École Normale Supérieure de l'Enseignement Technique Mohammedia

Université Hassan II de Casablanca

ENSET

ا لمدرسة العليا لأساتذة التعليم التقني المحمدية

جامعة الحسن الثاني بالدار البيضاء

Département de Mathématique et Informatique

II^{ème} année

Filière :

« Ingénierie Informatique : Big Data et Cloud Computing »

II-BDCC

JEE :Bank-Backend

Rapport

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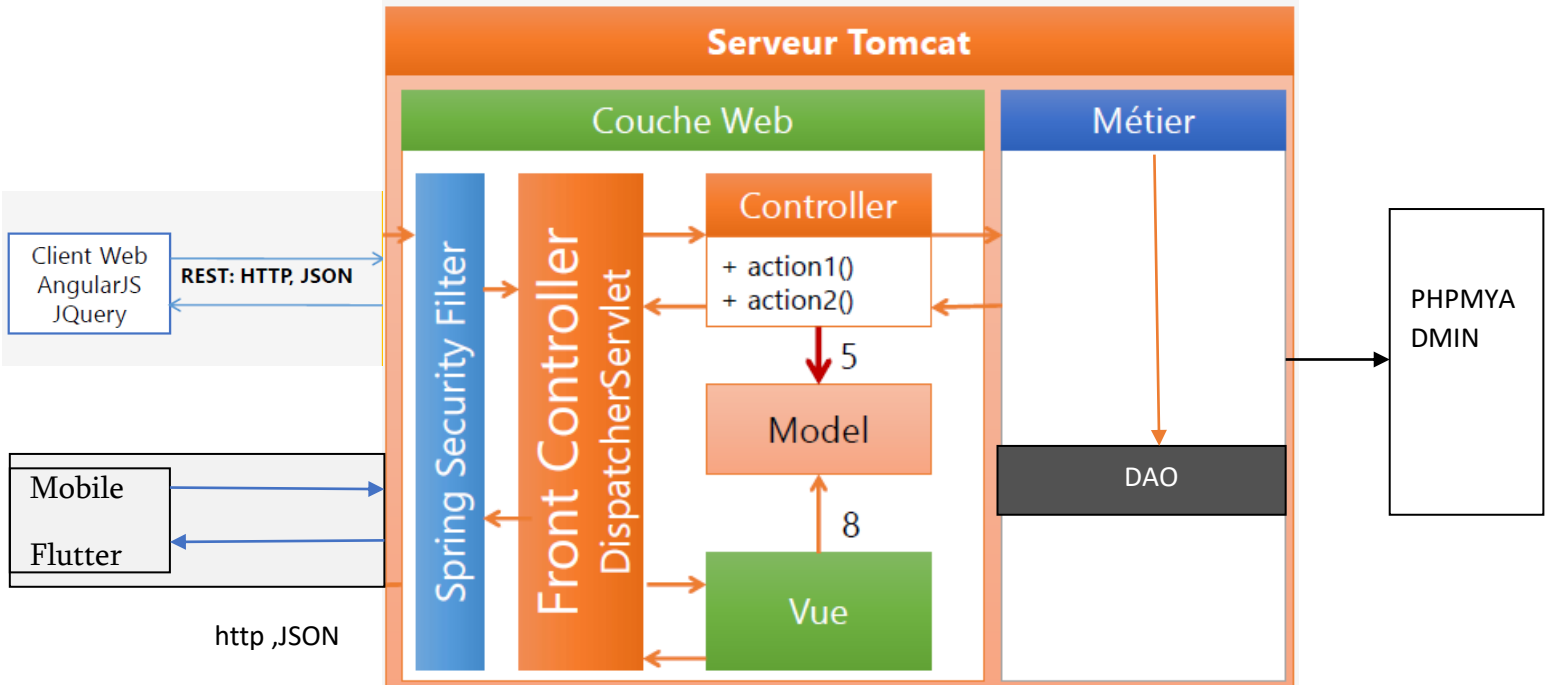
Partie 1 : Objectifs

On souhaite créer une application Web basée sur Spring et Angular qui permet de gérer des comptes bancaires. Chaque compte appartient à un client il existe deux types de comptes : Courant et Epargnes. Chaque Compte peut subir des opérations de types Débit ou crédit.

