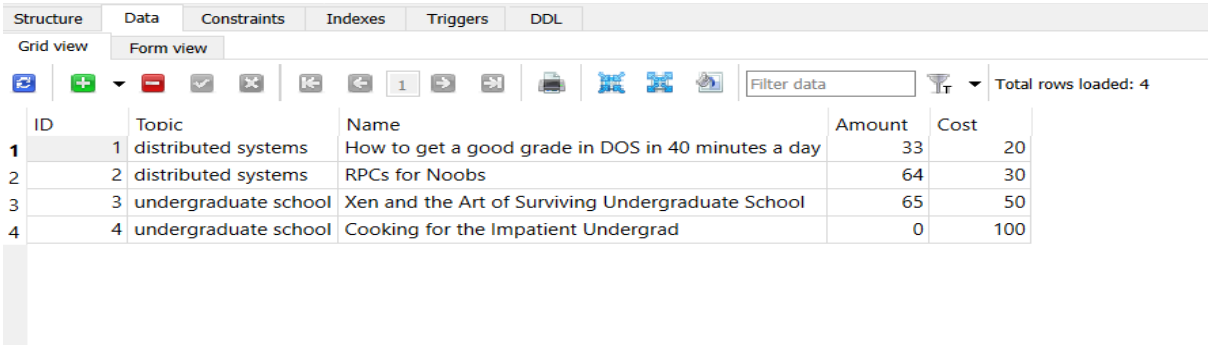


3-Search About Not Found Topic



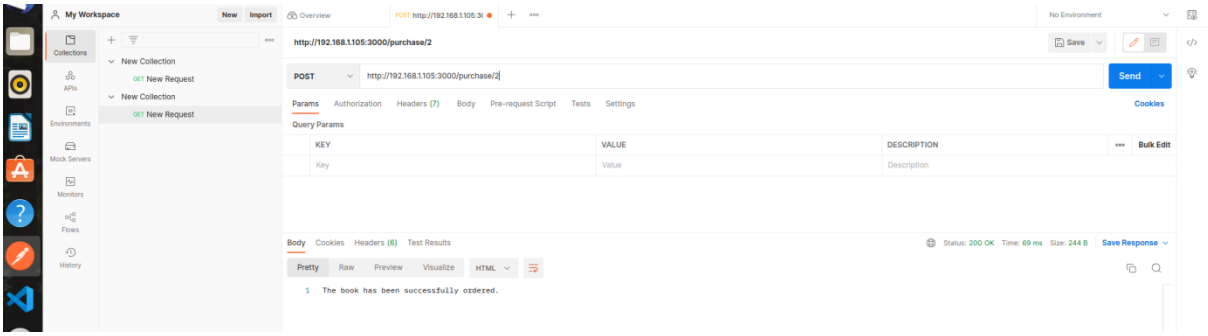
Purchase(ITEM_NUMBER):

1-Catalog DataBase before Purchase.

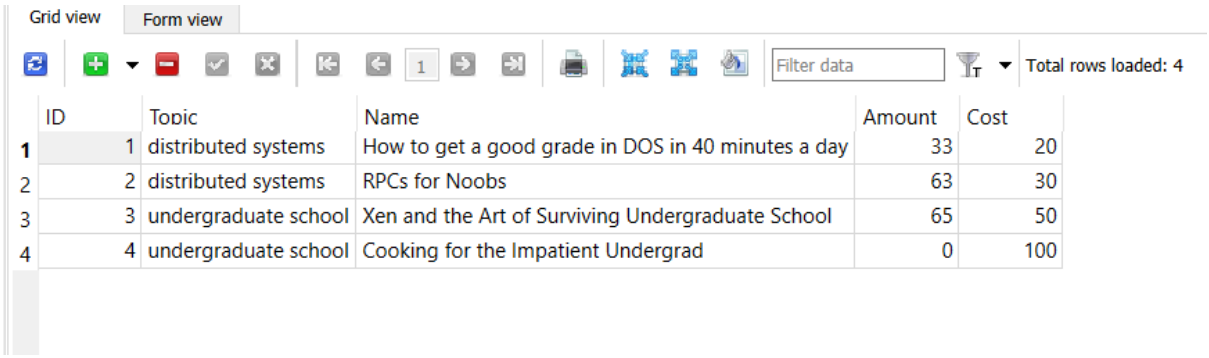


	ID	Topic	Name	Amount	Cost
1	1	distributed systems	How to get a good grade in DOS in 40 minutes a day	33	20
2	2	distributed systems	RPCs for Noobs	64	30
3	3	undergraduate school	Xen and the Art of Surviving Undergraduate School	65	50
4	4	undergraduate school	Cooking for the Impatient Undergrad	0	100

