

COMPTE RENDU ATELIER PRATIQUE 2 *JPA, HIBERNATE ET SPRING DATA*



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ENCADRÉ PAR: **MR MOHAMED YOUSSEFI**



PLAN:

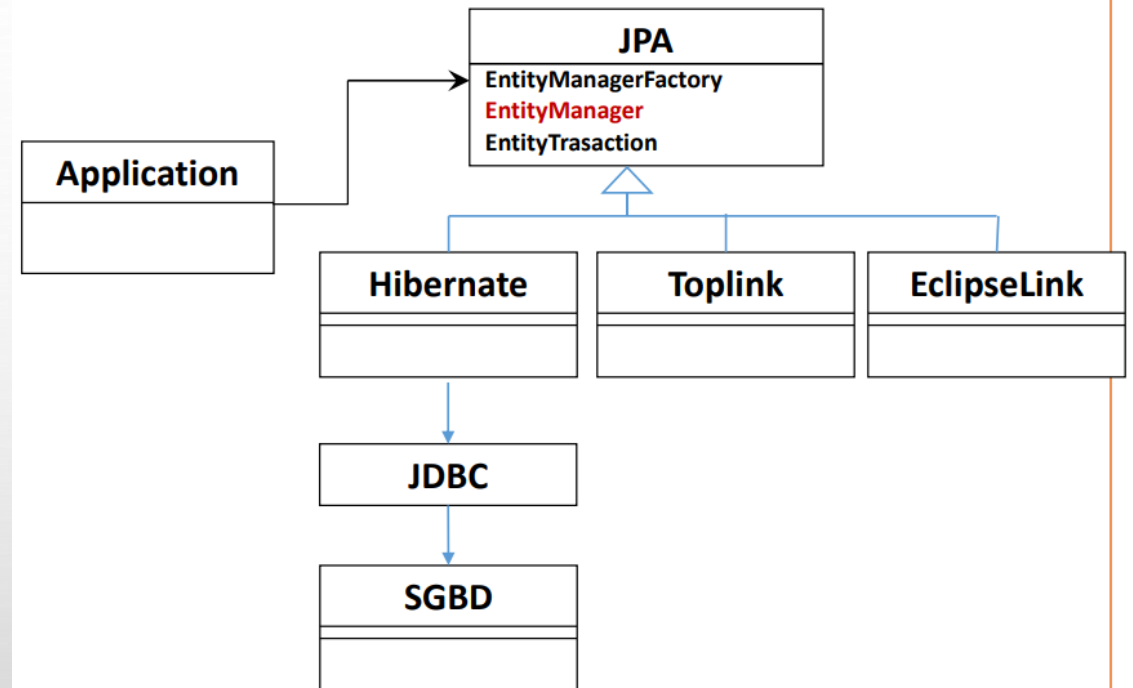
- **INTRODUCTION**
- **ÉNONCÉ**
- **CONCEPTION**
- **CODE SOURCE**
- **EXÉCUTION**
- **CONCLUSION**

INTRODUCTION :

- LES APPLICATIONS ONT BESOIN DE STOCKER LES DONNÉES DANS DES SGBD QUI SONT EN GÉNÉRAL RELATIONNELS.
- POUR DÉVELOPPER LA COUCHE MÉTIER D'UNE APPLICATION, ON UTILISE POO (CLASSES , HÉRITAGE, POLYMORPHISME...).
- UNE OPÉRATION QUI CONSISTE À FAIRE LA CORRESPONDANCE ENTRE LES DONNÉES QUI SONT STOCKÉES DANS DES BASES DE DONNÉES RELATIONNELLES (TABLES...) AVEC LES OBJETS DE L'APPLICATION C'EST CE QU'ON APPELLE LE MAPPING OBJET RELATIONNEL.
- POUR AVOIR LES BONNES PRATIQUES , IL FAUT UTILISER DES FRAMEWORK ORM, CITONS PAR EXEMPLE: HIBERNATE.
- TOUS LES FRAMEWORK DE MAPPING OBJET RELATIONNEL RESPECTENT LA MÊME SPÉCIFICATION JPA (JAVA PERSISTENCE API). DONC HIBERNATE REPRÉSENTE UNE IMPLÉMENTATION DE JPA.
- DONC ON PEUT FAIRE LE MAPPING SOIT EN SE BASANT SUR DES FICHIERS XML, SOIT EN UTILISANT DES ANNOTATIONS JPA.
- SPRING DATA RESTE TOUJOURS UNE IMPLÉMENTATION GÉNÉRIQUE DE JPA POUR GÉRER DES ENTITÉS JPA.



spring®



ENONCÉ:

- **CRÉER UNE APPLICATION QUI PERMET DE GÉRER DES PATIENTS EN UTILISANT SPRING BOOT, SPRING DATA, JPA, HIBERNATE :**

1) INSTALLER INTELLIJ ULTIMATE

2) CRÉER UN PROJET SPRING BOOT AVEC LES DÉPENDANCES :