L'application se compose des couches suivantes :

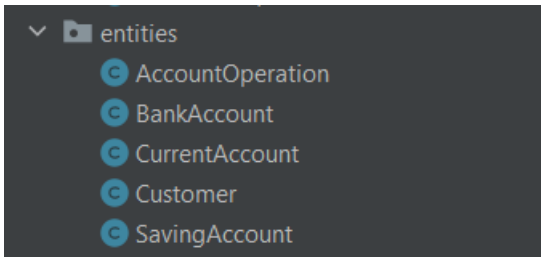
- Couche DAO (Entités JPA et Repositories)
- Couche Service définissant les opérations suivantes :
  - Ajouter des comptes
  - Ajouter des clients
  - Effectuer un débit (Retrait)
  - Effectuer un crédit (Versement)
  - Effectuer un virement
  - Consulter un compte
- La couche DTO
- Mappers (DTO <=>Entities)
- La couche Web (Rest Controllers)

Architectures :



Partie 2 : Réalisation

1-Creation des entités



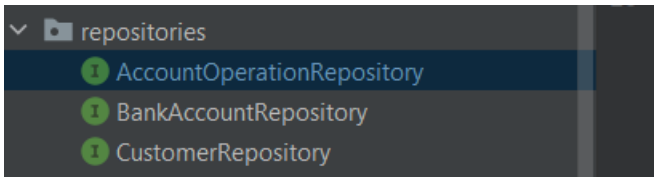
Pour l'héritage j'utilise, j'utilise la stratégie Single Table

```
2 inheritors   bertrand *
@Entity
@Inheritance(strategy = InheritanceType.SINGLE_TABLE)
@DiscriminatorColumn(name = "TYPE",length = 4, discriminatorType= DiscriminatorType.STRING)
@Data @NoArgsConstructor @AllArgsConstructor
public  class BankAccount {
```

```
@Entity
@Data
@AllArgsConstructor
@NoArgsConstructor
@DiscriminatorValue("CA")
public class CurrentAccount extends  BankAccount{
    private double overDraft;
}
```

```
17 usages   bertrand
@Entity
@Data @AllArgsConstructor @NoArgsConstructor
@DiscriminatorValue("SA")
public class SavingAccount extends BankAccount {
    private double interestRate;
}
```

2-Création des JPA repositories



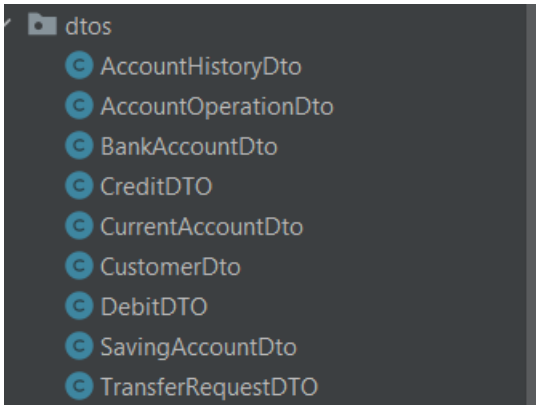
3-Couche service :

Interface service :