2-Purchase



3-Catalog DataBase After Purchase

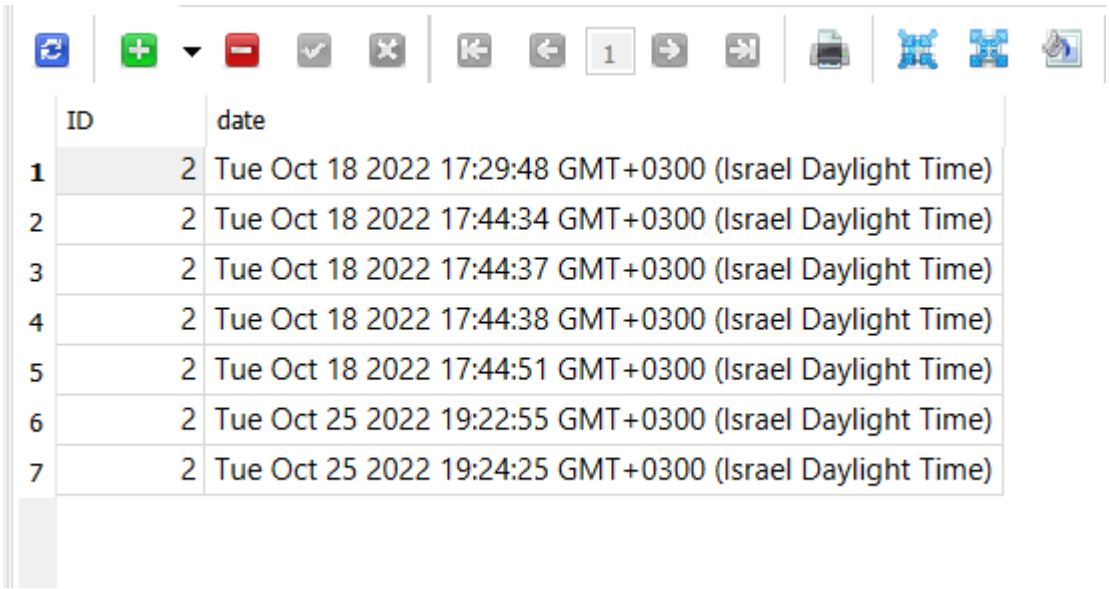


Grid view | Form view

Filter data | Total rows loaded: 4

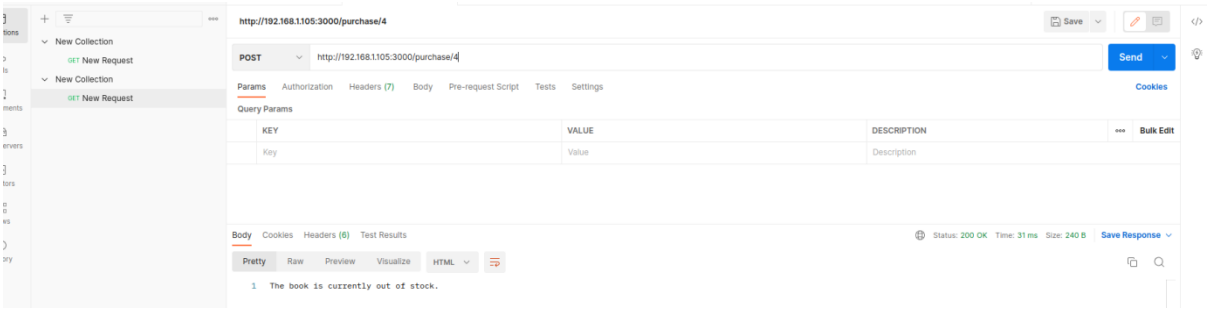
	ID	Topic	Name	Amount	Cost
1	1	distributed systems	How to get a good grade in DOS in 40 minutes a day	33	20
2	2	distributed systems	RPCs for Noobs	63	30
3	3	undergraduate school	Xen and the Art of Surviving Undergraduate School	65	50
4	4	undergraduate school	Cooking for the Impatient Undergrad	0	100

4-Order DataBase After Purchase

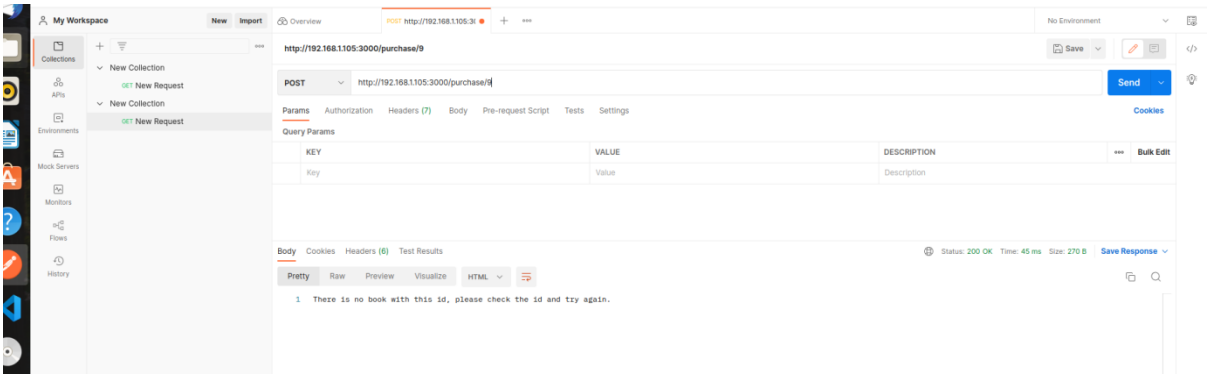


	ID	date
1	2	Tue Oct 18 2022 17:29:48 GMT+0300 (Israel Daylight Time)
2	2	Tue Oct 18 2022 17:44:34 GMT+0300 (Israel Daylight Time)
3	2	Tue Oct 18 2022 17:44:37 GMT+0300 (Israel Daylight Time)
4	2	Tue Oct 18 2022 17:44:38 GMT+0300 (Israel Daylight Time)
5	2	Tue Oct 18 2022 17:44:51 GMT+0300 (Israel Daylight Time)
6	2	Tue Oct 25 2022 19:22:55 GMT+0300 (Israel Daylight Time)
7	2	Tue Oct 25 2022 19:24:25 GMT+0300 (Israel Daylight Time)

5-When We try to purchase book with 0 amount



6-Purchase Not Found ID



CONCLUSIN:

We Learn from this Project how to Build Micro Web Services and how to use REST FULL to communicate between services.