- **SPRING DATA JPA**
- **WEB**
- **LOMBOK**
- **H2 DATABASE**

3) CRÉER L'ENTITÉ JPA PATIENT

4) CRÉER L'INTERFACE PATIENTREPOSITORY BASÉE SUR SPRING DATA

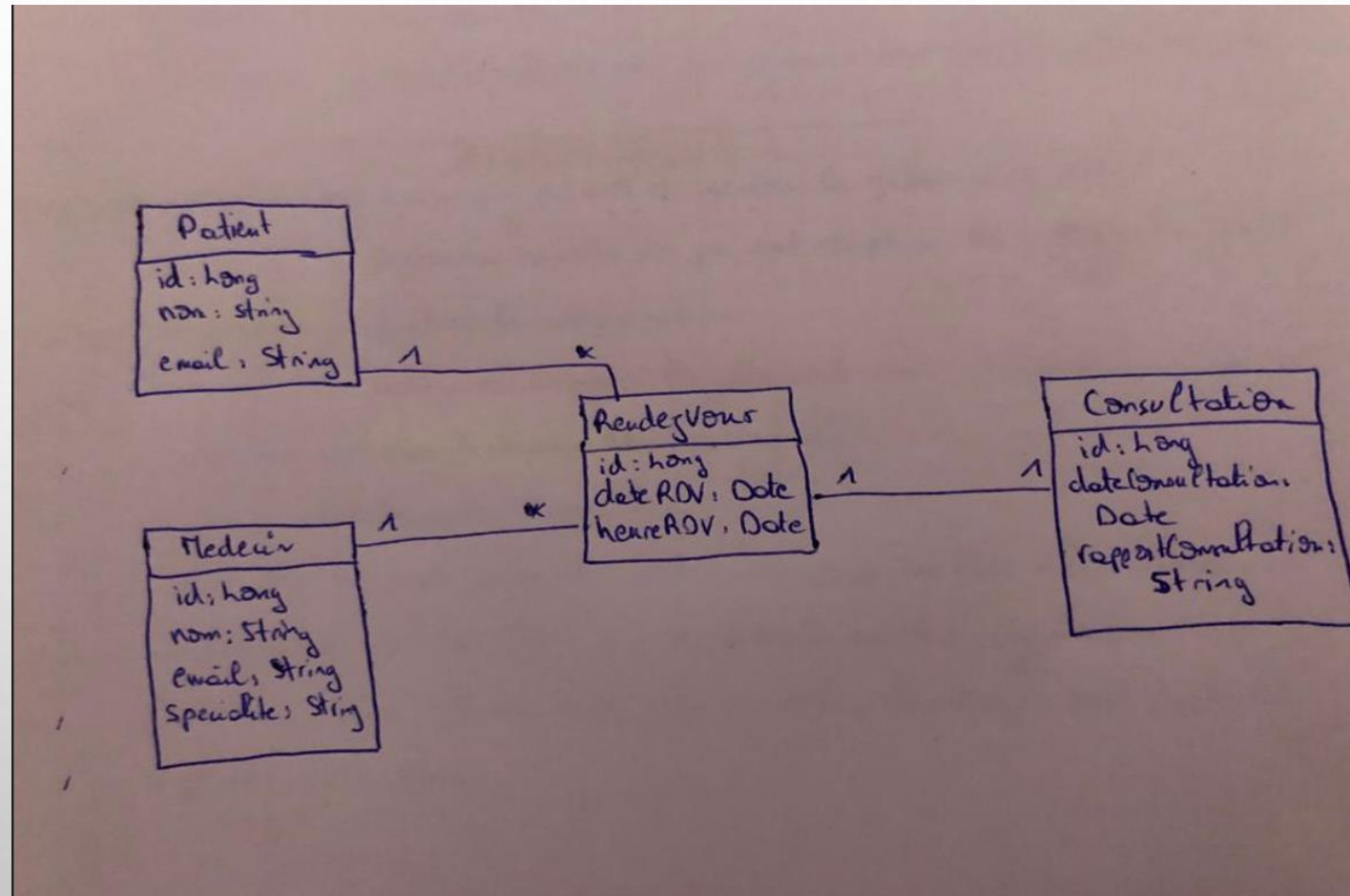
5) CONFIGURER LE DATA SOURCE DANS LE FICHIER APPLICATION PROPERTIES

6) Tester quelques opérations de la couche DAO pour :

