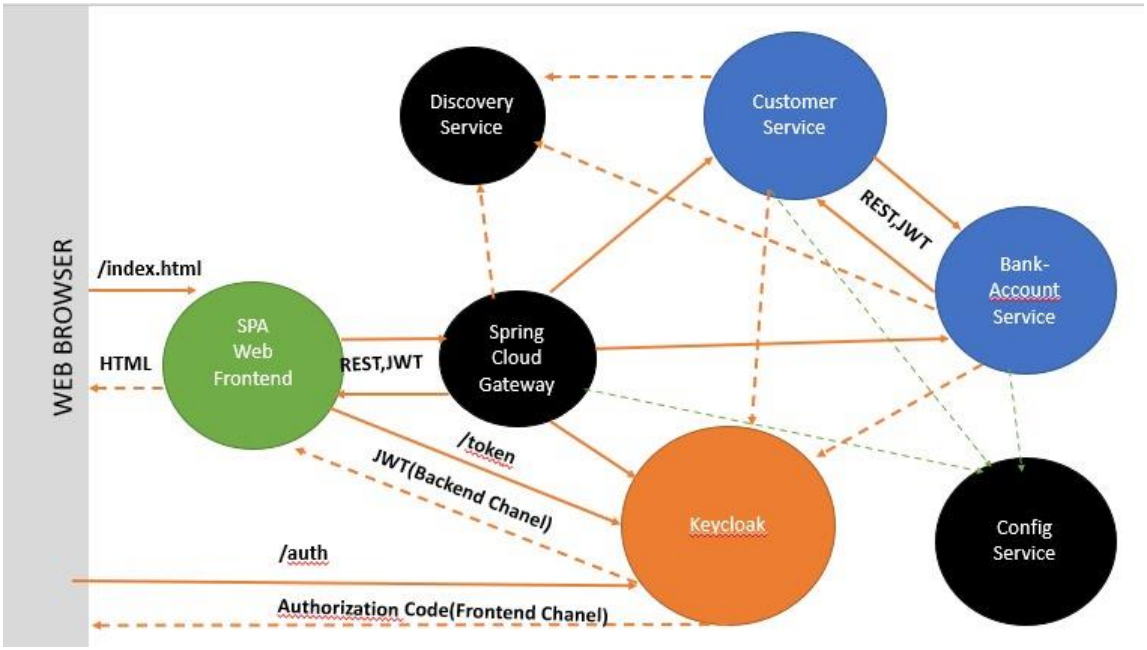
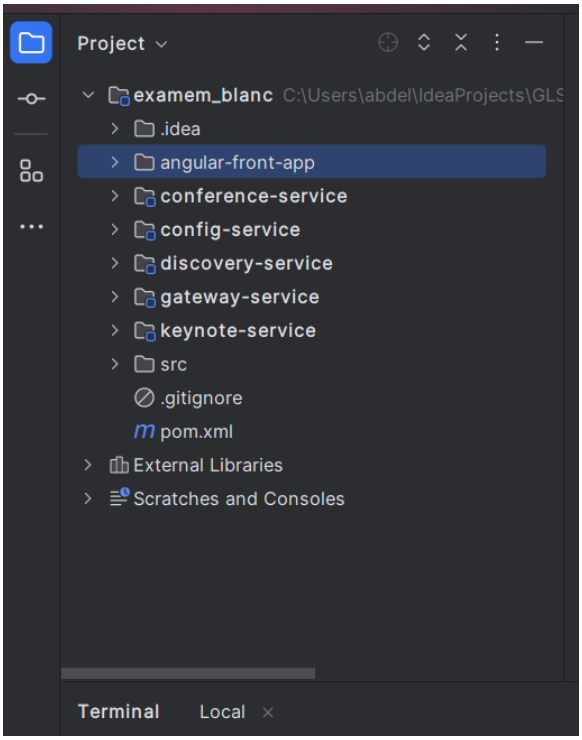
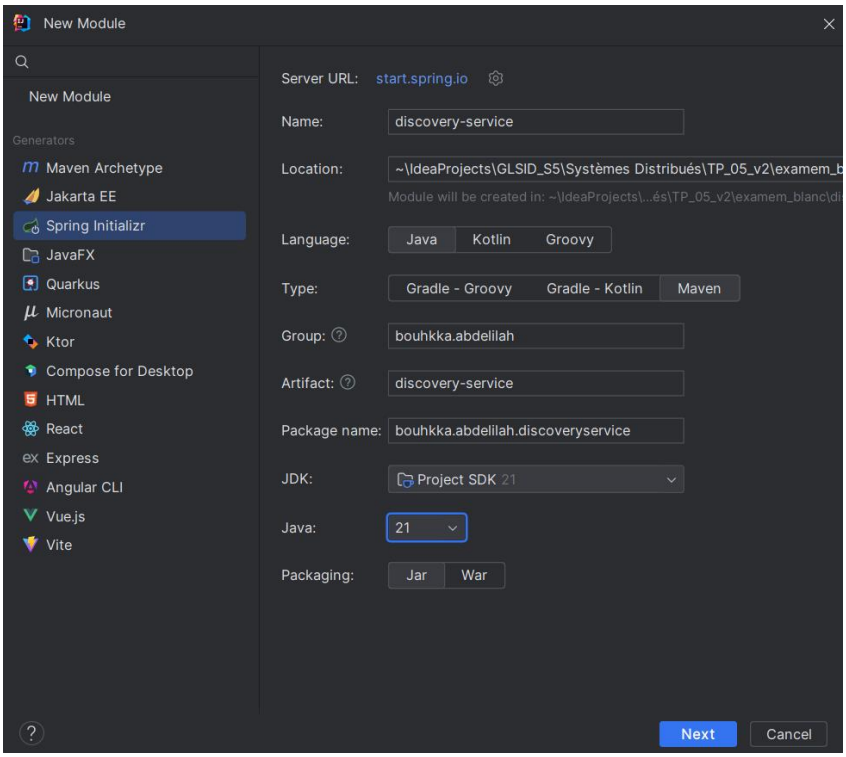
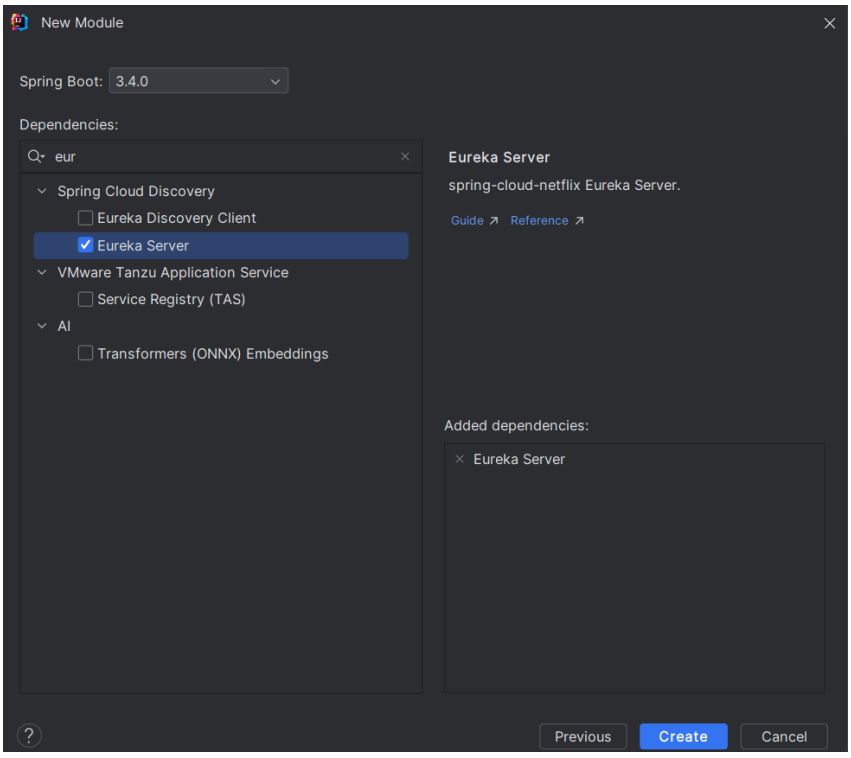
Établir une architecture technique du projet