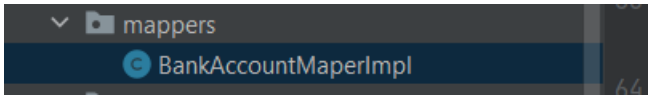
```
public interface BankAccountService {
3 usages  1 implementation  bertrand
CustomerDto saveCustomer(CustomerDto customer);
    1 implementation  bertrand
    CustomerDto updateCustomer(CustomerDto customer);
    1 usage  1 implementation  bertrand
    void deleteCustomer(Long customerId);
    1 usage  1 implementation  bertrand
    SavingAccountDto saveSavingBankAccount(double initialBalance, double interestRate, Long customerId) throws CustomerNotFoundException;
1 usage  1 implementation  bertrand
CurrentAccountDto saveCurrentBankAccount(double initialBalance, double overDraft, Long customerId) throws CustomerNotFoundException;
    2 usages  1 implementation  bertrand
    List<CustomerDto>listCustomers();
    1 usage  1 implementation  bertrand
    CustomerDto getcustomer(Long custometId) throws CustomerNotFoundException;
    1 usage  1 implementation  bertrand
    BankAccountDto getBankAccount(String accountId) throws BankAccountNotFoundException;
3 usages  1 implementation  bertrand
void debit(String accountId, double amount, String description) throws BankAccountNotFoundException, BalanceNotSufficientException;
3 usages  1 implementation  bertrand
void credit(String accountId, double amount, String description) throws BankAccountNotFoundException;
1 usage  1 implementation  bertrand
void transfer(String accountIdsource,String accountIdDestination, double amount) throws BankAccountNotFoundException, BalanceNotSufficientException;
    2 usages  1 implementation  bertrand
    List<BankAccountDto> bankAccountList();
    1 usage  1 implementation  bertrand
    List<AccountOperationDto>accountsHistory(String accountId);
    1 usage  1 implementation  bertrand
    AccountHistoryDto getaccountsHistory(String accountId, int page, int size) throws BankAccountNotFoundException;
    1 usage  1 implementation  bertrand
    List<CustomerDto> searchCustomers(String s);
}
```

Toutes ces fonctions sont implémentées dans une classe.