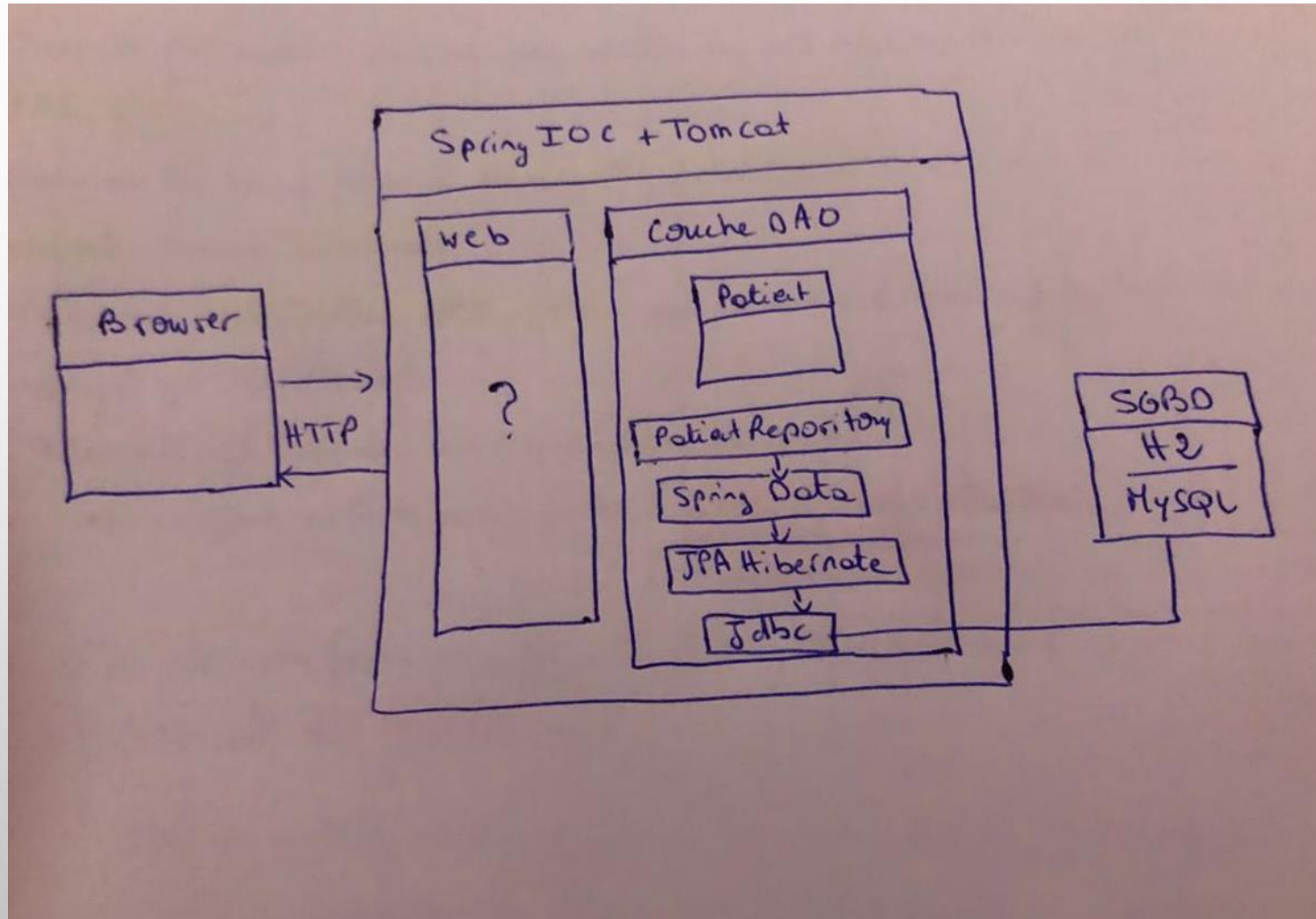
- **Ajouter des patients**
- **Afficher des patients**
- **Consulter un patient**
- **Mettre à jour un patient**
- **Supprimer un patient**
- **Chercher des patients avec différents critères**
- **Tester la pagination**

7) Migrer l'application de H2 vers MySQL

CONCEPTION :



CONCEPTION :



CODE SOURCE :

- **LIEN GITHUB : CAS D'UNE SEULE ENTITÉ JPA**

=> [BENNABBOUWIAM/JEESPRINGDATA_1JPA \(GITHUB.COM\)](https://github.com/BENNABBOUWIAM/JEESPRINGDATA_1JPA)

- **LIEN GITHUB : CAS DE PLUSIEURS ENTITÉS JPA AVEC RELATIONS**

=> [BENNABBOUWIAM/JEESPRINGDATA_VERSIONPE_JPA \(GITHUB.COM\)](https://github.com/BENNABBOUWIAM/JEESPRINGDATA_VERSIONPE_JPA)

EXÉCUTION:

- CAS D'UNE SEULE ENTITÉ JPA

jdbc:h2:mem:patient-db

PATIENT

INFORMATION_SCHEMA

Sequences

Users

H2 1.4.200 (2019-10-14)

Max rows: 1000

Auto commit

Auto complete Off

Auto select On

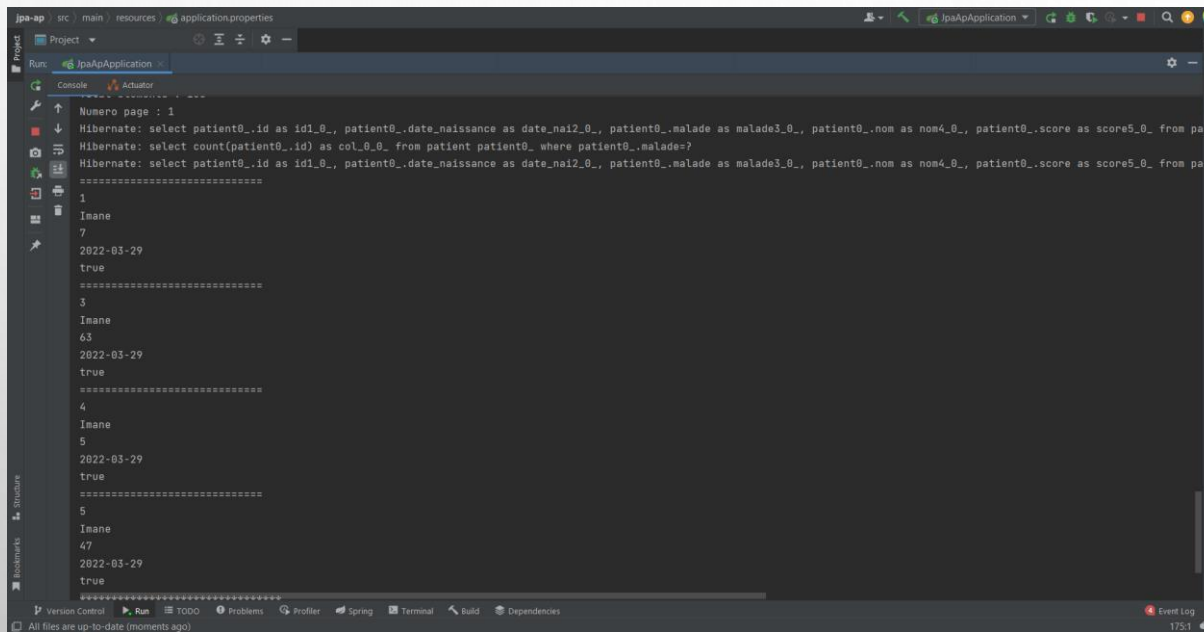
Run Run Selected Auto complete Clear SQL statement:

SELECT * FROM PATIENT;

ID	DATE_NAISSANCE	MALADE	NOM	SCORE
2	2022-03-29	FALSE	Imane	28
3	2022-03-29	TRUE	Imane	63
4	2022-03-29	TRUE	Imane	5
5	2022-03-29	TRUE	Imane	47
6	2022-03-29	FALSE	Imane	3
7	2022-03-29	FALSE	Imane	51
8	2022-03-29	FALSE	Imane	65
9	2022-03-29	FALSE	Imane	3
10	2022-03-29	FALSE	Imane	73
11	2022-03-29	FALSE	Imane	98
12	2022-03-29	FALSE	Imane	8
13	2022-03-29	TRUE	Imane	11
14	2022-03-29	TRUE	Imane	5
15	2022-03-29	TRUE	Imane	85
16	2022-03-29	FALSE	Imane	63
17	2022-03-29	FALSE	Imane	26
18	2022-03-29	FALSE	Imane	2
19	2022-03-29	FALSE	Imane	4
20	2022-03-29	TRUE	Imane	89
21	2022-03-29	FALSE	Imane	45
22	2022-03-29	TRUE	Imane	87
23	2022-03-29	FALSE	Imane	68

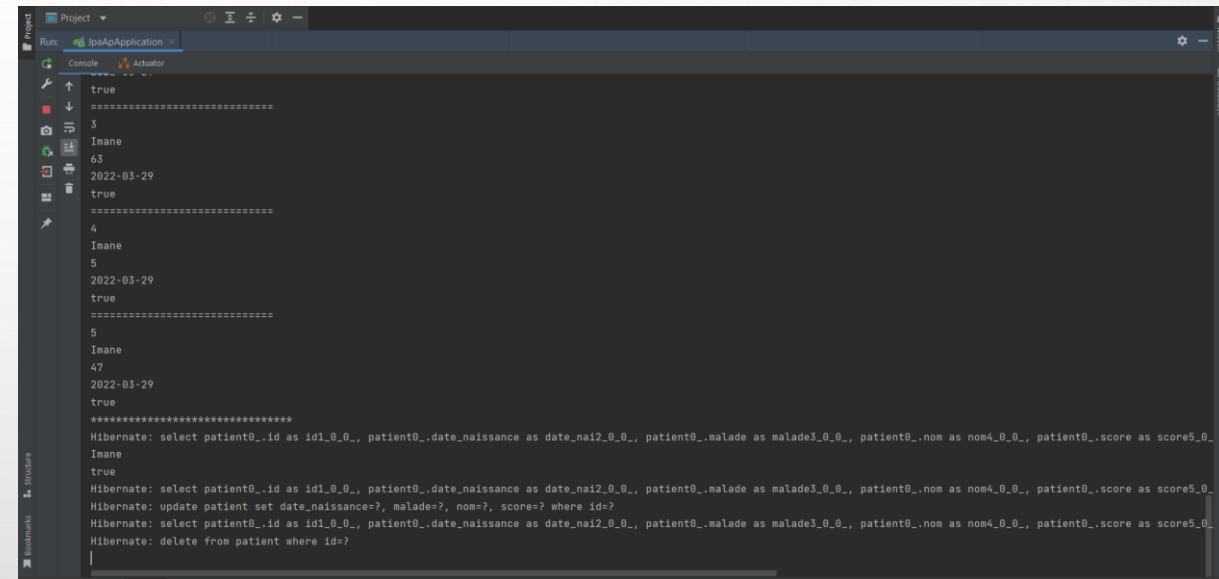
EXÉCUTION:

- CAS D'UNE SEULE ENTITÉ JPA



The screenshot shows the console output of a JPA application. It displays several Hibernate SQL queries and the resulting data for a patient entity. The output is as follows:

```
Numero page : 1
Hibernate: select patient0_.id as id1_0_, patient0_.date_naissance as date_nai2_0_, patient0_.malade as malade3_0_, patient0_.nom as nom4_0_, patient0_.score as score5_0_ from patient0_
Hibernate: select count(patient0_.id) as col_0_0_ from patient0_ where patient0_.malade=?
Hibernate: select patient0_.id as id1_0_, patient0_.date_naissance as date_nai2_0_, patient0_.malade as malade3_0_, patient0_.nom as nom4_0_, patient0_.score as score5_0_ from patient0_
=====
1
Imane
7
2022-03-29
true
=====
3
Imane
63
2022-03-29
true
=====
4
Imane
5
2022-03-29
true
=====
5
Imane
47
2022-03-29
true
=====
```