Créer un Projet Maven incluant les micro-services suivants : keynote-service, conference-service, gateway-service, discovery-service, config-service et angular-front-app




New Module
New Module
Generators
Maven Archetype
Jakarta EE
Spring Initializr
JavaFX
Quarkus
Micronaut
Ktor
Compose for Desktop
HTML
React
Express
Angular CLI
Vue.js
Vite
Server URL: start.spring.io
Name: discovery-service
Location: ~\IdeaProjects\GLSID_S5\Systèmes Distribués\TP_05_v2\examem_b
Module will be created in: ~\IdeaProjects\...és\TP_05_v2\examem_blanc\di
Language: Java Kotlin Groovy
Type: Gradle - Groovy Gradle - Kotlin Maven
Group: bouhkka.abdelilah
Artifact: discovery-service
Package name: bouhkka.abdelilah.discoveryservice
JDK: Project SDK 21
Java: 21
Packaging: Jar War
Next
Cancel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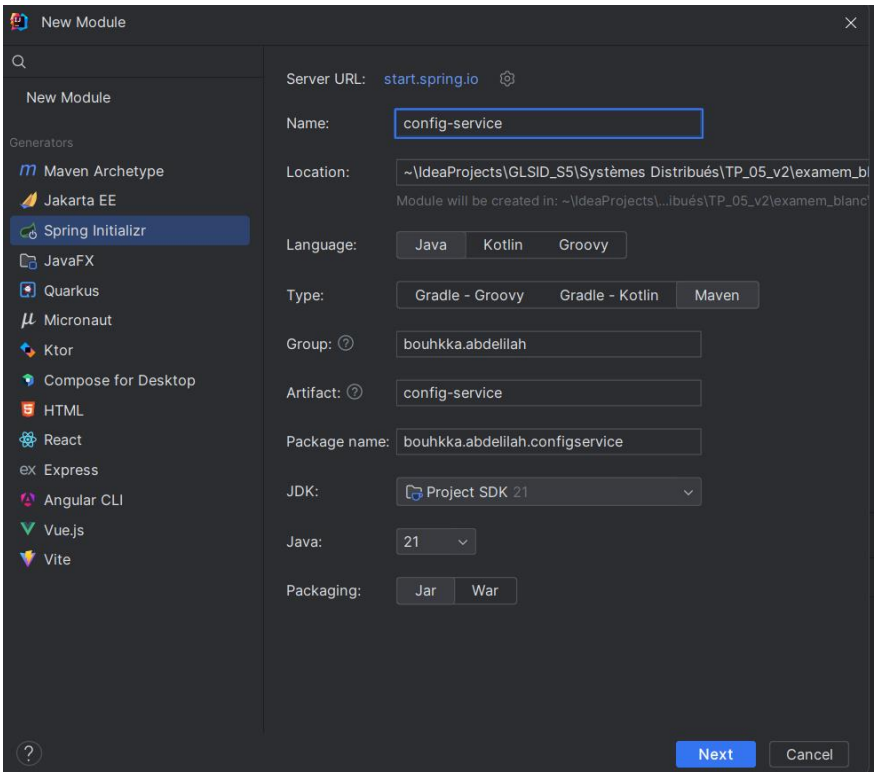
Spring Boot: 3.4.0
Dependencies:
eur
Spring Cloud Discovery
Eureka Discovery Client
Eureka Server
VMware Tanzu Application Service
Service Registry (TAS)
AI
Transformers (ONNX) Embeddings
Eureka Server
spring-cloud-netflix Eureka Server.
Guide
Reference
Added dependencies:
Eureka Server
Previous
Create
Cancel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Ktor
Compose for Desktop
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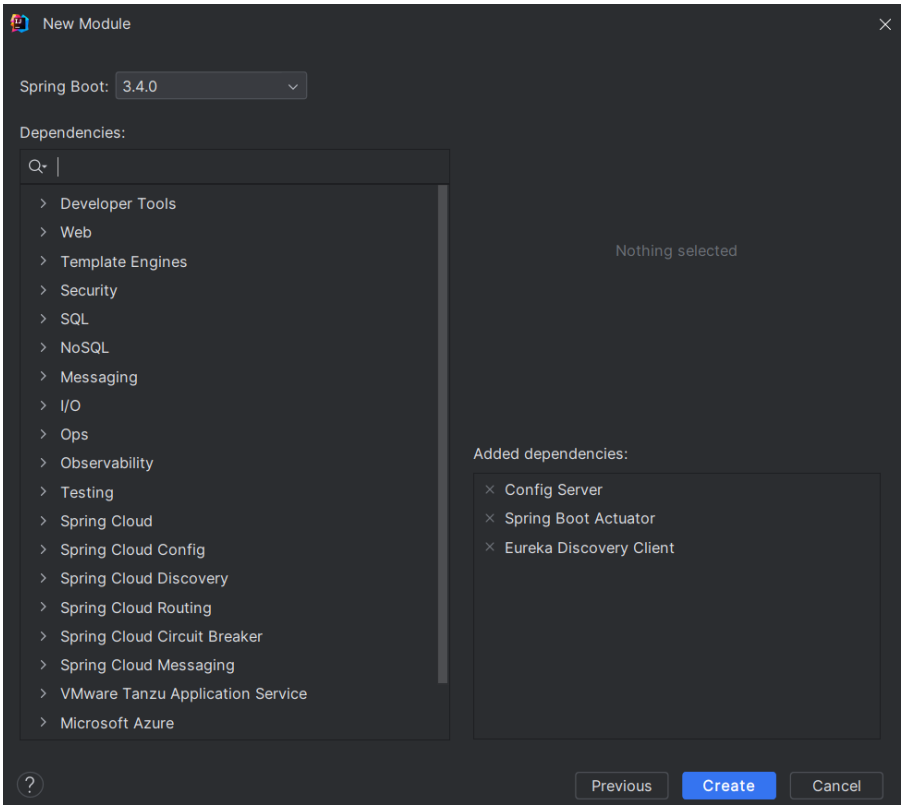
React
Express
Angular CLI
Vue.js
Vite
Server URL: start.spring.io
Name: config-service
Location: ~\IdeaProjects\GLSID_S5\Systèmes Distribués\TP_05_v2\examem_bl
Module will be created in: ~\IdeaProjects\...ibués\TP_05_v2\examem_blanc
Language: Java Kotlin Groovy
Type: Gradle - Groovy Gradle - Kotlin Maven
Group: bouhkka.abdelilah
Artifact: config-service
Package name: bouhkka.abdelilah.configservice
JDK: Project SDK 21
Java: 21
Packaging: Jar War
Next
Cancel


