

COMPTE RENDU PROJET DIGITAL BANKING SPRING ANGULAR



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PLAN:

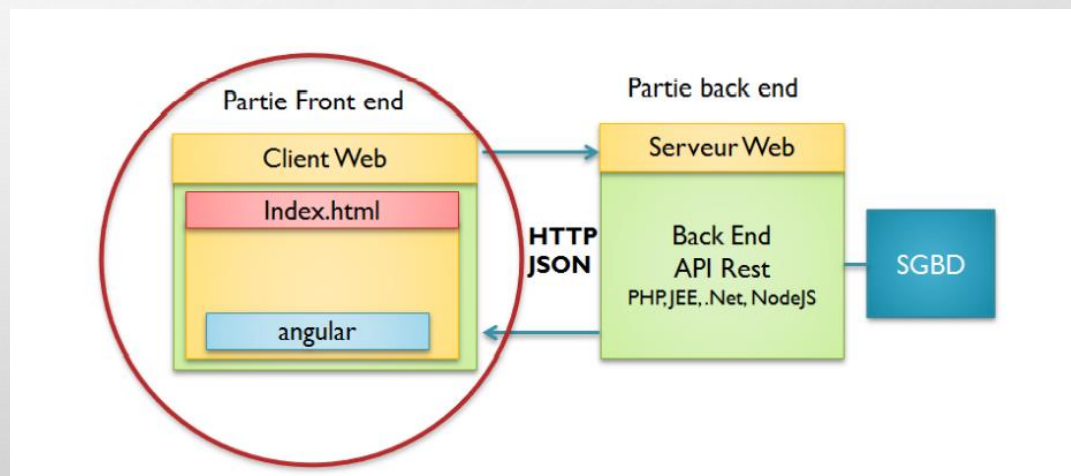
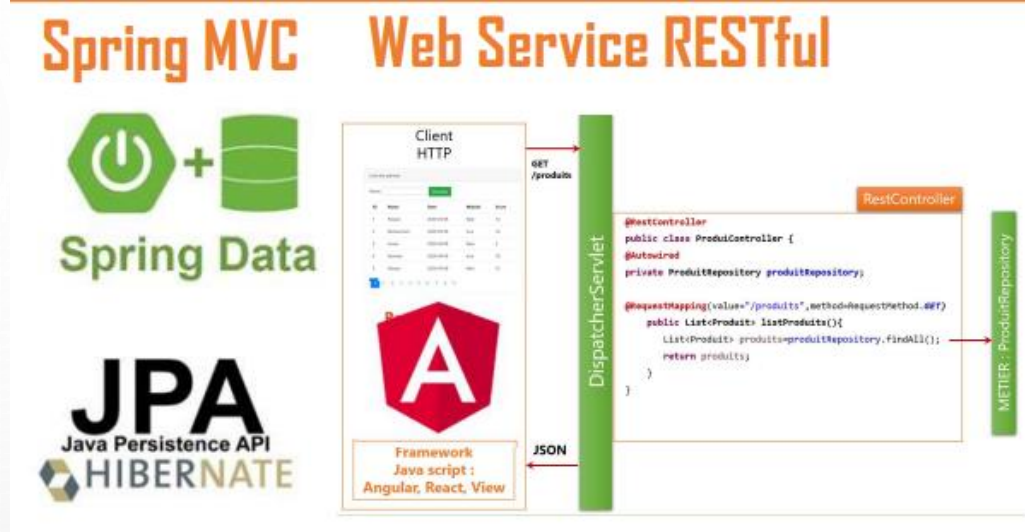
- **INTRODUCTION**
- **ÉNONCÉ**
- **CONCEPTION**
- **CODE SOURCE**
- **TEST ET EXÉCUTION**

INTRODUCTION :

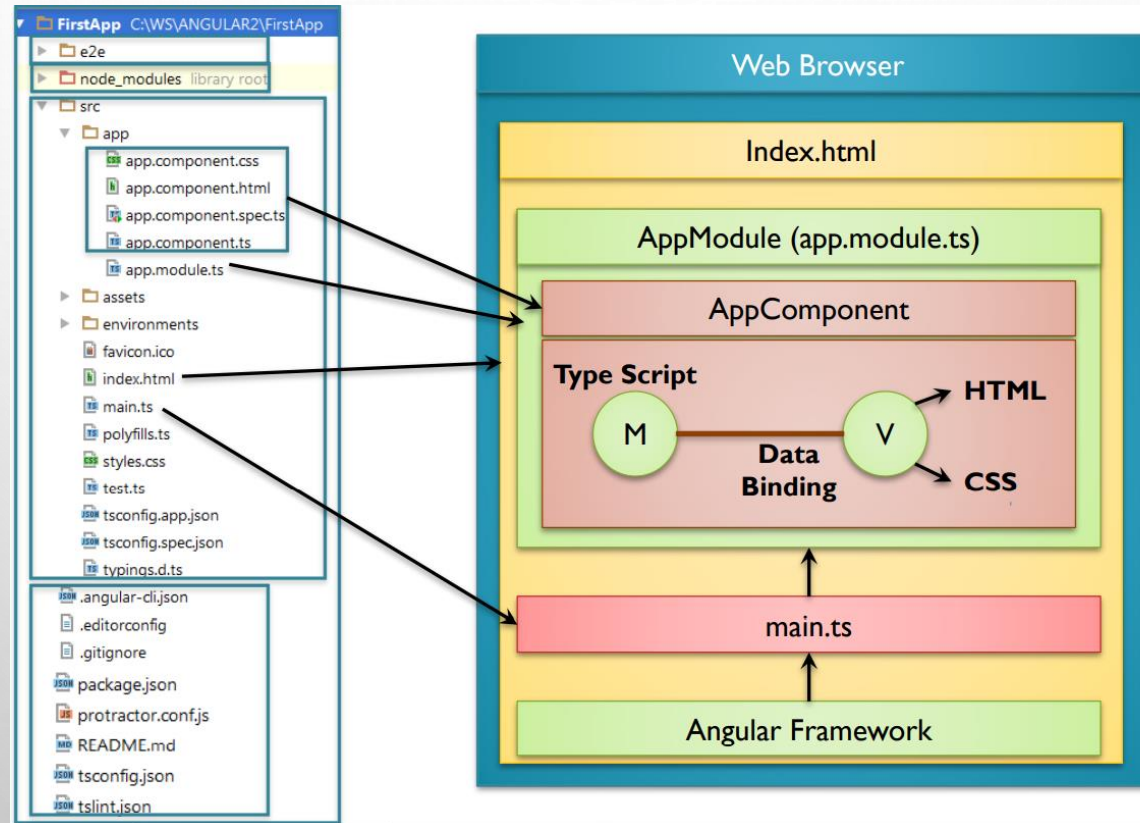
DÉVELOPPEMENT WEB FRONTEND

FRAMEWORK ANGULAR

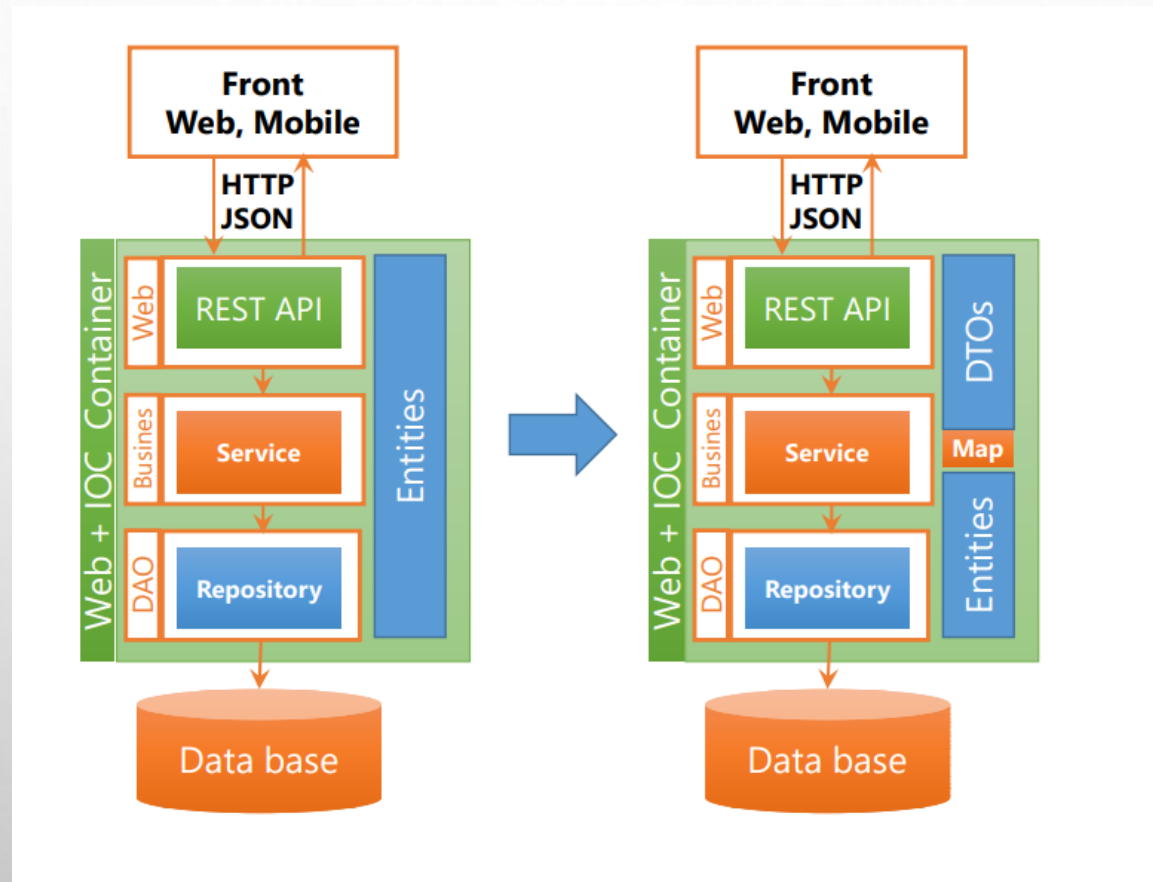
- ANGULAR PERMET DE CRÉER LA PARTIE FRONT END DES APPLICATIONS WEB DE TYPE SPA (SINGLE PAGE APPLICATION RÉACTIVE).
- UNE SPA EST UNE APPLICATION QUI CONTIENT UNE SEULE PAGE HTML (INDEX.HTML) RÉCUPÉRÉE DU SERVEUR.
- ANGULAR PERMET DE CRÉER LA PARTIE FRONT END DES APPLICATIONS WEB DE TYPE SPA (SINGLE PAGE APPLICATION).