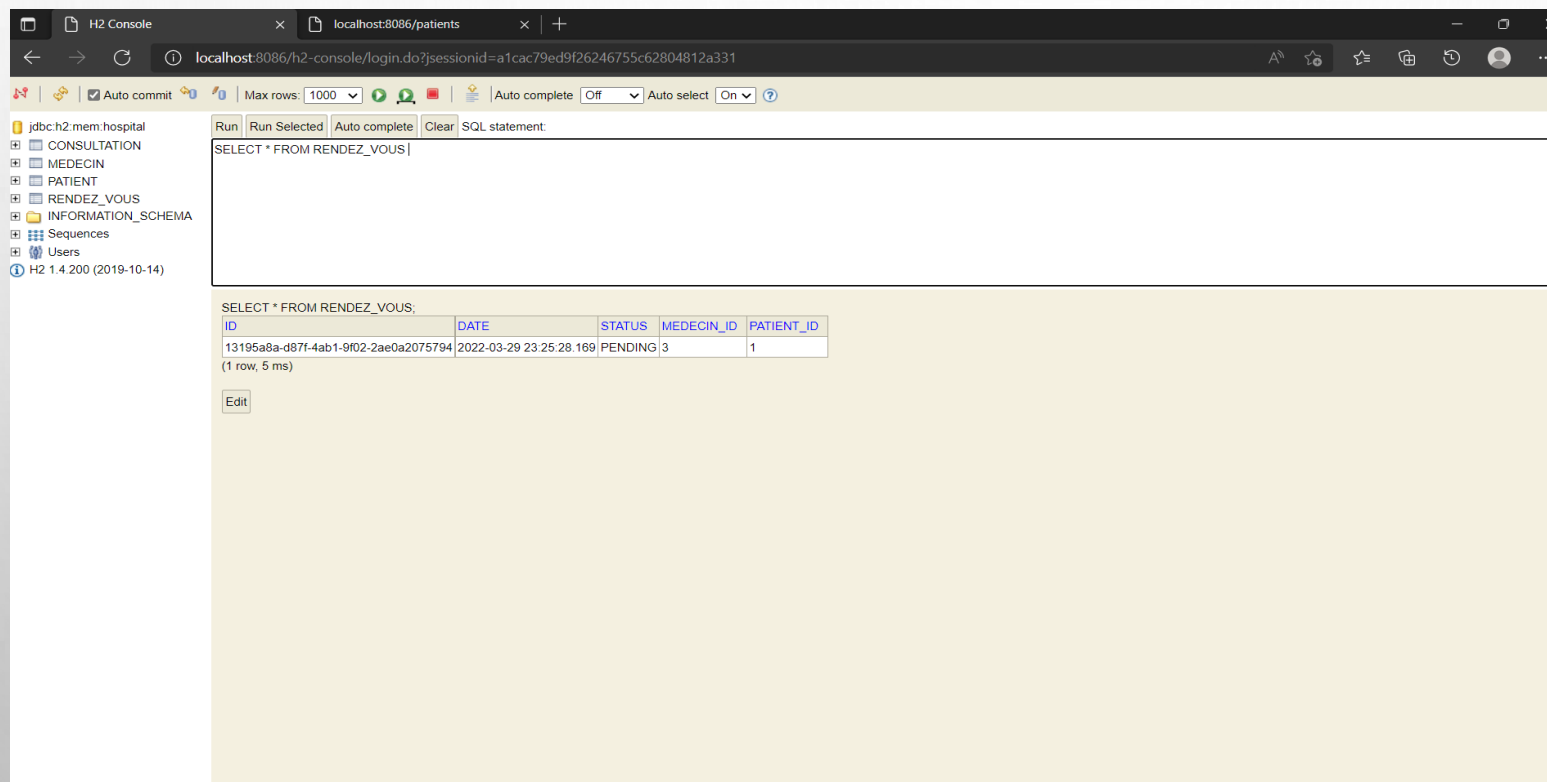


The screenshot shows the console output of a JPA application. It displays several Hibernate SQL queries and the resulting data for a patient entity. The output is as follows:

```
true
=====
3
Imane
63
2022-03-29
true
=====
4
Imane
5
2022-03-29
true
=====
5
Imane
47
2022-03-29
true
=====
Hibernate: select patient0_.id as id1_0_, patient0_.date_naissance as date_nai2_0_, patient0_.malade as malade3_0_, patient0_.nom as nom4_0_, patient0_.score as score5_0_ from patient0_
true
Hibernate: select patient0_.id as id1_0_, patient0_.date_naissance as date_nai2_0_, patient0_.malade as malade3_0_, patient0_.nom as nom4_0_, patient0_.score as score5_0_ from patient0_
Hibernate: update patient0_ set date_naissance=?, malade=?, nom=?, score=? where id=?
Hibernate: select patient0_.id as id1_0_, patient0_.date_naissance as date_nai2_0_, patient0_.malade as malade3_0_, patient0_.nom as nom4_0_, patient0_.score as score5_0_ from patient0_
Hibernate: delete from patient0_ where id=?
```

EXÉCUTION:

- CAS DE PLUSIEURS ENTITÉS JPA AVEC RELATIONS

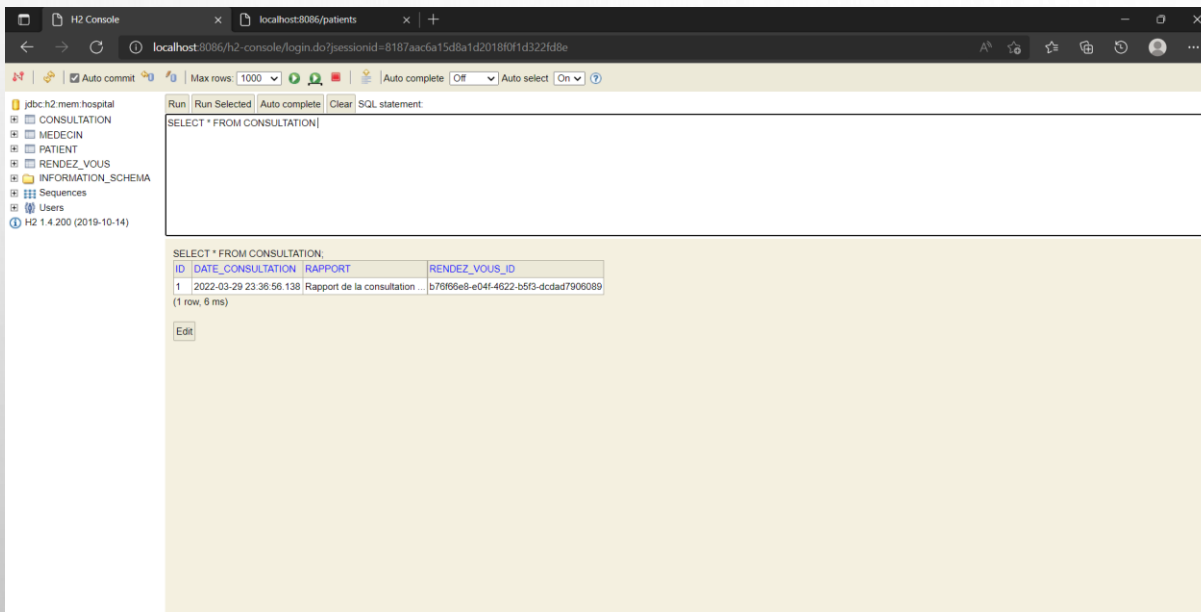


The screenshot shows the H2 Console interface. The left sidebar displays a database schema with tables: CONSULTATION, MEDECIN, PATIENT, RENDEZ_VOUS, INFORMATION_SCHEMA, Sequences, and Users. The main area shows the execution of the SQL query: `SELECT * FROM RENDEZ_VOUS`. The result is displayed as a table with 5 columns: ID, DATE, STATUS, MEDECIN_ID, and PATIENT_ID. The first row contains the values: 13195a8a-d87f-4ab1-9f02-2ae0a2075794, 2022-03-29 23:25:28.169, PENDING, 3, and 1. Below the table, it indicates "(1 row, 5 ms)". An "Edit" button is visible at the bottom left of the result area.

ID	DATE	STATUS	MEDECIN_ID	PATIENT_ID
13195a8a-d87f-4ab1-9f02-2ae0a2075794	2022-03-29 23:25:28.169	PENDING	3	1

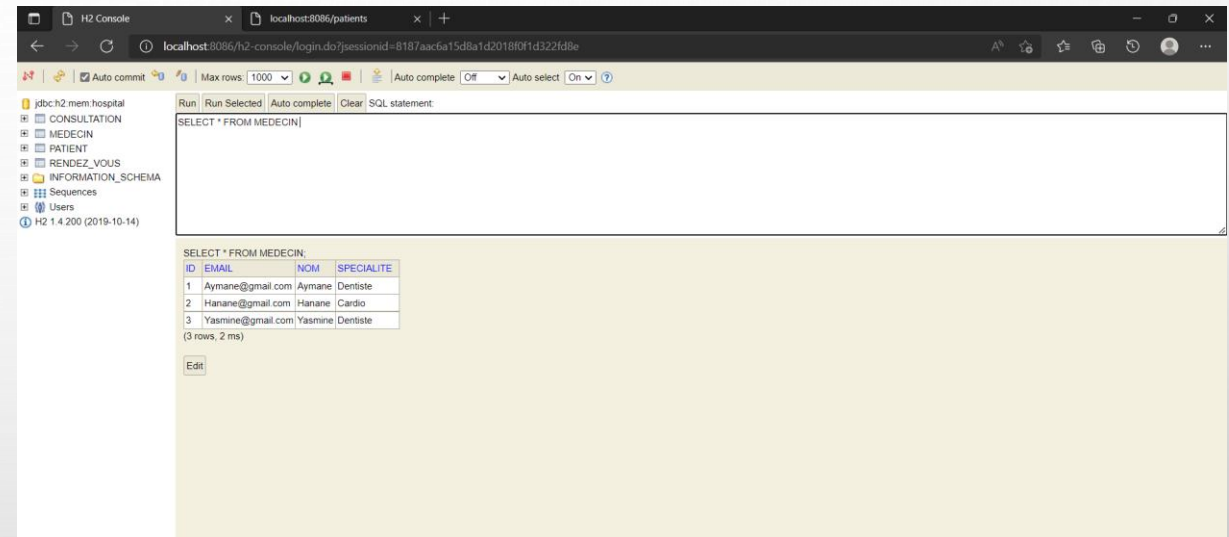
EXÉCUTION:

- CAS DE PLUSIEURS ENTITÉS JPA AVEC RELATIONS



The screenshot shows the H2 Console interface with a browser window at localhost:8086/h2-console. The left sidebar lists database objects: jdbc:h2:mem:hospital, CONSULTATION, MEDECIN, PATIENT, RENDEZ_VOUS, INFORMATION_SCHEMA, Sequences, and Users. The main area contains a SQL statement editor with the query `SELECT * FROM CONSULTATION;`. Below the editor, the results are displayed in a table with columns ID, DATE_CONSULTATION, RAPPORT, and RENDEZ_VOUS_ID. One row is shown with the date 2022-03-29 23:36:56.138 and a long report ID. The status bar indicates (1 row, 6 ms).