New Module
Spring Boot: 3.4.0
Dependencies:
Developer Tools
Web
Template Engines
Security
SQL
NoSQL
Messaging
I/O
Ops
Observability
Testing
Spring Cloud
Spring Cloud Config
Spring Cloud Discovery
Spring Cloud Routing
Spring Cloud Circuit Breaker
Spring Cloud Messaging
VMware Tanzu Application Service
Microsoft Azure
Nothing selected
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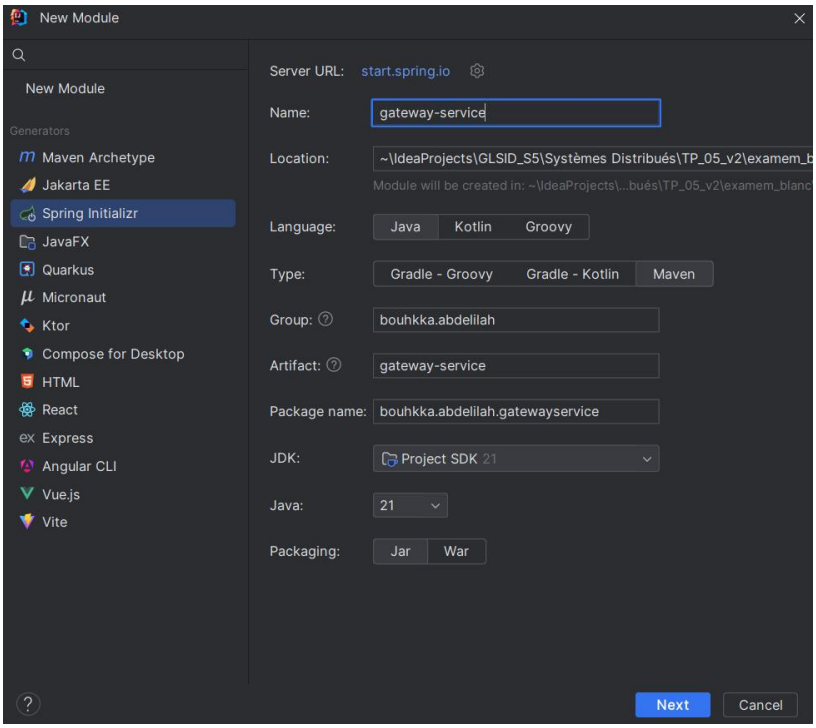
Config Server
Spring Boot Actuator
Eureka Discovery Client
Previous
Create
Cancel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React
Express
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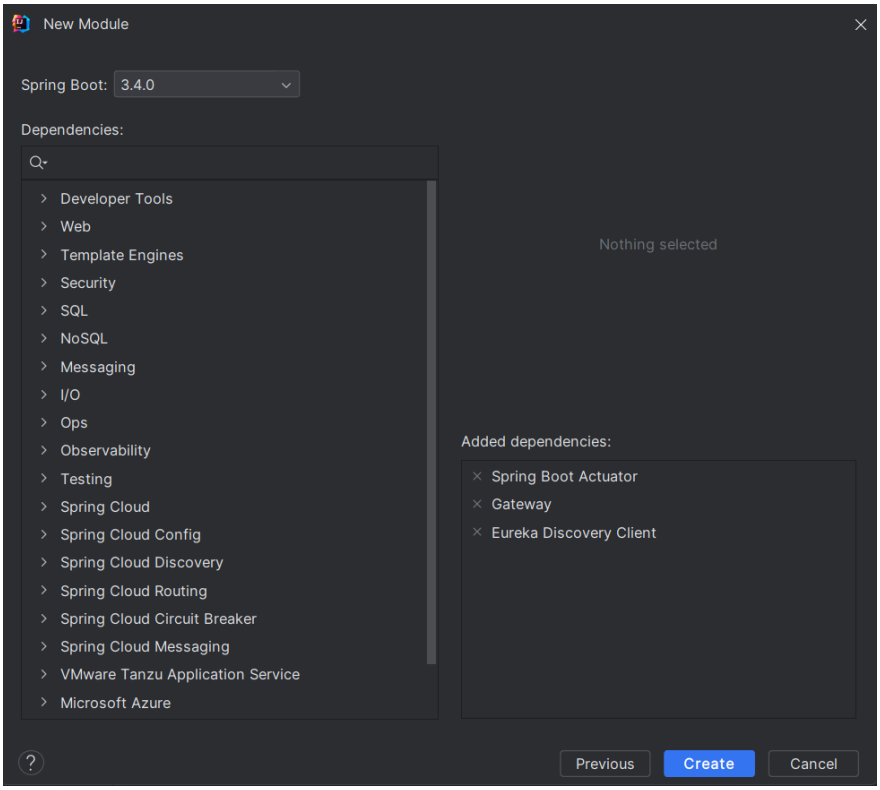
Vue.js
Vite
Server URL: start.spring.io
Name: gateway-service
Location: ~\IdeaProjects\GLSID_S5\Systèmes Distribués\TP_05_v2\examem_b
Module will be created in: ~\IdeaProjects\...bués\TP_05_v2\examem_blanc
Language: Java Kotlin Groovy
Type: Gradle - Groovy Gradle - Kotlin Maven
Group: bouhkka.abdelilah
Artifact: gateway-service
Package name: bouhkka.abdelilah.gatewayservice
JDK: Project SDK 21
Java: 21
Packaging: Jar War
Next
Cancel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Spring Cloud Routing
Spring Cloud Circuit Breaker
Spring Cloud Messaging
VMware Tanzu Application Service
Microsoft Azure
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Gateway
Eureka Discovery Client
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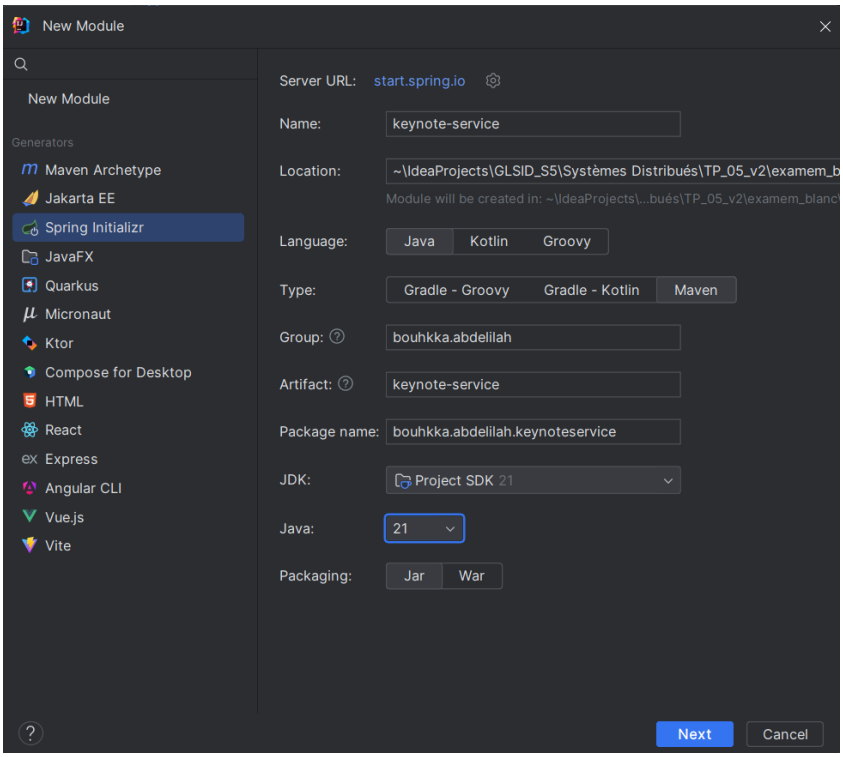
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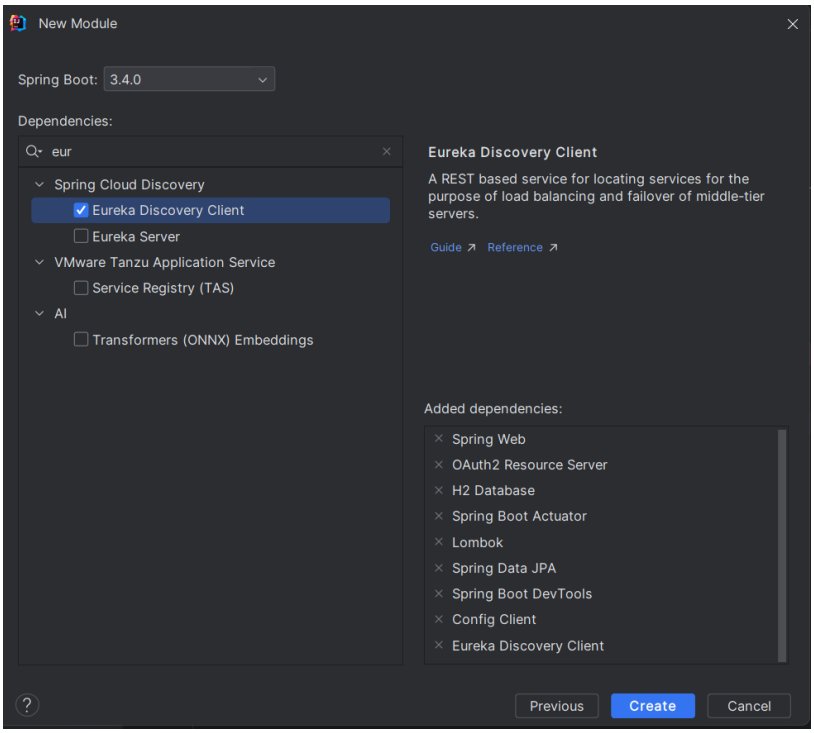
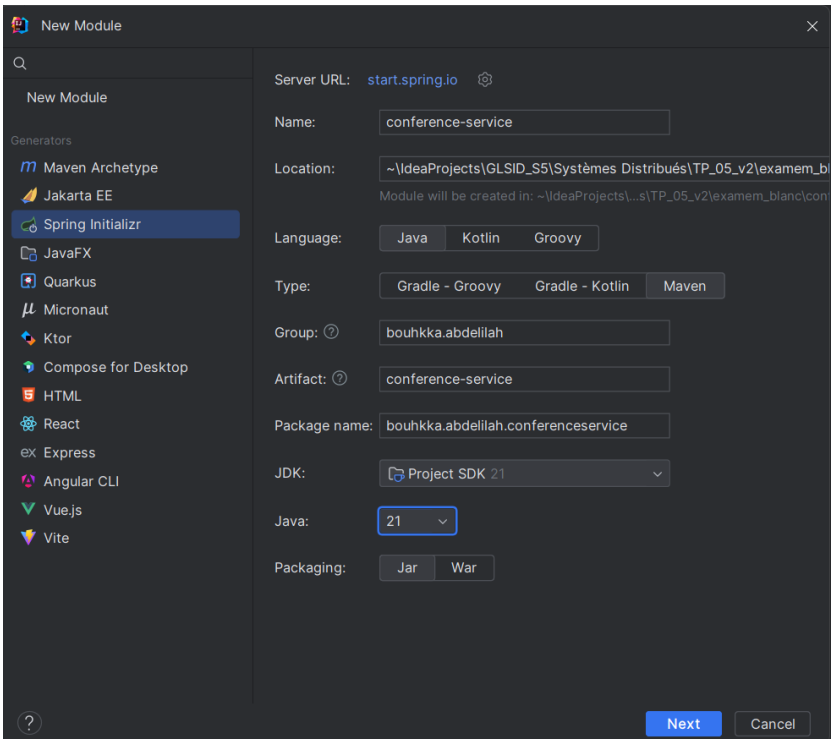
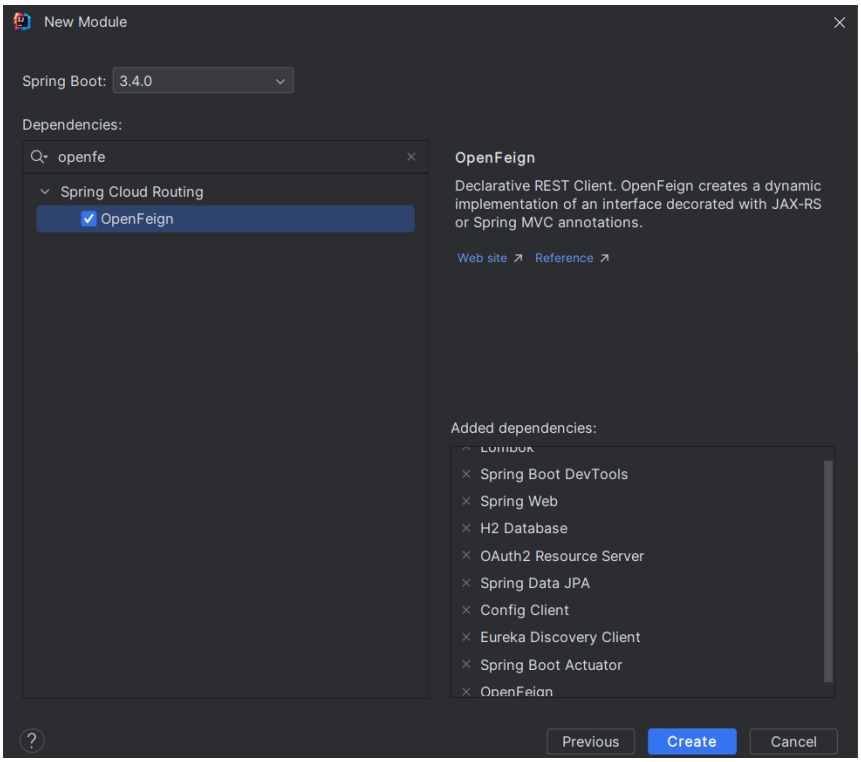
Spring Initializr
JavaFX
Quarkus
Micronaut
Ktor
Compose for Desktop
HTML
React
Express
Angular CLI
Vue.js
Vite
Server URL: start.spring.io
Name: keynote-service
Location: ~\IdeaProjects\GLSID_S5\Systèmes Distribués\TP_05_v2\examem_b
Module will be created in: ~\IdeaProjects\...bués\TP_05_v2\examem_blanc
Language: Java Kotlin Groovy
Type: Gradle - Groovy Gradle - Kotlin Maven
Group: bouhkka.abdelilah
Artifact: keynote-service
Package name: bouhkka.abdelilah.keynoteservice
JDK: Project SDK 21
Java: 21
Packaging: Jar War
Next
Cancel