STRUCTURE DU PROJET ANGULAR:

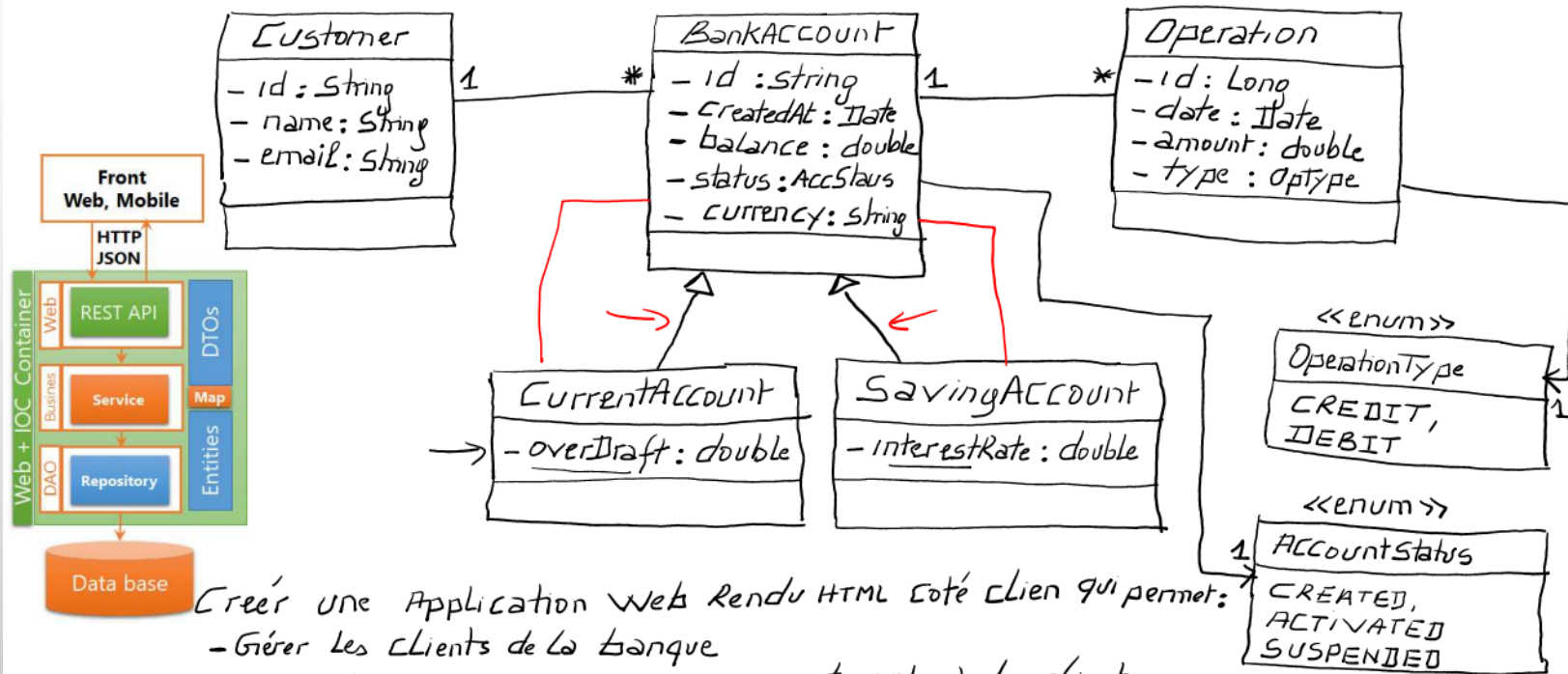


DÉVELOPPEMENT BACKEND :



ENONCÉ ET CONCEPTION :

Use Case : Digital Banking



Créer une Application Web Rendu HTML côté client qui permet:

- Gérer Les Clients de la Banque
- Gérer Les Comptes bancaires appartenant à des clients
- Gérer Les Opérations sur Les Comptes : Versement, Retraits, Virements

CODE SOURCE :

- **LIEN GITHUB : LIEN 1 (BACKEND)**

=> [PROJECTS_JEE/EBANCKING-BACKEND AT MAIN · BENNABBOUWIAM/PROJECTS_JEE \(GITHUB.COM\)](https://github.com/BENNABBOUWIAM/PROJECTS_JEE/tree/main/EBANCKING-BACKEND)

- **LIEN GITHUB : LIEN 2 (FRONTEND)**

=> [BENNABBOUWIAM/PROJECTS_JEE AT MASTER \(GITHUB.COM\)](https://github.com/BENNABBOUWIAM/PROJECTS_JEE/tree/master)

EXÉCUTION:

PARTIE BACKEND AVEC SPRING :

SINGLE TABLE : LISTE DES CUSTOMERS

The screenshot shows a database client window with a sidebar on the left containing a tree view of the database structure. The main area is divided into two sections. The top section contains the SQL statement `SELECT * FROM CUSTOMER;` and execution controls. The bottom section displays the query results in a table format.

Database structure (left sidebar):

- jdbc:h2:mem:bank
 - ACCOUNT_OPERATION
 - BANK_ACCOUNT
 - CUSTOMER
 - INFORMATION_SCHEMA
 - Sequences
 - Users
- H2 1.4.200 (2019-10-14)

Execution controls (top bar):

- Run
- Run Selected
- Auto complete
- Clear
- SQL statement:

SQL statement:

```
SELECT * FROM CUSTOMER;
```

Query Results:

ID	EMAIL	NAME
1	Hassan@gmail.com	Hassan
2	Yassine@gmail.com	Yassine
3	Aicha@gmail.com	Aicha

(3 rows, 8 ms)

Buttons: Edit

EXÉCUTION:

PARTIE BACKEND AVEC SPRING : SINGLE TABLE : LISTE DES BANKACCOUNTS

Auto commit ☒ Max rows: 1000 Auto complete Off Auto select On ?

jdbc:h2:mem:bank

- ACCOUNT_OPERATION
- BANK_ACCOUNT
- CUSTOMER
- INFORMATION_SCHEMA
- Sequences
- Users
- H2 1.4.200 (2019-10-14)

Run Run Selected Auto complete Clear SQL statement:

SELECT * FROM BANK_ACCOUNT;

SELECT * FROM BANK_ACCOUNT;

TYPE	ID	BALANCE	CREATED_AT	STATUS	OVER_DRAFT	INTEREST_RATE	CUSTOMER_ID
CA	d5aa6466-c1fd-4395-b5c0-4eab8a3b958a	42882.16881260509	2022-05-22 17:52:17.684	CREATED	9000.0	null	1
CA	aa04c749-1ba5-4004-9698-c3b648d2d2b5	87497.34225538644	2022-05-22 17:52:17.742	CREATED	9000.0	null	2
CA	9bfb484-98c8-484d-9fbc-704a1de0fc2e	31986.47909501948	2022-05-22 17:52:17.748	CREATED	9000.0	null	3
SA	974d8834-5fee-46df-bdf3-b34bd81f0338	432.76247215955243	2022-05-22 17:52:17.75	CREATED	null	5.5	1
SA	5904fc7d-aede-4c7e-a3b0-c16af758055f	1677.3959275854681	2022-05-22 17:52:17.75	CREATED	null	5.5	2
SA	77cfc8d0-cbdc-4396-812b-d283d0a10f5c	44046.664152298894	2022-05-22 17:52:17.75	CREATED	null	5.5	3

(6 rows, 8 ms)

Edit

EXÉCUTION:

PARTIE BACKEND AVEC SPRING : SINGLE TABLE : LISTE DES ACCOUNT OPERATIONS

jdbc:h2:mem:bank					Run	Run Selected	Auto complete	Clear	SQL statement:
ACCOUNT_OPERATION					SELECT * FROM ACCOUNT_OPERATION				
BANK_ACCOUNT									
CUSTOMER									
INFORMATION_SCHEMA									
Sequences									
Users									
H2 1.4.200 (2019-10-14)									
SELECT * FROM ACCOUNT_OPERATION;									
ID	AMOUNT	OPERATION_DATE	TYPE	BANK_ACCOUNT_ID					
1	7035.633213068556	2022-05-22 17:52:17.765	DEBIT	d5aa6466-c1fd-4395-b5c0-4eab6a3b958a					
2	11895.289508598076	2022-05-22 17:52:17.765	CREDIT	d5aa6466-c1fd-4395-b5c0-4eab6a3b958a					
3	5614.891341651549	2022-05-22 17:52:17.765	CREDIT	d5aa6466-c1fd-4395-b5c0-4eab6a3b958a					
4	1056.3687574617484	2022-05-22 17:52:17.765	CREDIT	d5aa6466-c1fd-4395-b5c0-4eab6a3b958a					
5	6070.17663494641	2022-05-22 17:52:17.765	DEBIT	d5aa6466-c1fd-4395-b5c0-4eab6a3b958a					
6	2214.247363767368	2022-05-22 17:52:17.765	DEBIT	d5aa6466-c1fd-4395-b5c0-4eab6a3b958a					
7	11051.331653727604	2022-05-22 17:52:17.765	CREDIT	d5aa6466-c1fd-4395-b5c0-4eab6a3b958a					
8	1427.0744939469698	2022-05-22 17:52:17.781	CREDIT	d5aa6466-c1fd-4395-b5c0-4eab6a3b958a					
9	10888.295752631813	2022-05-22 17:52:17.781	CREDIT	d5aa6466-c1fd-4395-b5c0-4eab6a3b958a					
10	3572.871740969551	2022-05-22 17:52:17.781	CREDIT	d5aa6466-c1fd-4395-b5c0-4eab6a3b958a					
11	3938.5435767205704	2022-05-22 17:52:17.781	CREDIT	aa04c749-1ba5-4004-9698-c3b648d2d2b5					
12	9234.649053294546	2022-05-22 17:52:17.781	CREDIT	aa04c749-1ba5-4004-9698-c3b648d2d2b5					
13	11482.386458700776	2022-05-22 17:52:17.781	CREDIT	aa04c749-1ba5-4004-9698-c3b648d2d2b5					
14	7927.5161822137825	2022-05-22 17:52:17.781	CREDIT	aa04c749-1ba5-4004-9698-c3b648d2d2b5					
15	4663.5730656449105	2022-05-22 17:52:17.781	DEBIT	aa04c749-1ba5-4004-9698-c3b648d2d2b5					
16	10780.452519414031	2022-05-22 17:52:17.781	CREDIT	aa04c749-1ba5-4004-9698-c3b648d2d2b5					
17	546.8440303130619	2022-05-22 17:52:17.781	DEBIT	aa04c749-1ba5-4004-9698-c3b648d2d2b5					
18	11547.132175986379	2022-05-22 17:52:17.796	CREDIT	aa04c749-1ba5-4004-9698-c3b648d2d2b5					
19	3313.3184549481825	2022-05-22 17:52:17.796	CREDIT	aa04c749-1ba5-4004-9698-c3b648d2d2b5					
20	11956.906372399151	2022-05-22 17:52:17.796	DEBIT	aa04c749-1ba5-4004-9698-c3b648d2d2b5					
21	4938.797709905622	2022-05-22 17:52:17.796	DEBIT	9bfb6484-98c8-484d-9fbc-704a1de0fc2e					
22	11928.776204387761	2022-05-22 17:52:17.796	DEBIT	9bfb6484-98c8-484d-9fbc-704a1de0fc2e					

EXÉCUTION:

PARTIE BACKEND AVEC SPRING : SINGLE TABLE : LISTE DES ACCOUNT OPERATIONS

jdbc:h2:mem:bank

ACCOUNT_OPERATION

BANK_ACCOUNT

CUSTOMER

INFORMATION_SCHEMA

Sequences

Users

H2 1.4.200 (2019-10-14)

Run | Run Selected | Auto complete | Clear | SQL statement:

SELECT * FROM ACCOUNT_OPERATION

41	6424.011014781305	2022-05-22 17:52:17.82	DEBIT	5904fc7d-aede-4c7e-a3b0-c16af758055f
42	4491.223165540367	2022-05-22 17:52:17.82	DEBIT	5904fc7d-aede-4c7e-a3b0-c16af758055f
43	5537.872705331339	2022-05-22 17:52:17.82	DEBIT	5904fc7d-aede-4c7e-a3b0-c16af758055f
44	6233.01096464959	2022-05-22 17:52:17.82	DEBIT	5904fc7d-aede-4c7e-a3b0-c16af758055f
45	6193.492800047424	2022-05-22 17:52:17.82	DEBIT	5904fc7d-aede-4c7e-a3b0-c16af758055f
46	11961.388343420824	2022-05-22 17:52:17.82	CREDIT	5904fc7d-aede-4c7e-a3b0-c16af758055f
47	3987.1997770415715	2022-05-22 17:52:17.82	DEBIT	5904fc7d-aede-4c7e-a3b0-c16af758055f
48	7752.561664505777	2022-05-22 17:52:17.82	DEBIT	5904fc7d-aede-4c7e-a3b0-c16af758055f
49	11405.634343603697	2022-05-22 17:52:17.82	DEBIT	5904fc7d-aede-4c7e-a3b0-c16af758055f
50	7155.505485541705	2022-05-22 17:52:17.836	DEBIT	5904fc7d-aede-4c7e-a3b0-c16af758055f
51	4127.764162816242	2022-05-22 17:52:17.836	DEBIT	77cfc8d0-cbdc-4396-812b-d283d0a10f5c
52	558.7540753872017	2022-05-22 17:52:17.836	DEBIT	77cfc8d0-cbdc-4396-812b-d283d0a10f5c
53	2425.050712841315	2022-05-22 17:52:17.836	DEBIT	77cfc8d0-cbdc-4396-812b-d283d0a10f5c
54	1379.1659606273515	2022-05-22 17:52:17.836	DEBIT	77cfc8d0-cbdc-4396-812b-d283d0a10f5c
55	5891.586959791941	2022-05-22 17:52:17.836	CREDIT	77cfc8d0-cbdc-4396-812b-d283d0a10f5c
56	4669.705286914512	2022-05-22 17:52:17.836	DEBIT	77cfc8d0-cbdc-4396-812b-d283d0a10f5c
57	2810.230585496226	2022-05-22 17:52:17.836	DEBIT	77cfc8d0-cbdc-4396-812b-d283d0a10f5c
58	3005.0061585511976	2022-05-22 17:52:17.836	DEBIT	77cfc8d0-cbdc-4396-812b-d283d0a10f5c
59	1909.9854161737176	2022-05-22 17:52:17.836	CREDIT	77cfc8d0-cbdc-4396-812b-d283d0a10f5c
60	3140.2029832694534	2022-05-22 17:52:17.852	DEBIT	77cfc8d0-cbdc-4396-812b-d283d0a10f5c

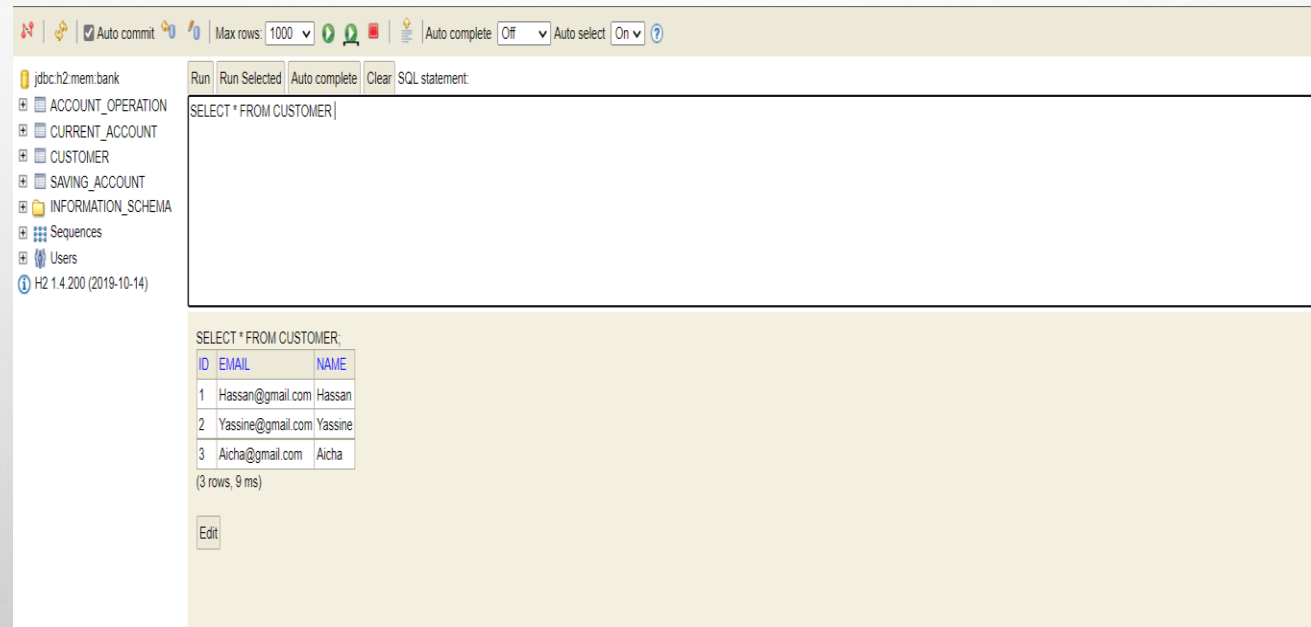
(60 rows, 8 ms)

Edit

EXÉCUTION:

PARTIE BACKEND AVEC SPRING :

PER CLASS : LISTE DES CUSTOMERS



The screenshot shows a database management interface. On the left, a tree view displays the database structure: jdbc:h2:mem:bank, ACCOUNT_OPERATION, CURRENT_ACCOUNT, CUSTOMER, SAVING_ACCOUNT, INFORMATION_SCHEMA, Sequences, Users, and H2 1.4.200 (2019-10-14). The main area contains a SQL editor with the query 'SELECT * FROM CUSTOMER;'. Below the editor, the results are displayed as a table with 3 rows and 3 columns (ID, EMAIL, NAME). The results are: 1 | Hassan@gmail.com | Hassan, 2 | Yassine@gmail.com | Yassine, and 3 | Aicha@gmail.com | Aicha. The execution time is 9 ms.

Auto commit: ☒ Max rows: 1000 Auto complete: Off Auto select: On

Run Run Selected Auto complete Clear SQL statement:

SELECT * FROM CUSTOMER;

ID	EMAIL	NAME
1	Hassan@gmail.com	Hassan
2	Yassine@gmail.com	Yassine
3	Aicha@gmail.com	Aicha

(3 rows, 9 ms)

Edit

EXÉCUTION:

PARTIE BACKEND AVEC SPRING :

PER CLASS : LISTE DES ACCOUNT OPERATIONS

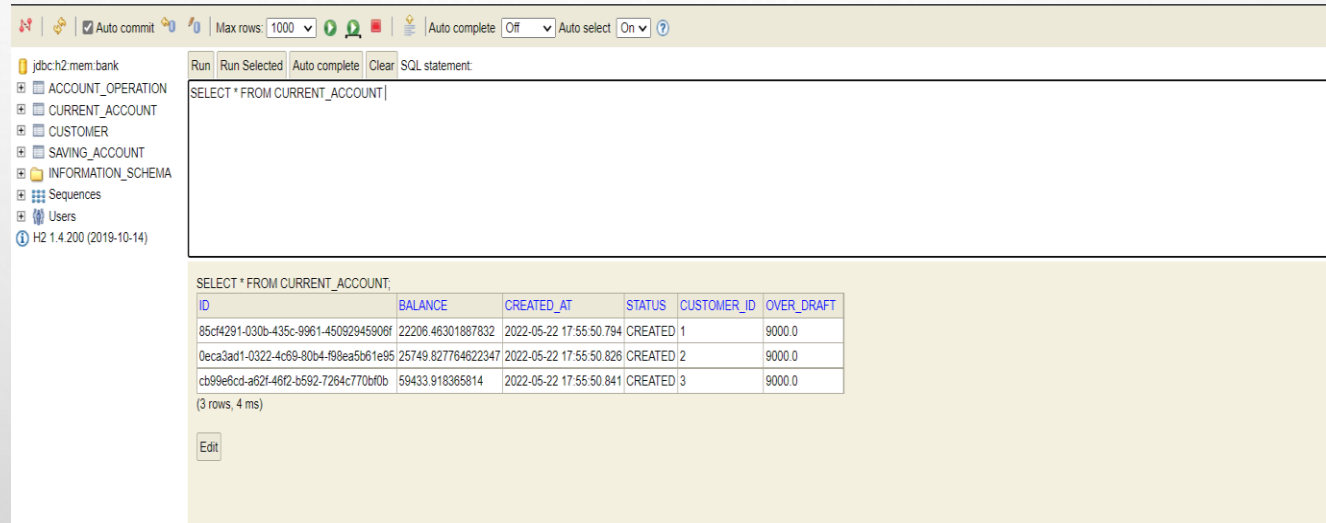
jdbc:h2:mem:bank				
ACCOUNT_OPERATION				
CURRENT_ACCOUNT				
CUSTOMER				
SAVING_ACCOUNT				
INFORMATION_SCHEMA				
Sequences				
Users				
H2 1.4.200 (2019-10-14)				

Run	Run Selected	Auto complete	Clear	SQL statement:
SELECT * FROM ACCOUNT_OPERATION				

SELECT * FROM ACCOUNT_OPERATION;				
ID	AMOUNT	OPERATION_DATE	TYPE	BANK_ACCOUNT_ID
1	3397.704358481042	2022-05-22 17:55:50.87	DEBIT	85cf4291-030b-435c-9961-45092945906f
2	7395.778673706038	2022-05-22 17:55:50.876	DEBIT	85cf4291-030b-435c-9961-45092945906f
3	1685.554732069097	2022-05-22 17:55:50.876	CREDIT	85cf4291-030b-435c-9961-45092945906f
4	4431.749998244689	2022-05-22 17:55:50.876	DEBIT	85cf4291-030b-435c-9961-45092945906f
5	1162.8913000033974	2022-05-22 17:55:50.876	DEBIT	85cf4291-030b-435c-9961-45092945906f
6	7641.344065212243	2022-05-22 17:55:50.876	DEBIT	85cf4291-030b-435c-9961-45092945906f
7	4634.999432631067	2022-05-22 17:55:50.876	CREDIT	85cf4291-030b-435c-9961-45092945906f
8	837.8897394111897	2022-05-22 17:55:50.876	DEBIT	85cf4291-030b-435c-9961-45092945906f
9	2037.1489748795866	2022-05-22 17:55:50.876	DEBIT	85cf4291-030b-435c-9961-45092945906f
10	3564.449180898168	2022-05-22 17:55:50.876	CREDIT	85cf4291-030b-435c-9961-45092945906f
11	3363.0673152020354	2022-05-22 17:55:50.893	DEBIT	0eca3ad1-0322-4c69-80b4-f98ea5b61e95
12	96.25419284373393	2022-05-22 17:55:50.894	DEBIT	0eca3ad1-0322-4c69-80b4-f98ea5b61e95
13	255.34832105389071	2022-05-22 17:55:50.894	DEBIT	0eca3ad1-0322-4c69-80b4-f98ea5b61e95
14	3021.2803052760305	2022-05-22 17:55:50.894	DEBIT	0eca3ad1-0322-4c69-80b4-f98ea5b61e95
15	4702.502337148404	2022-05-22 17:55:50.894	DEBIT	0eca3ad1-0322-4c69-80b4-f98ea5b61e95
16	2115.1428103557987	2022-05-22 17:55:50.894	CREDIT	0eca3ad1-0322-4c69-80b4-f98ea5b61e95
17	4674.065696479193	2022-05-22 17:55:50.894	DEBIT	0eca3ad1-0322-4c69-80b4-f98ea5b61e95
18	11800.720793258743	2022-05-22 17:55:50.894	CREDIT	0eca3ad1-0322-4c69-80b4-f98ea5b61e95
19	1286.9120258020957	2022-05-22 17:55:50.906	DEBIT	0eca3ad1-0322-4c69-80b4-f98ea5b61e95
20	8432.135360377122	2022-05-22 17:55:50.909	CREDIT	0eca3ad1-0322-4c69-80b4-f98ea5b61e95
21	2232.6212945171783	2022-05-22 17:55:50.91	DEBIT	cb99e6cd-a62f-46f2-b592-7264c770bf0b
22	5966.9210313497	2022-05-22 17:55:50.911	DEBIT	cb99e6cd-a62f-46f2-b592-7264c770bf0b

EXÉCUTION:

PARTIE BACKEND AVEC SPRING : PER CLASS : LISTE DES CURRENT ACCOUNTS



The screenshot shows a database management interface with a sidebar on the left containing a tree view of database objects: jdbc:h2:mem:bank, ACCOUNT_OPERATION, CURRENT_ACCOUNT, CUSTOMER, SAVING_ACCOUNT, INFORMATION_SCHEMA, Sequences, and Users. The main area displays the SQL statement "SELECT * FROM CURRENT_ACCOUNT;" and its execution results. The results are shown in a table with 6 columns: ID, BALANCE, CREATED_AT, STATUS, CUSTOMER_ID, and OVER_DRAFT. There are 3 rows of data. Below the table, it indicates "(3 rows, 4 ms)". An "Edit" button is located at the bottom left of the results area.