ID	DATE_CONSULTATION	RAPPORT	RENDEZ_VOUS_ID
1	2022-03-29 23:36:56.138	Rapport de la consultation ...	b76f66e8-e04f-4622-b5f3-dcdad7909089

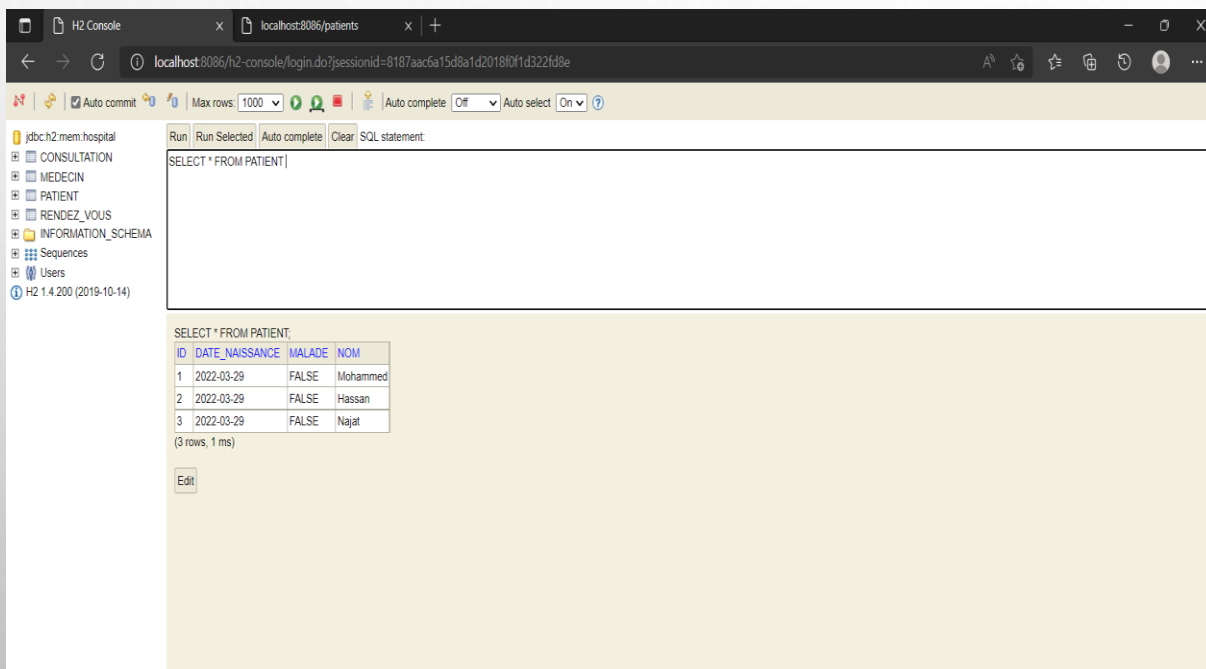


The screenshot shows the H2 Console interface with a browser window at localhost:8086/h2-console. The left sidebar lists database objects: jdbc:h2:mem:hospital, CONSULTATION, MEDECIN, PATIENT, RENDEZ_VOUS, INFORMATION_SCHEMA, Sequences, and Users. The main area contains a SQL statement editor with the query `SELECT * FROM MEDECIN;`. Below the editor, the results are displayed in a table with columns ID, EMAIL, NOM, and SPECIALITE. Three rows are shown, listing doctors Aymane, Hanane, and Yasmine with their respective specialties. The status bar indicates (3 rows, 2 ms).

ID	EMAIL	NOM	SPECIALITE
1	Aymane@gmail.com	Aymane	Dentiste
2	Hanane@gmail.com	Hanane	Cardio
3	Yasmine@gmail.com	Yasmine	Dentiste

EXÉCUTION:

- CAS DE PLUSIEURS ENTITÉS JPA AVEC RELATIONS



The screenshot shows the H2 Console interface. The left sidebar displays a database schema with tables: CONSULTATION, MEDECIN, PATIENT, RENDEZ_VOUS, INFORMATION_SCHEMA, Sequences, and Users. The main area shows a SQL statement: `SELECT * FROM PATIENT;`. Below the statement, the results are displayed in a table with 3 rows and 4 columns: ID, DATE_NAISSANCE, MALADE, and NOM. The results are: 1, 2022-03-29, FALSE, Mohammed; 2, 2022-03-29, FALSE, Hassan; 3, 2022-03-29, FALSE, Najat. The status bar indicates (3 rows, 1 ms).