New Module
Spring Boot: 3.4.0
Dependencies:
eur
Spring Cloud Discovery
Eureka Discovery Client
Eureka Server
VMware Tanzu Application Service
Service Registry (TAS)
AI
Transformers (ONNX) Embeddings
Eureka Discovery Client
A REST based service for locating services for the purpose of load balancing and failover of middle-tier servers.
Guide ↗ Reference ↗
Added dependencies:
Spring Web
OAuth2 Resource Server
H2 Database
Spring Boot Actuator
Lombok
Spring Data JPA
Spring Boot DevTools
Config Client
Eureka Discovery Client
Previous
Create
Cancel





Développer et tester les micro-services discovery-service et gateway-service et config-service

- Gateway-service :

```java
@SpringBootApplication
public class GatewayServiceApplication {

    public static void main(String[] args) { SpringApplication.run(GatewayServiceApplication.class, args); }

    @Bean
    DiscoveryClientRouteDefinitionLocator definitionLocator(
            ReactiveDiscoveryClient rdc,
            DiscoveryLocatorProperties properties){
        return new DiscoveryClientRouteDefinitionLocator(rdc, properties);
    }
}
```

```properties
spring.application.name=gateway-service

server.port=8888
spring.cloud.discovery.enabled=true
```

```yaml
spring:
  cloud:
    gateway:
      globalcors:
        corsConfigurations:
          '[/**]':
            allowedOrigins: "http://localhost:4200"
            allowedHeaders: "*"
            allowedMethods:
              - GET
              - POST
              - PUT
              - DELETE
```

- discovery-service :

```java
@SpringBootApplication
@EnableEurekaServer
public class DiscoveryServiceApplication {

    public static void main(String[] args) { SpringApplication.run(DiscoveryServiceApplication.class, args); }

}
```

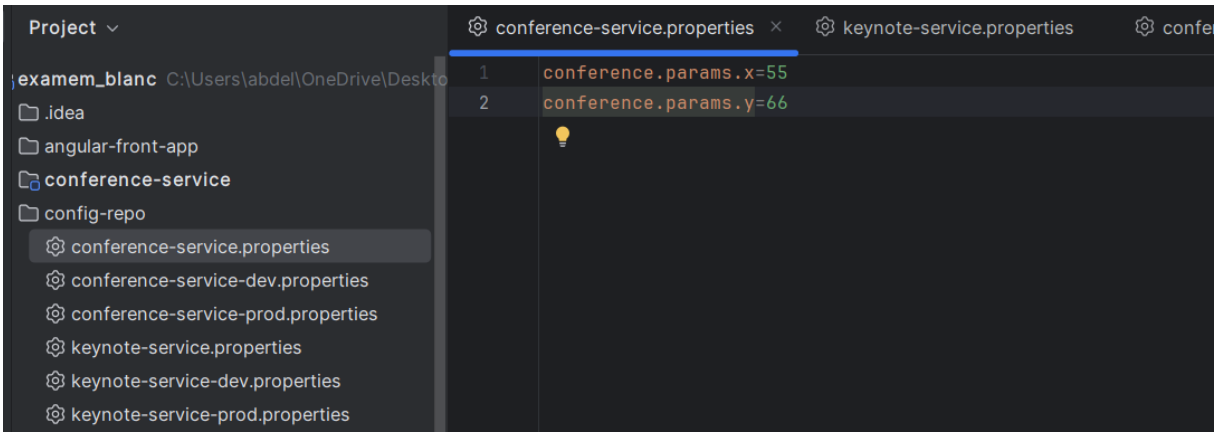
```properties
spring.application.name=discovery-service

server.port=8761
eureka.client.fetch-registry=false
eureka.client.register-with-eureka=false
```