Run Run Selected Auto complete Clear SQL statement:

SELECT * FROM CURRENT_ACCOUNT;

ID	BALANCE	CREATED_AT	STATUS	CUSTOMER_ID	OVER_DRAFT
85c4291-030b-435c-9961-45092945906f	22206.46301887832	2022-05-22 17:55:50.794	CREATED	1	9000.0
0eca3ad1-0322-4c69-80b4-f98ea5b61e95	25749.827764622347	2022-05-22 17:55:50.826	CREATED	2	9000.0
cb99e6cd-a62f-46f2-b592-7264c770bf0b	59433.918365814	2022-05-22 17:55:50.841	CREATED	3	9000.0

(3 rows, 4 ms)

Edit

EXÉCUTION:

PARTIE BACKEND AVEC SPRING : PER CLASS : LISTE DES SAVING ACCOUNTS

The screenshot shows a database client interface with a sidebar on the left containing a tree view of the database schema. The main area displays the execution of a SQL query. The query is `SELECT * FROM SAVING_ACCOUNT`. The result is a table with 6 columns: ID, BALANCE, CREATED_AT, STATUS, CUSTOMER_ID, and INTEREST_RATE. There are 3 rows of data. Below the table, it indicates "(3 rows, 0 ms)". An "Edit" button is visible at the bottom left of the result area.

jdbc:h2:mem:bank

- ACCOUNT_OPERATION
- CURRENT_ACCOUNT
- CUSTOMER
- SAVING_ACCOUNT
- INFORMATION_SCHEMA
- Sequences
- Users

H2 1.4.200 (2019-10-14)

Run | Run Selected | Auto complete | Clear | SQL statement:

SELECT * FROM SAVING_ACCOUNT

SELECT * FROM SAVING_ACCOUNT;

ID	BALANCE	CREATED_AT	STATUS	CUSTOMER_ID	INTEREST_RATE
e54debd3-c394-4200-b754-771b86e28bf	74895.29709752795	2022-05-22 17:55:50.841	CREATED	1	5.5
c1c1e0f8-d7ff-4130-82d8-985f9c1bf2be	78814.24019159633	2022-05-22 17:55:50.841	CREATED	2	5.5
ebbb9ef3-5e6b-44a5-b6ac-23308662086f	79795.22641139361	2022-05-22 17:55:50.853	CREATED	3	5.5

(3 rows, 0 ms)

Edit

EXÉCUTION:

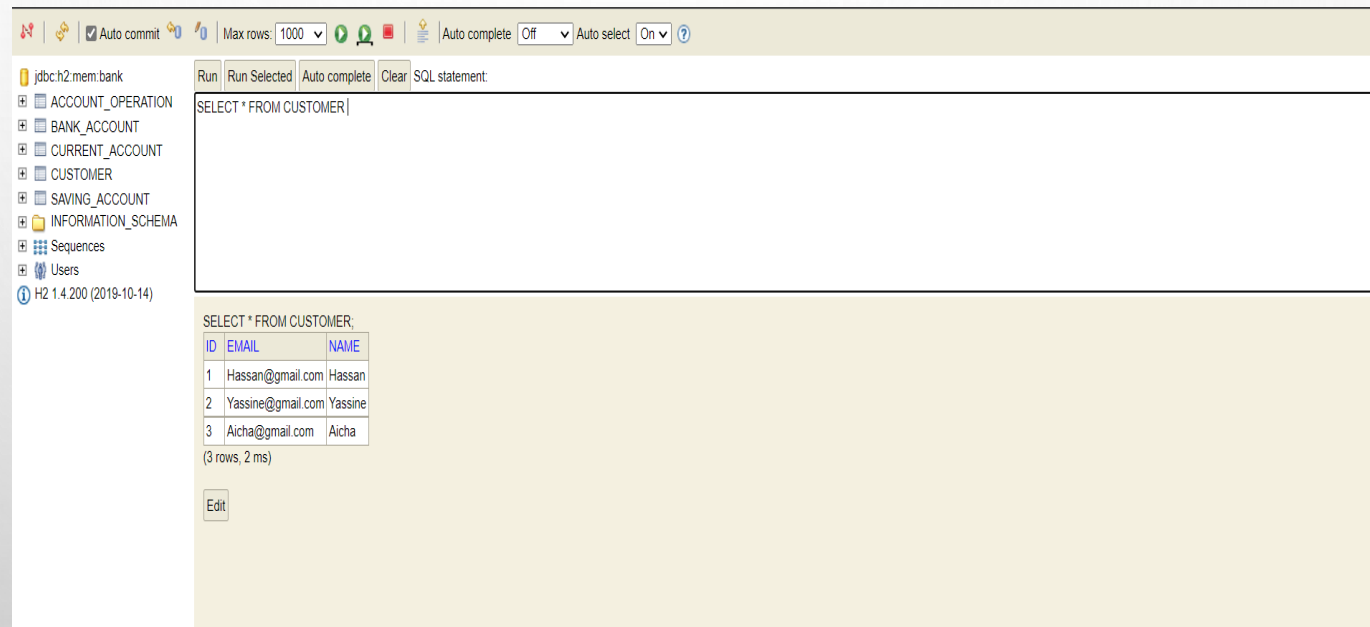
PARTIE BACKEND AVEC SPRING : JOINED TABLE : LISTE DES ACCOUNT OPERATIONS

<

EXÉCUTION:

PARTIE BACKEND AVEC SPRING :

JOINED TABLE : LISTE DES CUSTOMERS



The screenshot shows a database management interface. On the left, a tree view displays the database structure: jdbc:h2:mem:bank, ACCOUNT_OPERATION, BANK_ACCOUNT, CURRENT_ACCOUNT, CUSTOMER, SAVING_ACCOUNT, INFORMATION_SCHEMA, Sequences, and Users. The main area shows a SQL statement: `SELECT * FROM CUSTOMER;`. Below the statement, the execution result is displayed as a table with 3 rows and 2 columns (ID, NAME). The data is as follows:

ID	NAME
1	Hassan@gmail.com
2	Yassine@gmail.com
3	Aicha@gmail.com

Below the table, it indicates "(3 rows, 2 ms)". An "Edit" button is visible at the bottom left of the result area.

EXÉCUTION:

PARTIE BACKEND AVEC SPRING : JOINED TABLE : LISTE DES BANK ACCOUNTS

jdbc:h2:mem:bank

Auto commit: ☒ Max rows: 1000 Auto complete: Off Auto select: On

Run Run Selected Auto complete Clear SQL statement:

SELECT * FROM BANK_ACCOUNT

ACCOUNT_OPERATION
BANK_ACCOUNT
CURRENT_ACCOUNT
CUSTOMER
SAVING_ACCOUNT
INFORMATION_SCHEMA
Sequences
Users
H2 1.4.200 (2019-10-14)

SELECT * FROM BANK_ACCOUNT;

ID	BALANCE	CREATED_AT	STATUS	CUSTOMER_ID
3eb057b5-d8b8-414e-ba90-5c218ca9c310	7166.754455690305	2022-05-22 17:58:44.64	CREATED	1
ac641792-d4c3-4dad-bc22-b6482d87bb2b	34041.32065476614	2022-05-22 17:58:44.674	CREATED	2
94f8db80-bc05-4ccf-a3f8-c740994a9ddd	26592.87083051259	2022-05-22 17:58:44.691	CREATED	3
0c068047-87bd-40c8-944a-aa3d81e20a69	67087.56520742521	2022-05-22 17:58:44.691	CREATED	1
732c186b-95e3-478e-be19-c3beab075d81	85006.09967384825	2022-05-22 17:58:44.691	CREATED	2
4fdc2ff4-b6f0-4bbf-a579-fec76040e119	62339.63797734203	2022-05-22 17:58:44.708	CREATED	3

(6 rows, 0 ms)

Edit

EXÉCUTION:

PARTIE BACKEND AVEC SPRING :

JOINED TABLE : LISTE DES CURRENT & SAVING ACCOUNTS

jdbc:h2:mem:bank | Auto commit | Max rows: 1000 | Auto complete: Off | Auto select: On

Run | Run Selected | Auto complete | Clear | SQL statement:

```
SELECT * FROM CURRENT_ACCOUNT
```

jdbc:h2:mem:bank | Auto commit | Max rows: 1000 | Auto complete: Off | Auto select: On

Run | Run Selected | Auto complete | Clear | SQL statement:

```
SELECT * FROM CURRENT_ACCOUNT;
```

OVER_DRAFT	ID
9000 0	3eb057b5-d9b8-414e-ba90-5c218ca9c310
9000 0	ac641792-d4c3-4dad-bc22-b6482d87bb2b
9000 0	94f6db80-bc05-4ccf-a3f8-c740994a9ddd

(3 rows, 2 ms)

Edit

jdbc:h2:mem:bank | Auto commit | Max rows: 1000 | Auto complete: Off | Auto select: On

Run | Run Selected | Auto complete | Clear | SQL statement:

```
SELECT * FROM SAVING_ACCOUNT
```

jdbc:h2:mem:bank | Auto commit | Max rows: 1000 | Auto complete: Off | Auto select: On

Run | Run Selected | Auto complete | Clear | SQL statement:

```
SELECT * FROM SAVING_ACCOUNT;
```

INTEREST_RATE	ID
5.5	0c068047-87bd-40c8-944a-aa3d81e20a69
5.5	732c166b-95e3-478e-be19-c3beab075d81
5.5	4f6c2f84-b6f0-4bbf-a579-fec76040e119

(3 rows, 0 ms)

Edit

EXÉCUTION:

PARTIE BACKEND AVEC SPRING :

MYSQL

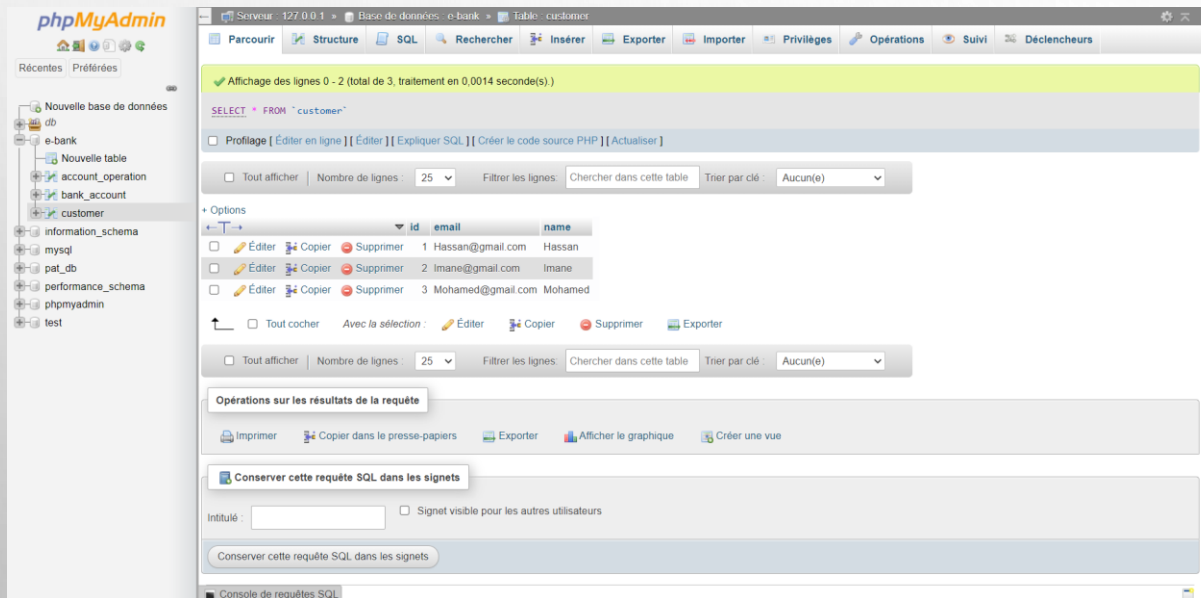
The screenshot displays the phpMyAdmin web interface. On the left, a sidebar shows the database structure with 'e-bank' selected. The main panel shows the 'Structure' tab for the 'e-bank' database. It lists three tables: 'account_operation', 'bank_account', and 'customer'. Below the table list, there is a 'Nouvelle table' (New table) section with input fields for 'Nom' (Name) and 'Nombre de colonnes' (Number of columns), and an 'Exécuter' (Execute) button. The bottom of the interface shows the 'Console de requêtes SQL' (SQL query console).