ID	DATE_NAISSANCE	MALADE	NOM
1	2022-03-29	FALSE	Mohammed
2	2022-03-29	FALSE	Hassan
3	2022-03-29	FALSE	Najat

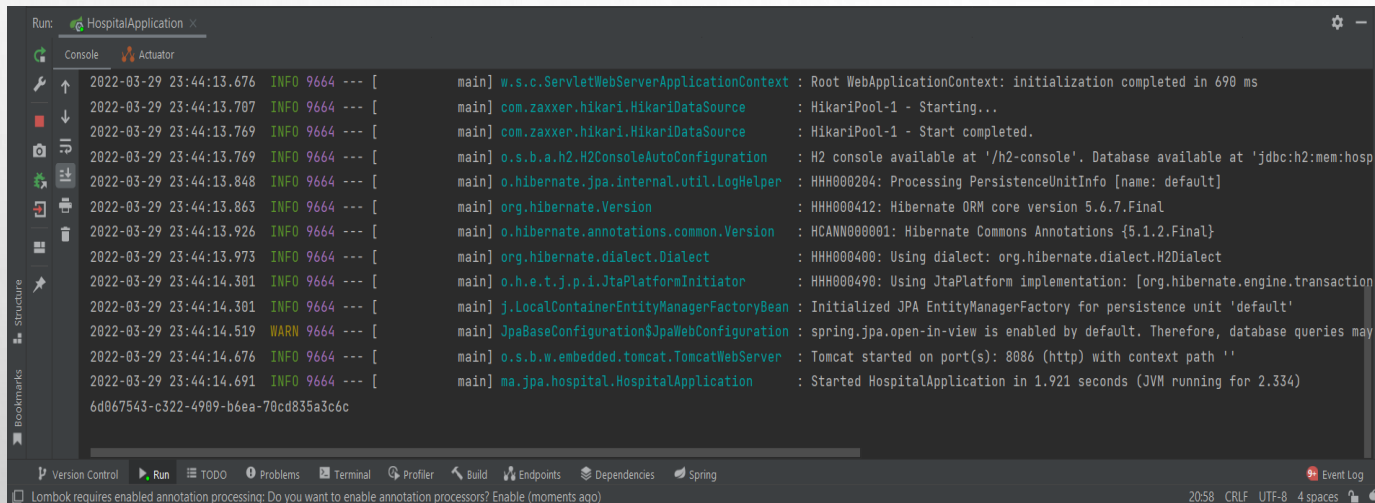


The screenshot shows the H2 Console interface. The main area displays a JSON result for a query. The JSON structure is as follows:

```
[{"id":1,"nom":"Mohammed","dateNaissance":"2022-03-29","malade":false,"rendezVous":[{"id":"b76f66e8-e04f-4622-b5f3-dcdad7906089","date":"2022-03-29T21:36:56.121+00:00","status":"PENDING","medecin":{"id":3,"nom":"Yasmine","email":"Yasmine@gmail.com","specialite":"Dentiste"},"consultation":{"id":1,"dateConsultation":"2022-03-29T21:36:56.138+00:00","rapport":"Rapport de la consultation ..."}]}],{"id":2,"nom":"Hassan","dateNaissance":"2022-03-29","malade":false,"rendezVous":[]}, {"id":3,"nom":"Najat","dateNaissance":"2022-03-29","malade":false,"rendezVous":[]}]
```


EXÉCUTION:

- CAS DE PLUSIEURS ENTITÉS JPA AVEC RELATIONS



```
Run: HospitalApplication
Console
2022-03-29 23:44:13.676 INFO 9664 --- [main] w.s.c.ServletWebServerApplicationContext : Root WebApplicationContext: initialization completed in 690 ms
2022-03-29 23:44:13.707 INFO 9664 --- [main] com.zaxxer.hikari.HikariDataSource : HikariPool-1 - Starting...
2022-03-29 23:44:13.769 INFO 9664 --- [main] com.zaxxer.hikari.HikariDataSource : HikariPool-1 - Start completed.
2022-03-29 23:44:13.769 INFO 9664 --- [main] o.s.b.a.h2.H2ConsoleAutoConfiguration : H2 console available at '/h2-console'. Database available at 'jdbc:h2:mem:hosp
2022-03-29 23:44:13.848 INFO 9664 --- [main] o.hibernate.jpa.internal.util.LogHelper : HHH0000204: Processing PersistenceUnitInfo [name: default]
2022-03-29 23:44:13.863 INFO 9664 --- [main] org.hibernate.Version : HHH0000412: Hibernate ORM core version 5.6.7.Final
2022-03-29 23:44:13.926 INFO 9664 --- [main] o.hibernate.annotations.common.Version : HCANN000001: Hibernate Commons Annotations {5.1.2.Final}
2022-03-29 23:44:13.973 INFO 9664 --- [main] org.hibernate.dialect.Dialect : HHH0000400: Using dialect: org.hibernate.dialect.H2Dialect
2022-03-29 23:44:14.301 INFO 9664 --- [main] o.h.e.t.j.p.i.JtaPlatformInitiator : HHH0000490: Using JtaPlatform implementation: [org.hibernate.engine.transaction
2022-03-29 23:44:14.301 INFO 9664 --- [main] j.LocalContainerEntityManagerFactoryBean : Initialized JPA EntityManagerFactory for persistence unit 'default'
2022-03-29 23:44:14.519 WARN 9664 --- [main] JpaBaseConfiguration$JpaWebConfiguration : spring.jpa.open-in-view is enabled by default. Therefore, database queries may
2022-03-29 23:44:14.676 INFO 9664 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat started on port(s): 8086 (http) with context path ''
2022-03-29 23:44:14.691 INFO 9664 --- [main] ma.jpa.hospital.HospitalApplication : Started HospitalApplication in 1.921 seconds (JVM running for 2.334)
6d0b7543-c322-4909-b6ea-70cd835a3c6c

Version Control Run TODO Problems Terminal Profiler Build Endpoints Dependencies Spring
Lombok requires enabled annotation processing: Do you want to enable annotation processors? Enable (moments ago) 20:58 CRLF UTF-8 4 spaces
```