- config-service :

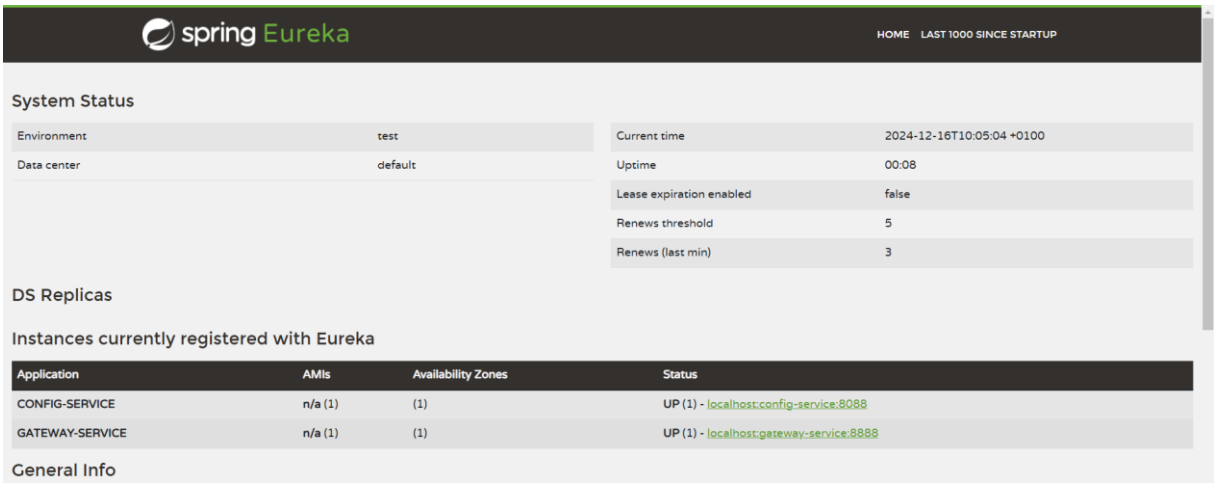
```java
@SpringBootApplication
@EnableConfigServer
@EnableDiscoveryClient
public class ConfigServiceApplication {

    public static void main(String[] args) { SpringApplication.run(ConfigServiceApplication.class, args); }

}
```

```
spring.application.name=config-service

server.port=8088
spring.cloud.config.server.git.uri=file:///C:/Users/abdel/OneDrive/Desktop/GLSID_S5/examem_blanc/config-repo
```

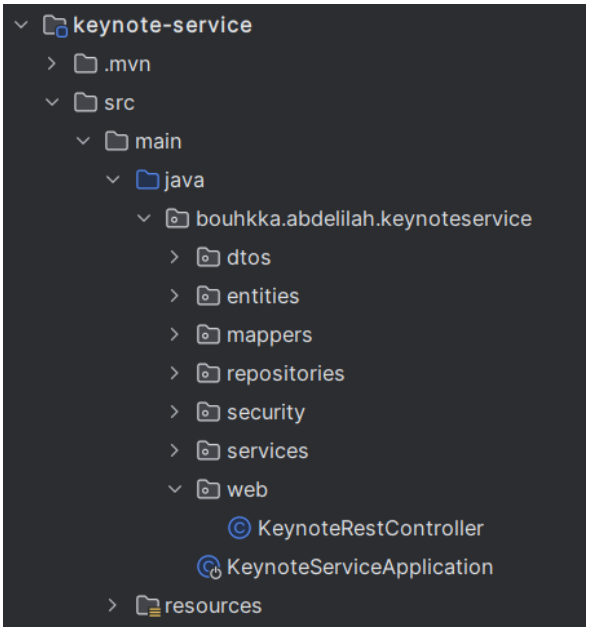
Créer un config-repo qui contient les fichiers de configurations :




```
PS C:\Users\abdel\OneDrive\Desktop\GLSID_S5\examem_blanc> cd .\config-repo\
PS C:\Users\abdel\OneDrive\Desktop\GLSID_S5\examem_blanc\config-repo> git init
Initialized empty Git repository in C:/Users/abdel/OneDrive/Desktop/GLSID_S5/examem_blanc/config-repo/.git/
PS C:\Users\abdel\OneDrive\Desktop\GLSID_S5\examem_blanc\config-repo> git add .
PS C:\Users\abdel\OneDrive\Desktop\GLSID_S5\examem_blanc\config-repo> git commit -m "first commit"
```



Développer et tester le micro-service Keynote-service (Entities, DAO, service, DTO, Mapper, RestController)



a. Entities :

```
9 usages
@Entity
@NoArgsConstructor
@AllArgsConstructor
@Getter @Setter @Builder @ToString
public class Keynote {
    @Id
    private String id;
    private String nom;
    private String prenom;
    private String email;
    private String fonction;
}
```

b. Repositoriy

```
import bouhkka.abdelilah.keynoteservice.entities.Keynote;
import org.springframework.data.jpa.repository.JpaRepository;

5 usages
public interface KeynoteRepository extends JpaRepository<Keynote, String> {
}
```

c. DTO :

```java
20 usages
@Data
public class KeynoteDTO {
    private String id;
    private String nom;
    private String prenom;
    private String email;
    private String fonction;
}
```

Ajouter les dépendances de **mapstruct** et **springdoc openAPI**

```xml
        <dependency>
            <groupId>org.springdoc</groupId>
            <artifactId>springdoc-openapi-starter-webmvc-ui</artifactId>
            <version>2.3.0</version>
        </dependency>
        <dependency>
            <groupId>org.mapstruct</groupId>
            <artifactId>mapstruct</artifactId>
            <version>1.5.0.Final</version>
        </dependency>
        <dependency>
            <groupId>org.mapstruct</groupId>
            <artifactId>mapstruct-processor</artifactId>
            <version>1.5.0.Final</version>
            <scope>provided</scope>
        </dependency>
```

d. Mapper :

```java
3 usages  1 implementation
@Mapper
public interface KeynoteMapper {
    no usages
    KeynoteMapper INSTANCE = Mappers.getMapper(KeynoteMapper.class);
    no usages  1 implementation
    KeynoteDTO keynoteToKeynoteDTO(Keynote keynote);
    no usages  1 implementation
    Keynote keynoteDTOToKeynote(KeynoteDTO keynoteDTO);
}
```

e. Keynote service :

```java
4 usages  1 implementation
public interface KeynoteService {
    1 usage  1 implementation
    List<KeynoteDTO> getAllKeynotes();
    2 usages  1 implementation
    Optional<KeynoteDTO> getKeynoteById(String id);
    1 usage  1 implementation
    KeynoteDTO createKeynote(KeynoteDTO keynoteDTO);
    1 usage  1 implementation
    void deleteKeynote(String id);
    1 usage  1 implementation
    KeynoteDTO updateKeynote(KeynoteDTO keynoteDTO);
}
```

f. Keynote service implémentation :

```java
@Service
@Transactional
public class KeynoteServiceImpl implements KeynoteService{

    @Autowired
    private KeynoteRepository keynoteRepository;
    no usages
    @Override
    public List<KeynoteDTO> getAllKeynotes() {
        List<Keynote> keynotes = keynoteRepository.findAll();
        return keynotes.stream() Stream<Keynote>
                .map(KeynoteMapper.INSTANCE::keynoteToKeynoteDTO) Stream<KeynoteDTO>
                .toList();
    }

    no usages
    @Override
    public Optional<KeynoteDTO> getKeynoteById(String id) {
        return keynoteRepository.findById(id)
                .map(KeynoteMapper.INSTANCE::keynoteToKeynoteDTO);
    }
```

```java
    @Override
    public KeynoteDTO createKeynote(KeynoteDTO keynoteDTO) {
        Keynote keynote = KeynoteMapper.INSTANCE.keynoteDTOToKeynote(keynoteDTO);
        Keynote savedKeynote = keynoteRepository.save(keynote);
        return KeynoteMapper.INSTANCE.keynoteToKeynoteDTO(savedKeynote);
    }

    no usages
    @Override
    public void deleteKeynote(String id) {
        keynoteRepository.deleteById(id);
    }
}
```