Table	Action	Lignes	Type	Interclassement	Taille	Perte
<input type="checkbox"/> account_operation	Parcourir Structure Rechercher Insérer Vider Supprimer	240	InnoDB	utf8mb4_general_ci	32,0 kio	-
<input type="checkbox"/> bank_account	Parcourir Structure Rechercher Insérer Vider Supprimer	18	InnoDB	utf8mb4_general_ci	32,0 kio	-
<input type="checkbox"/> customer	Parcourir Structure Rechercher Insérer Vider Supprimer	6	InnoDB	utf8mb4_general_ci	16,0 kio	-
3 tables		Somme				
		264	InnoDB	utf8mb4_general_ci	80,0 kio	0 o

EXÉCUTION:

PARTIE BACKEND AVEC SPRING :

MYSQL : CUSTOMER & BANK ACCOUNT



phpMyAdmin - Serveur: 127.0.0.1 - Base de données: e-bank - Table: customer

Parcourir Structure SQL Rechercher Insérer Exporter Importer Privileges Opérations Suivi Déclencheurs

✓ Affichage des lignes 0 - 2 (total de 3, traitement en 0.0014 seconde(s).)

SELECT * FROM `customer`

Profilage [Éditer en ligne] [Éditer] [Expliquer SQL] [Créer le code source PHP] [Actualiser]

Tout afficher Nombre de lignes: 25 Filtrer les lignes: Chercher dans cette table Trier par clé: Aucun(e)

Options

	id	email	name
<input type="checkbox"/> Éditer <input type="checkbox"/> Copier <input type="checkbox"/> Supprimer	1	Hassan@gmail.com	Hassan
<input type="checkbox"/> Éditer <input type="checkbox"/> Copier <input type="checkbox"/> Supprimer	2	Imane@gmail.com	Imane
<input type="checkbox"/> Éditer <input type="checkbox"/> Copier <input type="checkbox"/> Supprimer	3	Mohamed@gmail.com	Mohamed

Tout cocher Avec la sélection: Éditer Copier Supprimer Exporter

Tout afficher Nombre de lignes: 25 Filtrer les lignes: Chercher dans cette table Trier par clé: Aucun(e)

Opérations sur les résultats de la requête

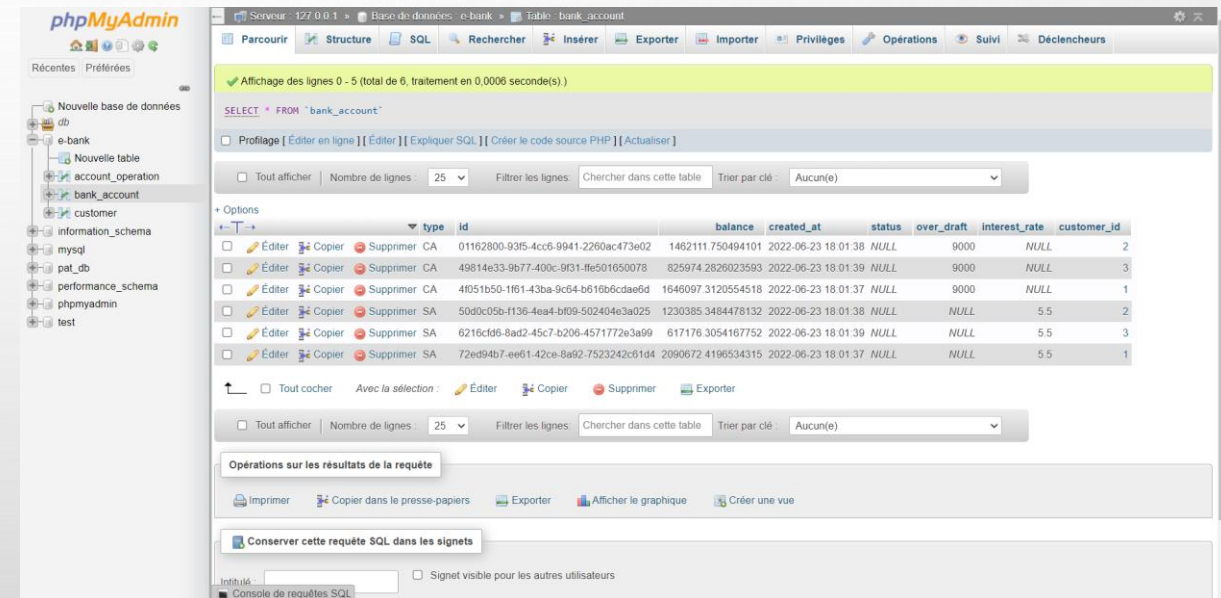
Imprimer Copier dans le presse-papiers Exporter Afficher le graphique Créer une vue

Conservation de la requête SQL dans les signets

Intitulé: ☐ Signet visible pour les autres utilisateurs

Conservation de la requête SQL dans les signets

Console de requêtes SQL



phpMyAdmin - Serveur: 127.0.0.1 - Base de données: e-bank - Table: bank_account

Parcourir Structure SQL Rechercher Insérer Exporter Importer Privileges Opérations Suivi Déclencheurs

✓ Affichage des lignes 0 - 5 (total de 6, traitement en 0.0006 seconde(s).)

SELECT * FROM `bank_account`

Profilage [Éditer en ligne] [Éditer] [Expliquer SQL] [Créer le code source PHP] [Actualiser]

Tout afficher Nombre de lignes: 25 Filtrer les lignes: Chercher dans cette table Trier par clé: Aucun(e)

Options

	type	id	balance	created_at	status	over_draft	interest_rate	customer_id
<input type="checkbox"/> Éditer <input type="checkbox"/> Copier <input type="checkbox"/> Supprimer	CA	01162800-935-4cc6-9941-2260ac473e02	1462111.750494101	2022-06-23 18:01:38	NULL	9000	NULL	2
<input type="checkbox"/> Éditer <input type="checkbox"/> Copier <input type="checkbox"/> Supprimer	CA	49814e33-9b77-400c-9f31-1fe501650078	825974.2826023593	2022-06-23 18:01:39	NULL	9000	NULL	3
<input type="checkbox"/> Éditer <input type="checkbox"/> Copier <input type="checkbox"/> Supprimer	CA	4f051b50-1f61-43ba-9c64-b616b6cdae6d	1646097.3120554518	2022-06-23 18:01:37	NULL	9000	NULL	1
<input type="checkbox"/> Éditer <input type="checkbox"/> Copier <input type="checkbox"/> Supprimer	SA	5d00c05b-f136-4ea4-bf09-502404e3a025	1230385.3484478132	2022-06-23 18:01:38	NULL	NULL	5.5	2
<input type="checkbox"/> Éditer <input type="checkbox"/> Copier <input type="checkbox"/> Supprimer	SA	6216cd6-8ad2-45c7-b206-4571772e3a99	617176.3054167752	2022-06-23 18:01:39	NULL	NULL	5.5	3
<input type="checkbox"/> Éditer <input type="checkbox"/> Copier <input type="checkbox"/> Supprimer	SA	72ed94b7-ee61-42ce-8a92-7523242c61d4	2090672.4196534315	2022-06-23 18:01:37	NULL	NULL	5.5	1

Tout cocher Avec la sélection: Éditer Copier Supprimer Exporter

Tout afficher Nombre de lignes: 25 Filtrer les lignes: Chercher dans cette table Trier par clé: Aucun(e)

Opérations sur les résultats de la requête

Imprimer Copier dans le presse-papiers Exporter Afficher le graphique Créer une vue

Conservation de la requête SQL dans les signets

Intitulé: ☐ Signet visible pour les autres utilisateurs

Console de requêtes SQL

EXÉCUTION:

PARTIE BACKEND AVEC SPRING : COUCHE WEB CONTROLLER : LIST CUSTOMER

```
[{"id":1,"name":"Hassan","email":"Hassan@gmail.com"}, {"id":2,"name":"Imane","email":"Imane@gmail.com"}, {"id":3,"name":"Mohamed","email":"Mohamed@gmail.com"}]
```

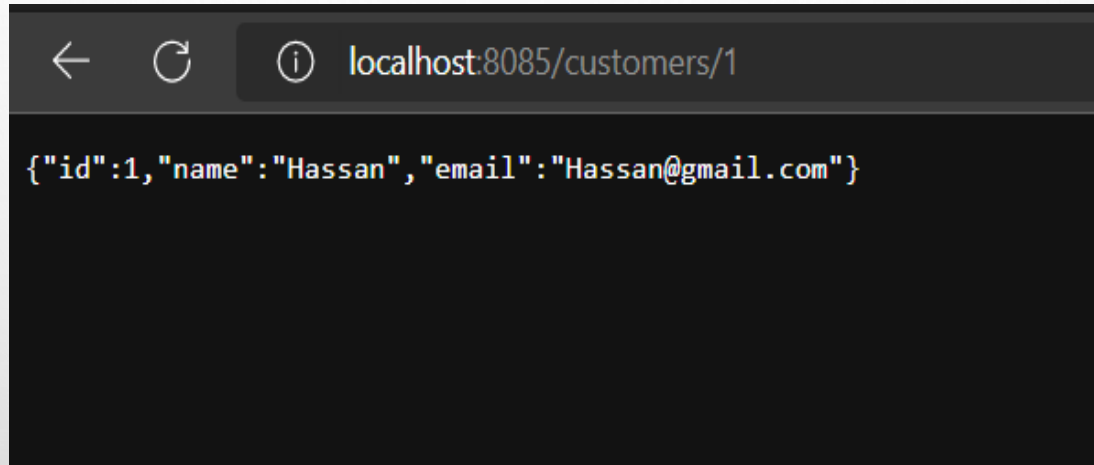
LES DTOS

```
[{"id":1,"name":"Hassan","email":"Hassan@gmail.com"}, {"id":2,"name":"Imane","email":"Imane@gmail.com"}, {"id":3,"name":"Mohamed","email":"Mohamed@gmail.com"}]
```

EXÉCUTION:

PARTIE BACKEND AVEC SPRING :