g. Controller

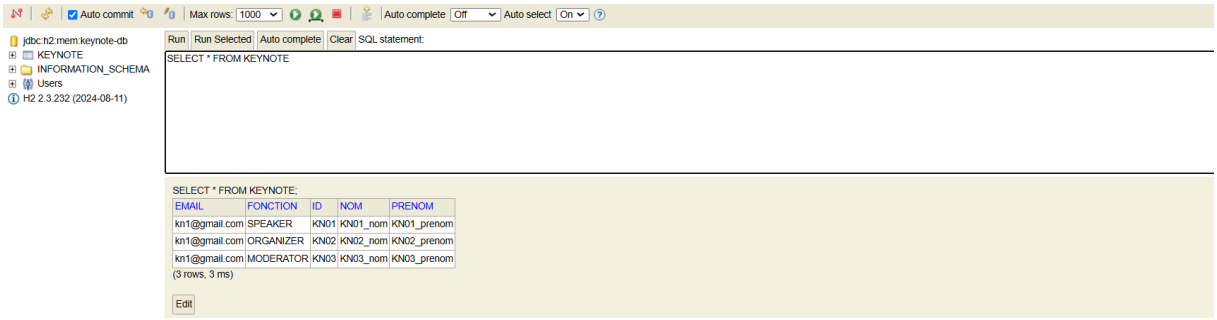
```java
@RestController
@RequestMapping("/api")
public class KeynoteRestController {

    7 usages
    private KeynoteService keynoteService;

    public KeynoteRestController(KeynoteService keynoteService) {
        this.keynoteService = keynoteService;
    }

    @GetMapping("/keynotes")
    public List<KeynoteDTO> keynoteList(){
        return keynoteService.getAllKeynotes();
    }

    @GetMapping("/keynotes/{id}")
    public KeynoteDTO keynoteById(@PathVariable String id){
        return keynoteService.getKeynoteById(id).get();
    }
```

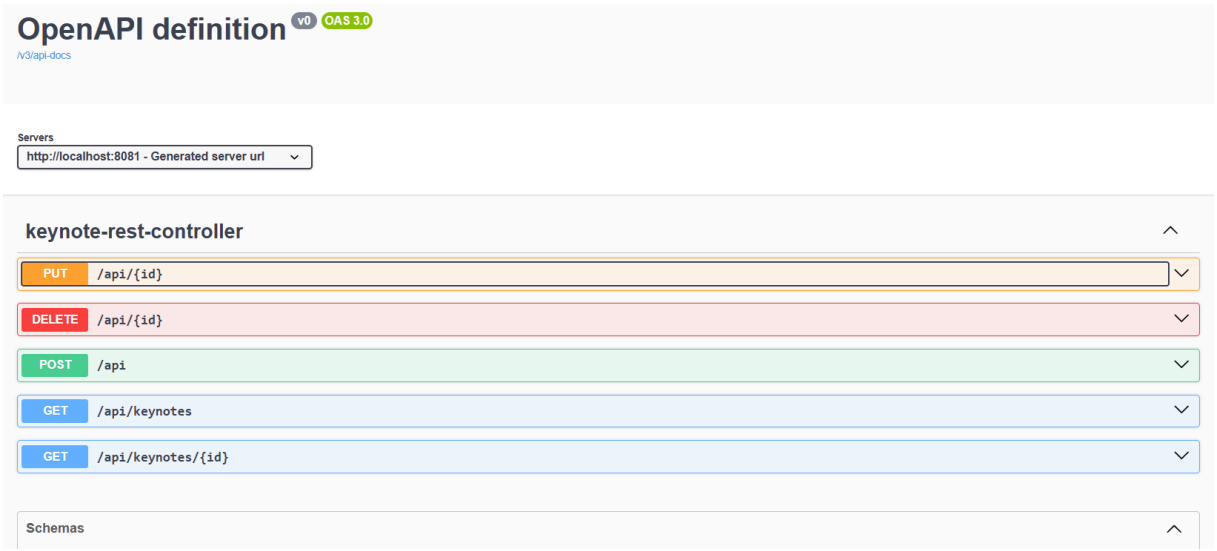
```java
@PostMapping
public KeynoteDTO createKeynote(@RequestBody KeynoteDTO keynoteDTO) {
    KeynoteDTO savedKeynote = keynoteService.createKeynote(keynoteDTO);
    return savedKeynote;
}

@PutMapping("/{id}")
public KeynoteDTO updateKeynote(@PathVariable String id, @RequestBody KeynoteDTO keynoteDTO) {
    if (!keynoteService.getKeynoteById(id).isPresent()) {
        return null;
    }
    keynoteDTO.setId(id);  // Make sure the ID is set
    KeynoteDTO updatedKeynote = keynoteService.updateKeynote(keynoteDTO);
    return updatedKeynote;
}

@DeleteMapping("/{id}")
public void deleteKeynote(@PathVariable String id) {
    keynoteService.deleteKeynote(id);
}
```

h. Application.properties :

```
spring.application.name=keynote-service

server.port=8081
spring.datasource.url=jdbc:h2:mem:keynote-db
spring.h2.console.enabled=true

spring.cloud.config.enabled=false
spring.cloud.discovery.enabled=false
```

Test :





GET /api/keynotes

Parameters Cancel

No parameters

Execute Clear

Responses

Curl

```
curl -X 'GET' \
  'http://localhost:8081/api/keynotes' \
  -H 'accept: */*'
```

Request URL

```
http://localhost:8081/api/keynotes
```

Server response

Code	Details
200	Response body


```
[
  {
    "id": "KN01",
    "nom": "KN01_nom",
    "prenom": "KN01_prenom",
    "email": "kn1@gmail.com",
    "fonction": "SPEAKER"
  },
  {
    "id": "KN02",
    "nom": "KN02_nom",
    "prenom": "KN02_prenom",
    "email": "kn1@gmail.com",
    "fonction": "ORGANIZER"
  },
```


GET /api/keynotes/{id}

Parameters Cancel

Name	Description
id * required string (path)	KN02

Execute Clear

Responses

Curl

```
curl -X 'GET' \
  'http://localhost:8081/api/keynotes/KN02' \
  -H 'accept: */*'
```

Request URL

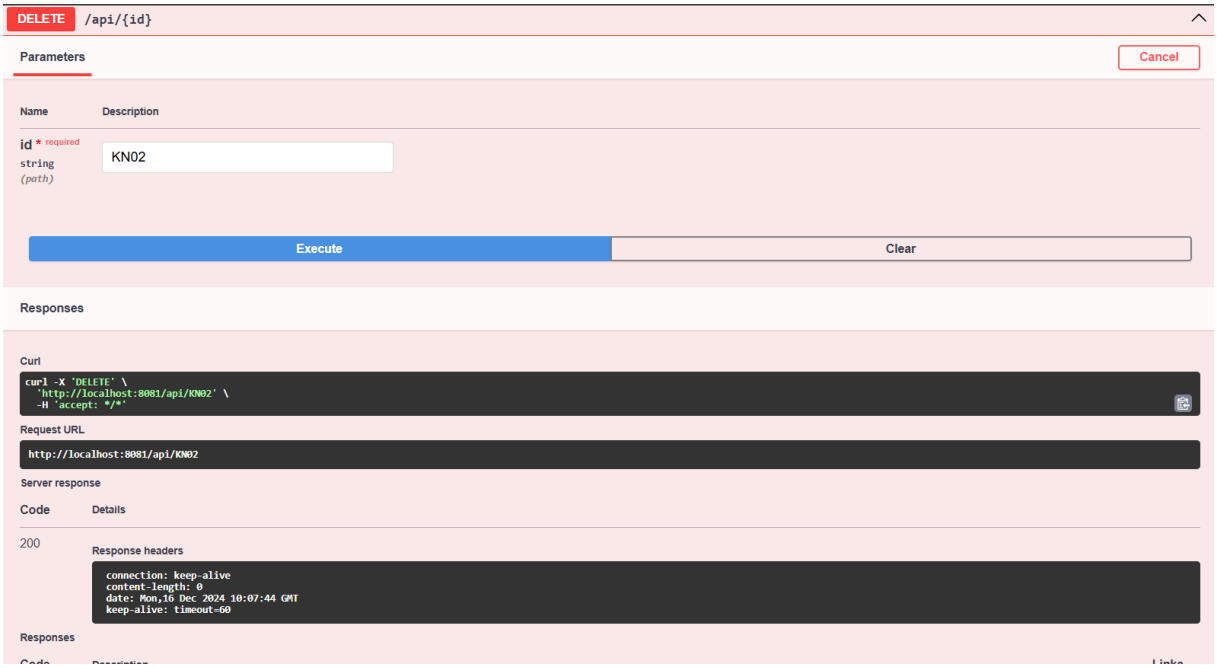
```
http://localhost:8081/api/keynotes/KN02
```