LES DTOS : GET CUSTOMER ID

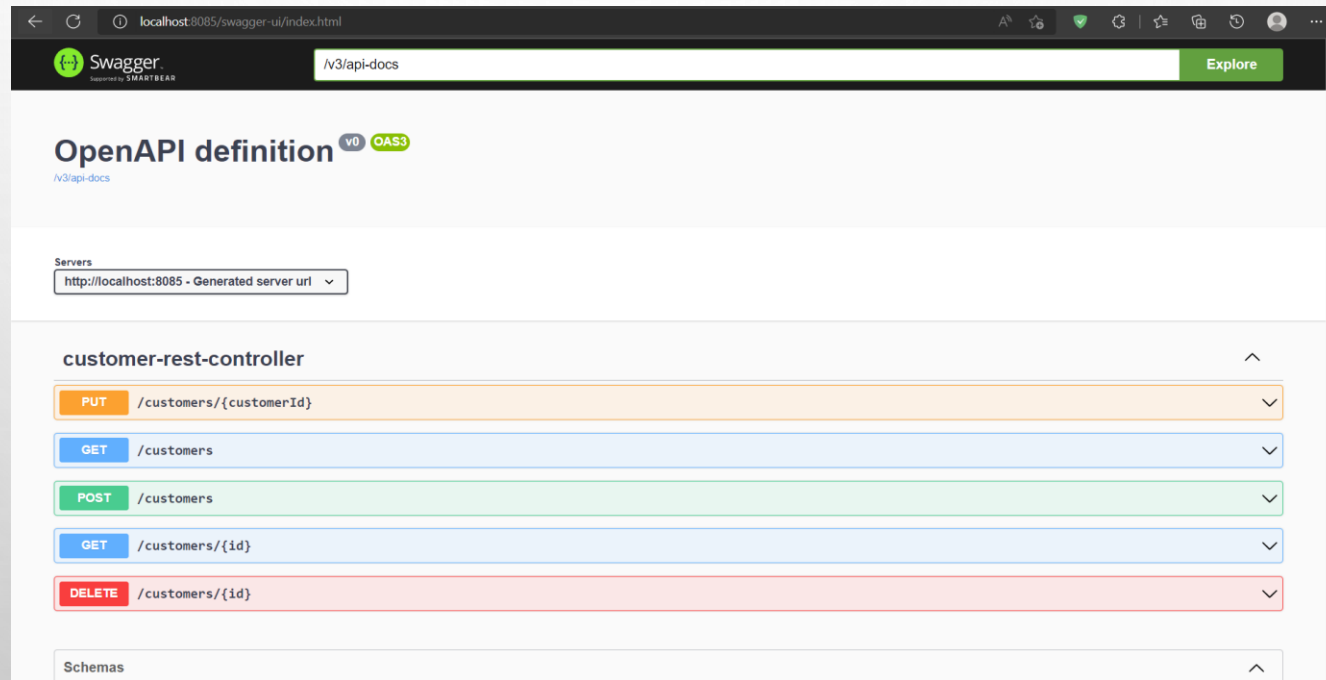
A screenshot of a web browser window. The address bar shows 'localhost:8085/customers/1'. The main content area displays a JSON object: {"id":1,"name":"Hassan","email":"Hassan@gmail.com"}.

```
← ↻ ⓘ localhost:8085/customers/1  
  
{ "id":1, "name": "Hassan", "email": "Hassan@gmail.com" }
```

EXÉCUTION:

PARTIE BACKEND AVEC SPRING :

TESTER LES MÉTHODES



EXÉCUTION:

PARTIE BACKEND AVEC SPRING : TESTER LES MÉTHODES

localhost:8085/swagger-ui/index.html#/bank-account-rest-api/listAccounts

Server response

Code Details

200

Response body

```
{
  "id": "2e11d325-d528-4e1f-8762-12b01a99b88",
  "balance": 678917.79039704,
  "createddt": "2022-06-24T20:48:39.000+00:00",
  "status": null,
  "customerDTO": {
    "id": 3,
    "name": "Mohamed",
    "email": "Mohamed@gmail.com"
  },
  "overDraft": 5000
},
{
  "id": "4319a2f0-9a53-4fc1-a681-d30c8d30fce3",
  "balance": 767721.763471368,
  "createddt": "2022-06-24T20:48:39.000+00:00",
  "status": null,
  "customerDTO": {
    "id": 3,
    "name": "Mohamed",
    "email": "Mohamed@gmail.com"
  },
  "interestRate": 5.5
},
{
  "id": "d5d0dea7-57c5-413f-8da9-a21142b14606",

```

Response headers

```
connection: keep-alive
content-type: application/json
date: Fri, 24 Jun 2022 20:50:06 GMT
keep-alive: timeout=60
transfer-encoding: chunked
```

Responses

Code	Description	Links
------	-------------	-------

Server response

Code Details

200

Response body

```
{
  "type": "SavingAccount",
  "id": "68f76e1e-88a8-4f71-b742-d2c62dd28761",
  "balance": 1362715.301821817,
  "createddt": "2022-06-24T21:20:45.000+00:00",
  "status": null,
  "customerDTO": {
    "id": 2,
    "name": "Imane",
    "email": "Imane@gmail.com"
  },
  "interestRate": 5.5
},
{
  "type": "SavingAccount",
  "id": "6e5cc3c8-3bbe-4ede-a52b-36e77e64a8eb",
  "balance": 2245781.808349074,
  "createddt": "2022-06-24T21:20:45.000+00:00",
  "status": null,
  "customerDTO": {
    "id": 1,
    "name": "Hassan",
    "email": "Hassan@gmail.com"
  },
  "interestRate": 5.5
},

```

Response headers

```
connection: keep-alive
content-type: application/json
date: Fri, 24 Jun 2022 21:21:06 GMT
keep-alive: timeout=60
transfer-encoding: chunked
```

Responses

Code	Description	Links
200	OK	No links

EXÉCUTION:

PARTIE BACKEND AVEC SPRING :

JSON : LISTE DES ACCOUNTS

```
← local:8085/accounts [{"type":"SavingAccount","id":"68f7de1e-08a8-4f71-b742-d2c62dd28761","balance":1362715.301021817,"createdAt":"2022-06-24T21:20:45.000+00:00","status":null,"customerDTO":{"id":2,"name":"Imane","email":"Imane@gmail.com"},"interestRate":5.5}, {"type":"SavingAccount","id":"6e5ce3c0-3bbe-4e4e-a52b-36e77e64a8eb","balance":2245783.860345074,"createdAt":"2022-06-24T21:20:45.000+00:00","status":null,"customerDTO":{"id":1,"name":"Hassan","email":"Hassan@gmail.com"},"interestRate":5.5}, {"type":"CurrentAccount","id":"d2283aeb-99c1-4c51-a92b-ac984b499fea","balance":706674.1774702928,"createdAt":"2022-06-24T21:20:46.000+00:00","status":null,"customerDTO":{"id":3,"name":"Mohamed","email":"Mohamed@gmail.com"},"overDraft":9000.0}, {"type":"CurrentAccount","id":"eb2bc12d-a9ca-4219-a95a-e1db704b43be","balance":2089451.791233306,"createdAt":"2022-06-24T21:20:45.000+00:00","status":null,"customerDTO":{"id":1,"name":"Hassan","email":"Hassan@gmail.com"},"overDraft":9000.0}, {"type":"CurrentAccount","id":"f408602b-119c-4344-ad8f-4a5f7c80ba5e","balance":1404158.642853037,"createdAt":"2022-06-24T21:20:45.000+00:00","status":null,"customerDTO":{"id":2,"name":"Imane","email":"Imane@gmail.com"},"overDraft":9000.0}, {"type":"SavingAccount","id":"fd51aa70-532e-4864-9b65-46a7d7de1661","balance":712076.4128090385,"createdAt":"2022-06-24T21:20:46.000+00:00","status":null,"customerDTO":{"id":3,"name":"Mohamed","email":"Mohamed@gmail.com"},"interestRate":5.5}]
```

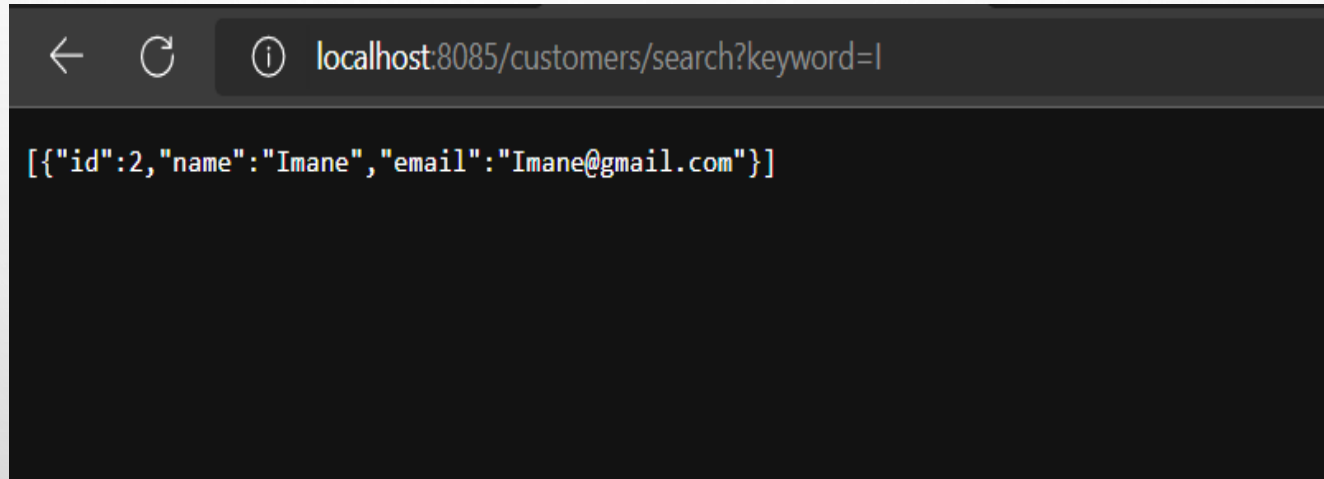
JSON : LISTE DES ACCOUNTS OPERATIONS

```
← local:8085/accounts/28b00c2b-15e0-412b-9b71-34b6e169ce67/operations [{"id":121,"operationDate":"2022-06-24T21:38:38.000+00:00","amount":110716.17183910665,"type":"CREDIT","description":"Credit"}, {"id":122,"operationDate":"2022-06-24T21:38:38.000+00:00","amount":3771.264928037988,"type":"DEBIT","description":"Debit"}, {"id":123,"operationDate":"2022-06-24T21:38:38.000+00:00","amount":42098.55593650788,"type":"CREDIT","description":"Credit"}, {"id":124,"operationDate":"2022-06-24T21:38:38.000+00:00","amount":6752.116717255404,"type":"DEBIT","description":"Debit"}, {"id":125,"operationDate":"2022-06-24T21:38:38.000+00:00","amount":126323.51451079574,"type":"CREDIT","description":"Credit"}, {"id":126,"operationDate":"2022-06-24T21:38:38.000+00:00","amount":5377.8532856017655,"type":"DEBIT","description":"Debit"}, {"id":127,"operationDate":"2022-06-24T21:38:38.000+00:00","amount":109495.35493593867,"type":"CREDIT","description":"Credit"}, {"id":128,"operationDate":"2022-06-24T21:38:38.000+00:00","amount":9017.232625144032,"type":"DEBIT","description":"Debit"}, {"id":129,"operationDate":"2022-06-24T21:38:38.000+00:00","amount":120190.50648217023,"type":"CREDIT","description":"Credit"}, {"id":130,"operationDate":"2022-06-24T21:38:38.000+00:00","amount":4571.660306392335,"type":"DEBIT","description":"Debit"}, {"id":131,"operationDate":"2022-06-24T21:38:38.000+00:00","amount":127817.64158799441,"type":"CREDIT","description":"Credit"}, {"id":132,"operationDate":"2022-06-24T21:38:38.000+00:00","amount":9504.560801238867,"type":"DEBIT","description":"Debit"}, {"id":133,"operationDate":"2022-06-24T21:38:38.000+00:00","amount":50081.89212233035,"type":"CREDIT","description":"Credit"}, {"id":134,"operationDate":"2022-06-24T21:38:38.000+00:00","amount":3898.604063161251,"type":"DEBIT","description":"Debit"}, {"id":135,"operationDate":"2022-06-24T21:38:38.000+00:00","amount":64044.95202836576,"type":"CREDIT","description":"Credit"}, {"id":136,"operationDate":"2022-06-24T21:38:38.000+00:00","amount":9984.646979212139,"type":"DEBIT","description":"Debit"}, {"id":137,"operationDate":"2022-06-24T21:38:38.000+00:00","amount":64849.58167341143,"type":"CREDIT","description":"Credit"}, {"id":138,"operationDate":"2022-06-24T21:38:38.000+00:00","amount":1034.6178842508712,"type":"DEBIT","description":"Debit"}, {"id":139,"operationDate":"2022-06-24T21:38:38.000+00:00","amount":85789.16786217316,"type":"CREDIT","description":"Credit"}, {"id":140,"operationDate":"2022-06-24T21:38:38.000+00:00","amount":3444.3515643677047,"type":"DEBIT","description":"Debit"}]
```