Server response

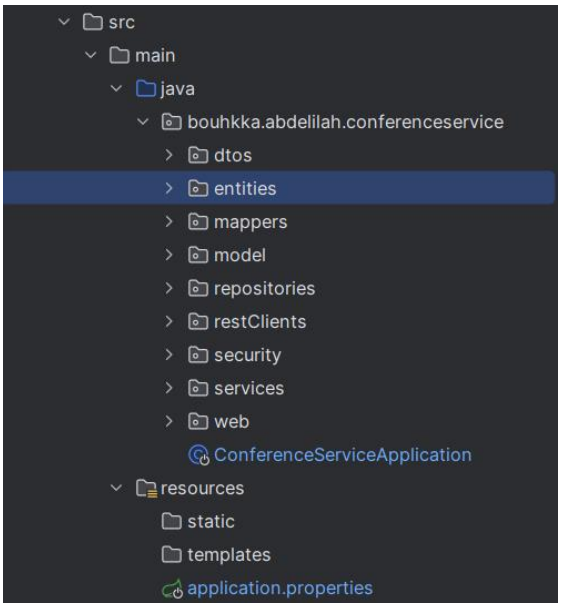
Code	Details
200	Response body


```
{
  "id": "KN02",
  "nom": "KN02_nom",
  "prenom": "KN02_prenom",
  "email": "kn1@gmail.com",
  "fonction": "ORGANIZER"
}
```


Download



Développer et tester le micro-service conférence-service (Entities, DAO, service, DTO, Mapper, RestController, Client Rest Open Feign)



a. Entities

```java
@Entity
@NoArgsConstructor
@AllArgsConstructor
@Getter @Setter @Builder @ToString
public class Conference {
    @Id @GeneratedValue(strategy = GenerationType.IDENTITY)
    private Long id;
    private String titre;
    private String type;
    private LocalDate date;
    private int duree;
    private int nombreInscrits;
    private double score;

    @Transient
    private List<Keynote> keynotes;
}
```

b. DTO

```java
31 usages
@Data
public class ConferenceDTO {
    private Long id;
    private String titre;
    private String type;
    private LocalDate date;
    private int duree;
    private int nombreInscrits;
    private double score;
    private List<Keynote> keynotes;
}
```

c. Model

```java
@NoArgsConstructor
@AllArgsConstructor
@Getter
@Setter
@Builder
@ToString
public class Keynote {
    private String id;
    private String nom;
    private String prenom;
    private String email;
    private String fonction;
}
```

d. Mappers

```
8 usages  1 implementation
@Mapper
public interface ConferenceMapper {
    4 usages
    ConferenceMapper INSTANCE = Mappers.getMapper(ConferenceMapper.class);
    3 usages  1 implementation
    ConferenceDTO conferenceToConferenceDTO(Conference conference);
    1 usage  1 implementation
    Conference conferenceDTOToConference(ConferenceDTO conferenceDTO);
}
```

e. Repository

```
4 usages
public interface ConferenceRepository extends JpaRepository<Conference, String> {
}
```

f. RestClient

```
4 usages
@FeignClient(url = "http://localhost:8081", name = "keynote-service")
public interface KeynoteRestClient {
    @GetMapping("/api/keynotes")
    List<Keynote> getAllKeynotes();
    @GetMapping("/api/keynotes/{id}")
    Keynote findKeynoteById(@PathVariable String id);
}
```

g. ConferenceServices

```
4 usages  1 implementation
public interface ConferenceService {
    1 usage  1 implementation
    List<ConferenceDTO> getAllConferences();
    2 usages  1 implementation
    Optional<ConferenceDTO> getConferenceById(Long id);
    1 usage  1 implementation
    ConferenceDTO createConference(ConferenceDTO conferenceDTO);
    1 usage  1 implementation
    void deleteConference(Long id);
    1 usage  1 implementation
    ConferenceDTO updateConference(ConferenceDTO conferenceDTO);
}
```

h. ConferenceServiceImpl :

```java
@Service
@Transactional
public class ConferenceServiceImpl implements ConferenceService {

    @Autowired
    private ConferenceRepository conferenceRepository;
    1 usage
    @Override
    public List<ConferenceDTO> getAllConferences() {
        List<Conference> conferences = conferenceRepository.findAll();
        return conferences.stream() Stream<Conference>
                .map(ConferenceMapper.INSTANCE::conferenceToConferenceDTO) Stream<ConferenceDTO>
                .toList();
    }

    2 usages
    @Override
    public Optional<ConferenceDTO> getConferenceById(Long id) {
        return conferenceRepository.findById(String.valueOf(id))
                .map(ConferenceMapper.INSTANCE::conferenceToConferenceDTO);
    }
```

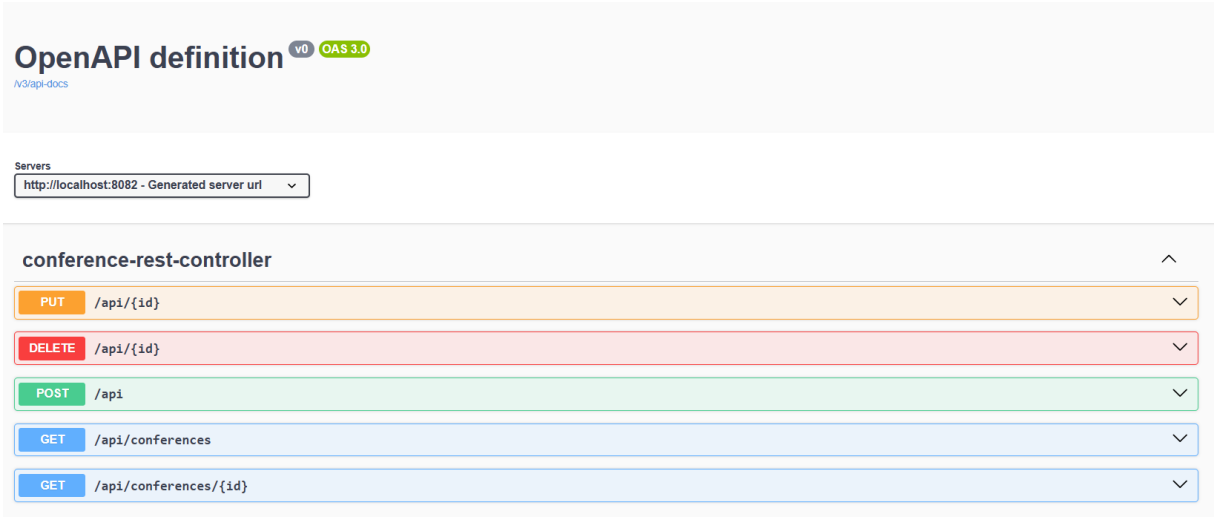
```java
    1 usage
    @Override
    public ConferenceDTO createConference(ConferenceDTO conferenceDTO) {
        Conference conference = ConferenceMapper.INSTANCE.conferenceDTOToConference(conferenceDTO);
        Conference savedConference = conferenceRepository.save(conference);
        return ConferenceMapper.INSTANCE.conferenceToConferenceDTO(savedConference);
    }

    1 usage
    @Override
    public void deleteConference(Long id) { conferenceRepository.deleteById(String.valueOf(id)); }

    1 usage
    @Override
    public ConferenceDTO updateConference(ConferenceDTO conferenceDTO) { return null; }
}
```