EXÉCUTION:

PARTIE BACKEND AVEC SPRING :

JSON : RECHERCHER CUSTOMER

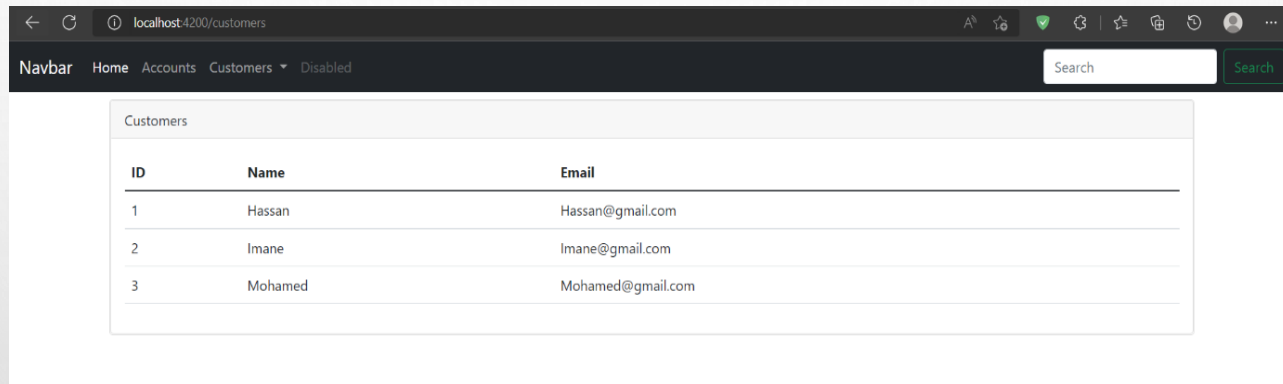


A screenshot of a web browser window. The address bar shows the URL `localhost:8085/customers/search?keyword=l`. The main content area displays a JSON array: `[{"id":2,"name":"Imane","email":"Imane@gmail.com"}]`. The browser interface includes back, refresh, and information icons in the address bar.

```
[{"id":2,"name":"Imane","email":"Imane@gmail.com"}]
```

EXÉCUTION:

PARTIE FRONTEND AVEC ANGULAR : LISTE DES CUSTOMERS

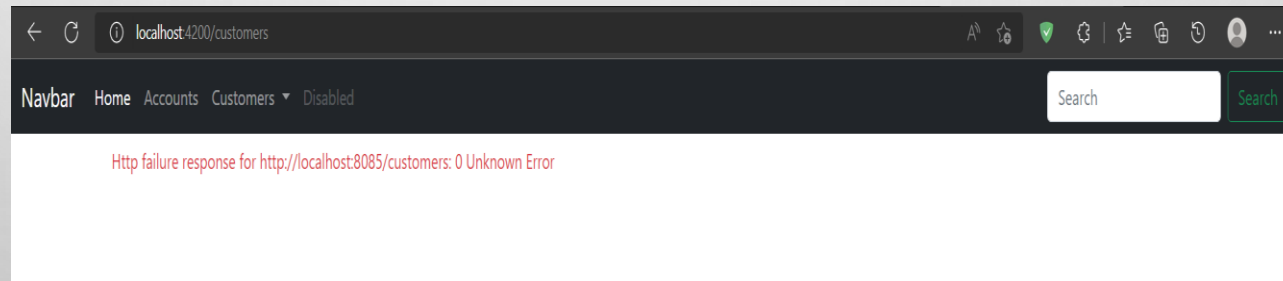
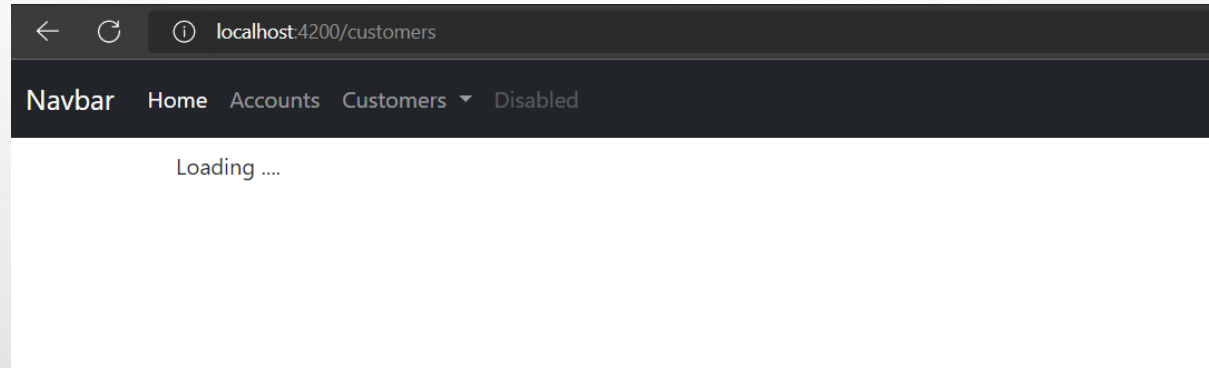


Customers

ID	Name	Email
1	Hassan	Hassan@gmail.com
2	Imane	Imane@gmail.com
3	Mohamed	Mohamed@gmail.com

EXÉCUTION:

PARTIE FRONTEND AVEC ANGULAR : GESTION DES ERREURS



EXÉCUTION:

PARTIE FRONTEND AVEC ANGULAR :

RECHERCHE CUSTOMER

The screenshot shows a web browser at localhost:4200/customers. The application has a dark navbar with 'Home', 'Accounts', 'Customers', and 'Disabled' links. A search bar in the top right contains the text 'Search'. Below the navbar, a 'Customers' section contains a search input with the keyword 'I' and a blue 'Search' button. The results are displayed in a table with columns 'ID', 'Name', and 'Email'.

ID	Name	Email
2	Imane	Imane@gmail.com

The screenshot shows the same application with the keyword 'H' entered in the search input. The search button is blue. The table displays two results.

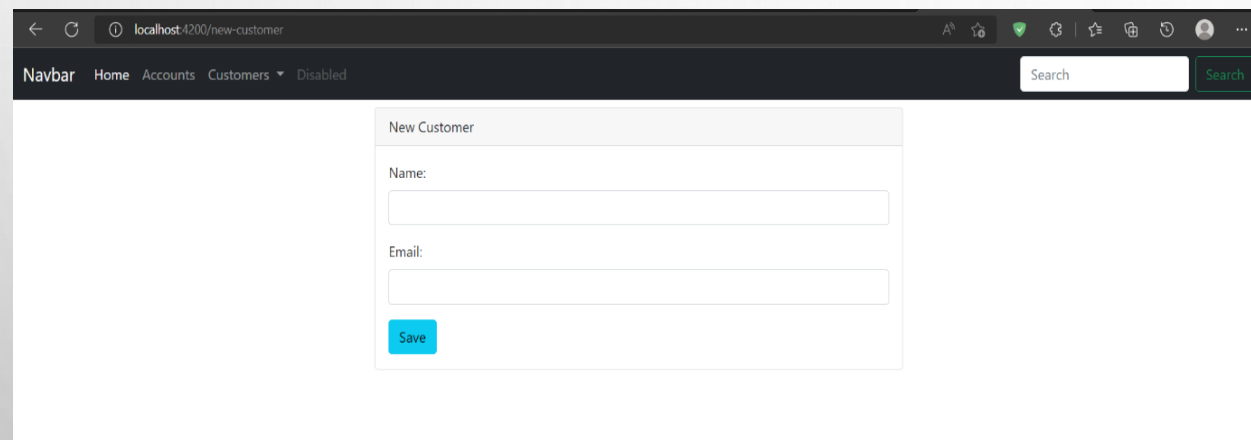
ID	Name	Email
1	Hassan	Hassan@gmail.com
3	Mohamed	Mohamed@gmail.com

The screenshot shows the application with the keyword 'mo' entered in the search input. The search button is blue. The table displays one result.

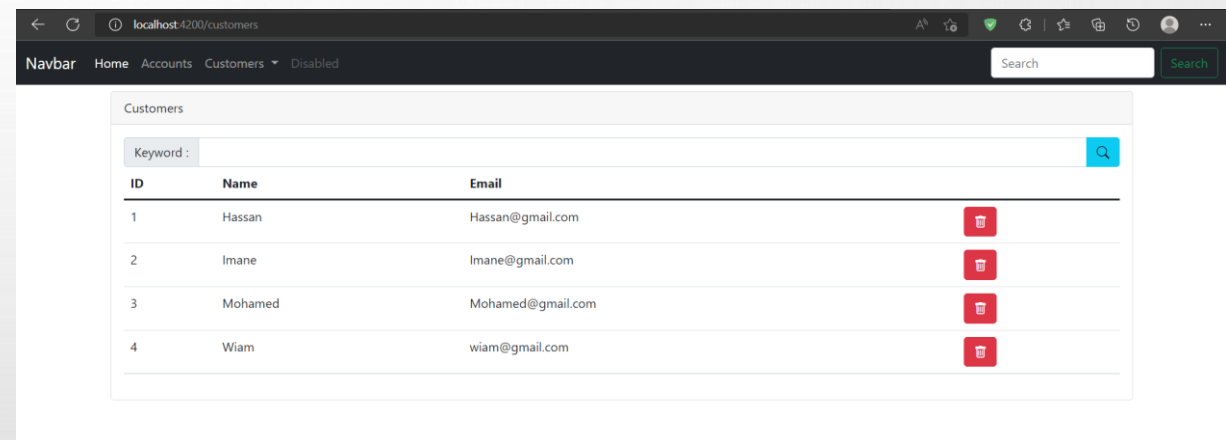
ID	Name	Email
3	Mohamed	Mohamed@gmail.com

EXÉCUTION:





PARTIE FRONTEND AVEC ANGULAR : CRÉER CUSTOMER



The screenshot shows a web browser at localhost:4200/new-customer. The application has a dark navbar with 'Navbar', 'Home', 'Accounts', 'Customers', and 'Disabled' links. A search bar is on the right. The main content area is titled 'New Customer' and contains two input fields: 'Name:' and 'Email:'. Below the 'Email:' field is a blue 'Save' button.



The screenshot shows a web browser at localhost:4200/customers. The application has a dark navbar with 'Navbar', 'Home', 'Accounts', 'Customers', and 'Disabled' links. A search bar is on the right. The main content area is titled 'Customers' and contains a search bar with the placeholder 'Keyword :'. Below the search bar is a table with columns 'ID', 'Name', and 'Email'. There are four rows of customer data, each with a red trash icon in the rightmost column.

ID	Name	Email	
1	Hassan	Hassan@gmail.com	
2	Imane	Imane@gmail.com	
3	Mohamed	Mohamed@gmail.com	
4	Wiam	wiam@gmail.com	

EXÉCUTION:

PARTIE FRONTEND AVEC ANGULAR :

DELETE CUSTOMER

localhost:4200/customers

Navbar Home Accounts Customers Disabled Search Search

Customers

Keyword :

ID	Name	Email	
1	Hassan	Hassan@gmail.com	
2	Imane	Imane@gmail.com	
3	Mohamed	Mohamed@gmail.com	
5	Wiam	Wiam@gmail.com	
6	aaaa	aaaa@gmail.com	

Navbar Home Accounts Customers Disabled Search Search

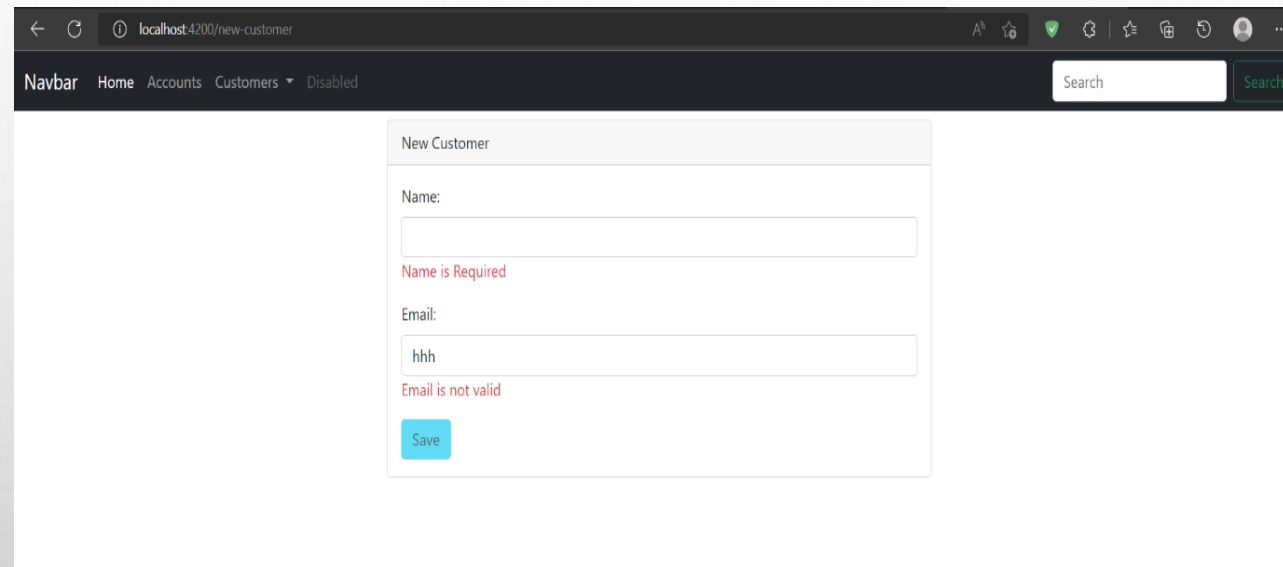
Customers

Keyword :

ID	Name	Email	
1	Hassan	Hassan@gmail.com	
2	Imane	Imane@gmail.com	
3	Mohamed	Mohamed@gmail.com	
5	Wiam	Wiam@gmail.com	

EXÉCUTION:

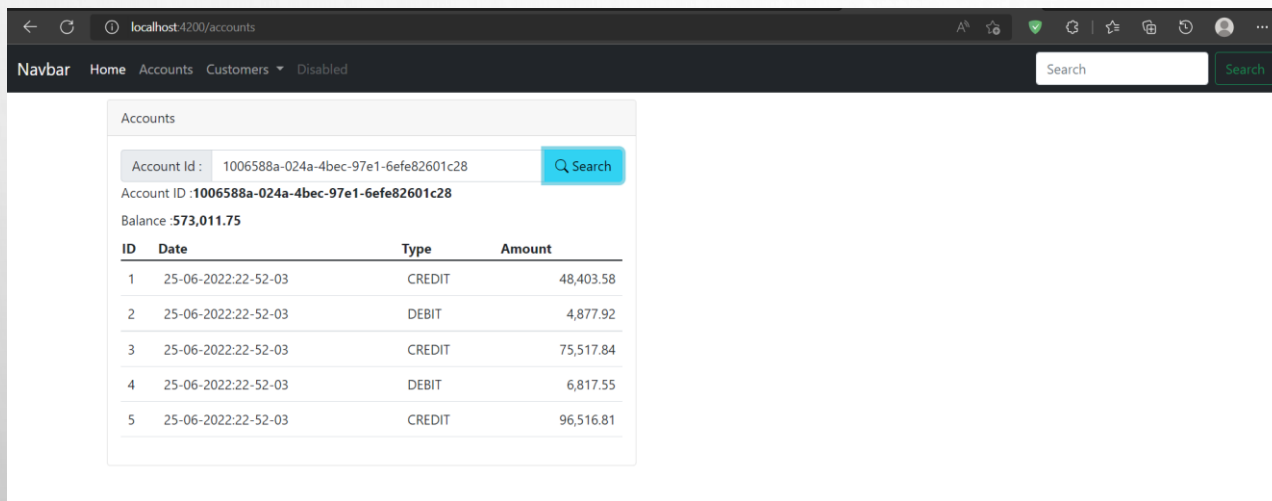
PARTIE FRONTEND AVEC ANGULAR : VALIDER LES INFORMATIONS SAISIES



The screenshot shows a web browser window at the URL `localhost:4200/new-customer`. The application has a dark navigation bar with links: `Navbar`, `Home`, `Accounts`, `Customers` (with a dropdown arrow), and `Disabled`. A search bar with the text `Search` and a `Search` button is on the right. The main content area displays a 'New Customer' form. The form has two input fields: 'Name:' and 'Email:'. The 'Name' field is empty, and the 'Email' field contains the text `hhh`. Below the 'Name' field, there is a red error message: `Name is Required`. Below the 'Email' field, there is a red error message: `Email is not valid`. At the bottom of the form, there is a blue `Save` button.

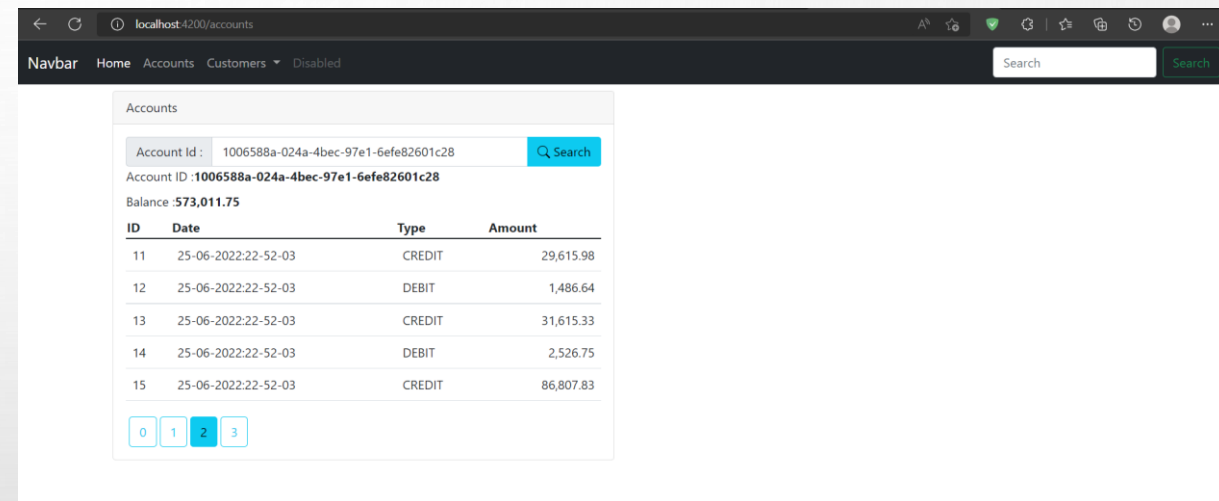
EXÉCUTION:

PARTIE FRONTEND AVEC ANGULAR : RECHERCHER UN COMPTE / PAGINATION



The screenshot shows a web browser at localhost:4200/accounts. The application has a dark navbar with links: Home, Accounts, Customers, and Disabled. A search bar is present. The main content area is titled 'Accounts' and contains a search input with the value '1006588a-024a-4bec-97e1-6efe82601c28' and a 'Search' button. Below the search bar, the account ID and balance are displayed: 'Account ID :1006588a-024a-4bec-97e1-6efe82601c28' and 'Balance :573,011.75'. A table lists transactions with columns ID, Date, Type, and Amount.

ID	Date	Type	Amount
1	25-06-2022:22-52-03	CREDIT	48,403.58
2	25-06-2022:22-52-03	DEBIT	4,877.92
3	25-06-2022:22-52-03	CREDIT	75,517.84
4	25-06-2022:22-52-03	DEBIT	6,817.55
5	25-06-2022:22-52-03	CREDIT	96,516.81



The screenshot shows the same Angular application as the previous one, but with pagination. The search bar and account details are the same. The table lists transactions with columns ID, Date, Type, and Amount. Below the table, there is a pagination control with buttons for 0, 1, 2, and 3. The button for 2 is highlighted, indicating the current page.

ID	Date	Type	Amount
11	25-06-2022:22-52-03	CREDIT	29,615.98
12	25-06-2022:22-52-03	DEBIT	1,486.64
13	25-06-2022:22-52-03	CREDIT	31,615.33
14	25-06-2022:22-52-03	DEBIT	2,526.75
15	25-06-2022:22-52-03	CREDIT	86,807.83

EXÉCUTION:

PARTIE FRONTEND AVEC ANGULAR :

ACCOUNT OPERATION

The screenshot shows a web application running on localhost:4200/accounts. A modal dialog titled "localhost:4200 indique" with the message "Success Credit" and an "OK" button is displayed over the main content. The main content area shows the "Accounts" section with a search bar and a "Search" button. Below the search bar, the account ID is "75c4d2b1-77f9-47ab-92da-3ff5cb6612d8" and the balance is "617,610.46". A table lists transactions with columns ID, Date, Type, and Amount. The table contains 5 rows of data. Below the table is a pagination control showing "0" selected and "1", "2", "3" as options. To the right of the table is a form for creating a new operation. It has radio buttons for "DEBIT" (selected), "CREDIT", and "TRANSFER". The "Amount" field contains "980" and the "Description" field contains "Test". A green "Save Operation" button is at the bottom of the form.

ID	Date	Type	Amount
21	26-06-2022-00-49-24	CREDIT	32,252.55
22	26-06-2022-00-49-24	DEBIT	1,202.64
23	26-06-2022-00-49-24	CREDIT	105,623.70
24	26-06-2022-00-49-24	DEBIT	7,602.56
25	26-06-2022-00-49-24	CREDIT	86,598.84

The screenshot shows the same web application as the previous one, but the modal dialog is no longer present. The "Accounts" section is still visible. To the right of the accounts section is a new "Operations" section. It has the same radio buttons for "DEBIT", "CREDIT", and "TRANSFER". The "Amount" field is empty. The "Description" field is empty. A green "Save Operation" button is at the bottom of the form. The table of transactions is still visible on the left.

ID	Date	Type	Amount
121	26-06-2022-00-50-31	DEBIT	980.00
21	26-06-2022-00-49-24	CREDIT	32,252.55
22	26-06-2022-00-49-24	DEBIT	1,202.64
23	26-06-2022-00-49-24	CREDIT	105,623.70
24	26-06-2022-00-49-24	DEBIT	7,602.56

EXÉCUTION:

PARTIE FRONTEND AVEC ANGULAR :

ACCOUNT CUSTOMER

The top screenshot shows the 'Customers' page. It features a search bar and a table with the following data:

ID	Name	Email		
1	Hassan	Hassan@gmail.com		Accounts
2	Imane	Imane@gmail.com		Accounts
3	Mohamed	Mohamed@gmail.com		Accounts

The bottom screenshot shows the 'customer-accounts/1' page. It displays a single account with the following JSON data:

```
1  
{ "id": 1, "name": "Hassan", "email": "Hassan@gmail.com" }
```