i. Controllers

```java
@RestController
@RequestMapping("/api")
public class ConferenceRestController {

    7 usages
    private ConferenceService conferenceService;
    2 usages
    private KeynoteRestClient keynoteRestClient;

    public ConferenceRestController(ConferenceService conferenceService, KeynoteRestClient keynoteRestClient) {
        this.conferenceService = conferenceService;
        this.keynoteRestClient = keynoteRestClient;
    }

    @GetMapping("/conferences")
    public List<ConferenceDTO> conferenceList(){
        List<ConferenceDTO> conferences = conferenceService.getAllConferences();
        conferences.forEach(c->{
                c.setKeynotes(keynoteRestClient.getAllKeynotes());
        });
        return conferences;
    }

    @GetMapping("/conferences/{id}")
    public ConferenceDTO conferenceById(@PathVariable Long id) { return conferenceService.getConferenceById(id).get(); }
```

```java
    @PostMapping
    public ConferenceDTO createConference(@RequestBody ConferenceDTO conferenceDTO) {
        ConferenceDTO savedConference = conferenceService.createConference(conferenceDTO);
        return savedConference;
    }

    @PutMapping("/{id}")
    public ConferenceDTO updateConference(@PathVariable Long id, @RequestBody ConferenceDTO conferenceDTO) {
        if (!conferenceService.getConferenceById(id).isPresent()) {
            return null;
        }
        conferenceDTO.setId(id);  // Make sure the ID is set
        ConferenceDTO updatedConference = conferenceService.updateConference(conferenceDTO);
        return updatedConference;
    }

    @DeleteMapping("/{id}")
    public void deleteConference(@PathVariable Long id) { conferenceService.deleteConference(id); }
```

j. Testing :

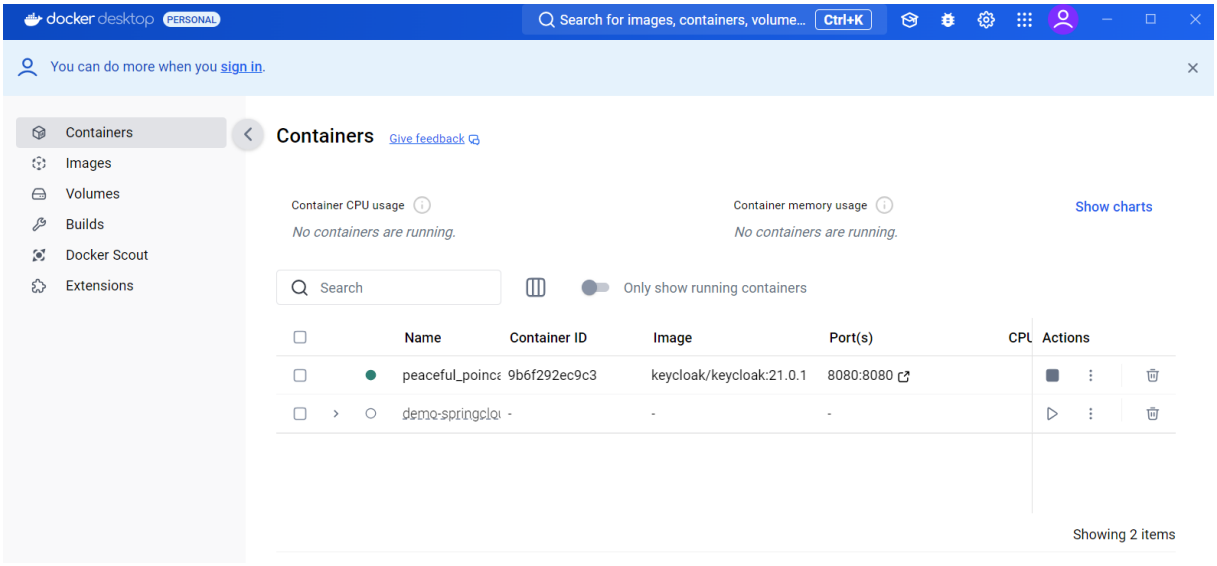


Développer un simple frontend web pour l'application

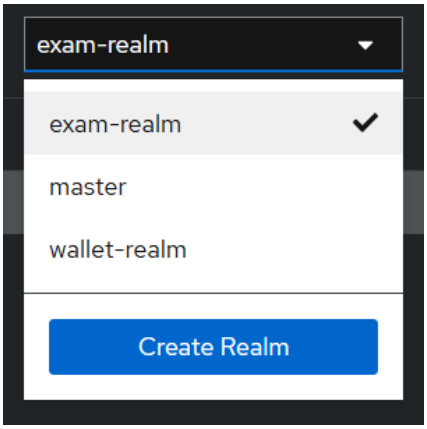
Sécuriser l'application avec une authentification Keycloak

Demarer Docker Desctop Et demarer Keycloak .

```
C:\Users\abdel>docker run -p 8080:8080 -e KEYCLOAK_ADMIN=admin -e KEYCLOAK_ADMIN_PASSWORD=admin quay.io/keycloak/keycloa
k:21.0.1 start-dev
Updating the configuration and installing your custom providers, if any. Please wait.
```



k. Creation d’un nouveau realm



Creation de client

Clients

Clients are applications and services that can request authentication of a user. Learn more

Clients list | Initial access token | Client registration

Search for client | Create client | Import client | 1 - 7

Client ID	Name	Type	Description	Home URL
account	${client_account}	OpenID Connect	–	http://localhost:8080/realms/exam-realm/account/
account-console	${client_account-console}	OpenID Connect	–	http://localhost:8080/realms/ecom-realm/account/
admin-cli	${client_admin-cli}	OpenID Connect	–	–
broker	${client_broker}	OpenID Connect	–	–
exam-client-ang	–	OpenID Connect	–	–
realm-management	${client_realm-management}	OpenID Connect	–	–
security-admin-console	${client_security-admin-console}	OpenID Connect	–	http://localhost:8080/admin/exam-realm/console/

Creation des utilisateurs

Users

Users are the users in the current realm. Learn more

User list

Search user | Add user | Delete user | 1 - 3

Username	Email	Last name	First name	Status
user1	user1@gmail.com	User1LastName	User1FirstName	–
user2	user2@gmail.com	User2LastName	User2FirstName	–
user3	user3@gmail.com	User3LastName	User3FirstName	–

Creation des roles

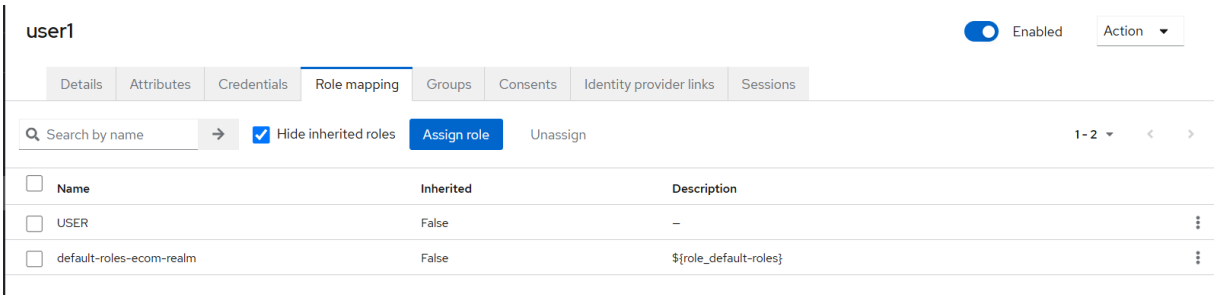
Realm roles

Realm roles are the roles that you define for use in the current realm. Learn more

Search role by name | Create role | 1 - 5

Role name	Composite	Description
ADMIN	False	–
USER	False	–

Affection des roles aux utilisateur



Déployer l’application avec Docker et Docker compose