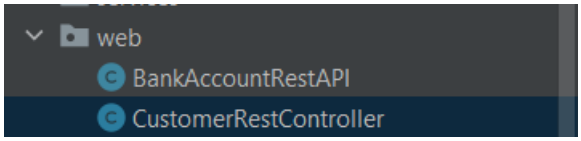
4-DTOs



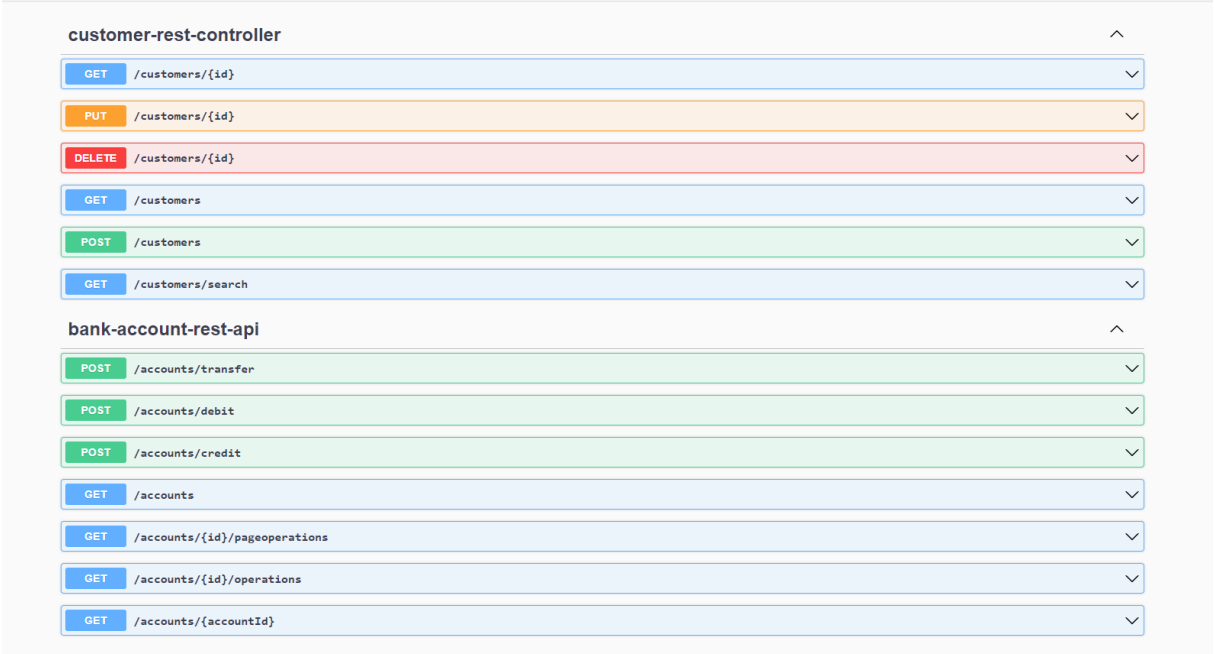
5-Mappers



6-Restful api



7- fonctionnalités Swagger



8-Test de quelques fonctions

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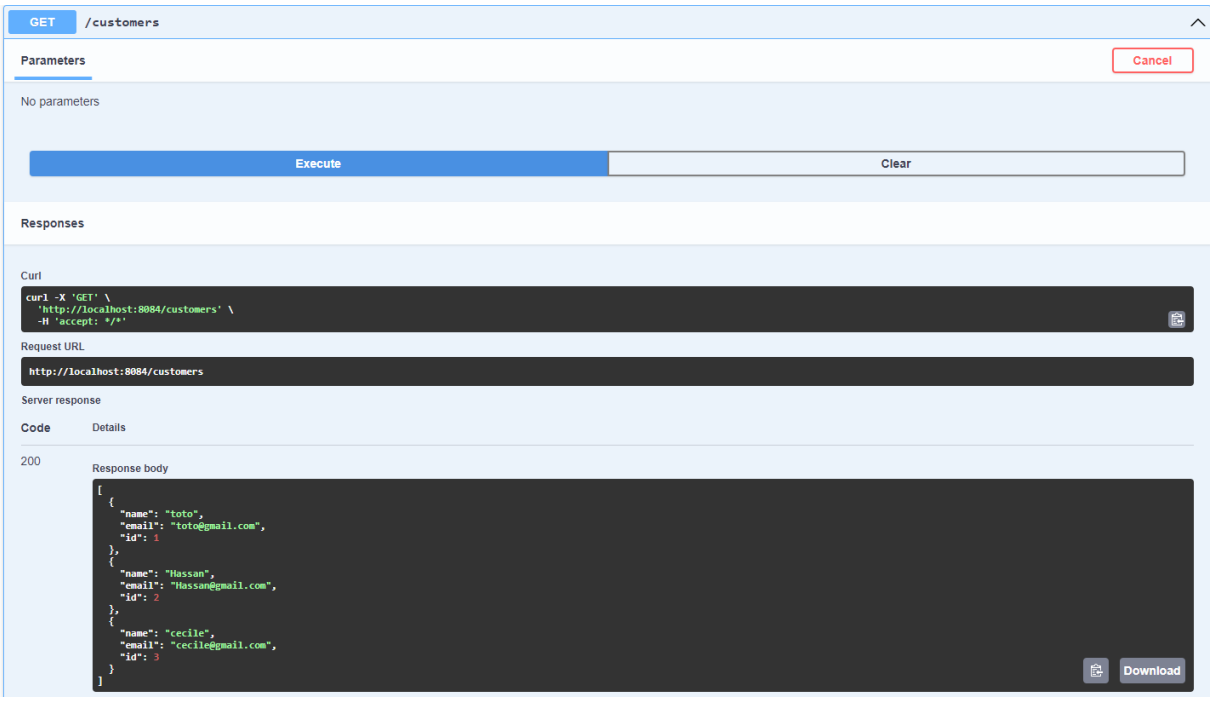
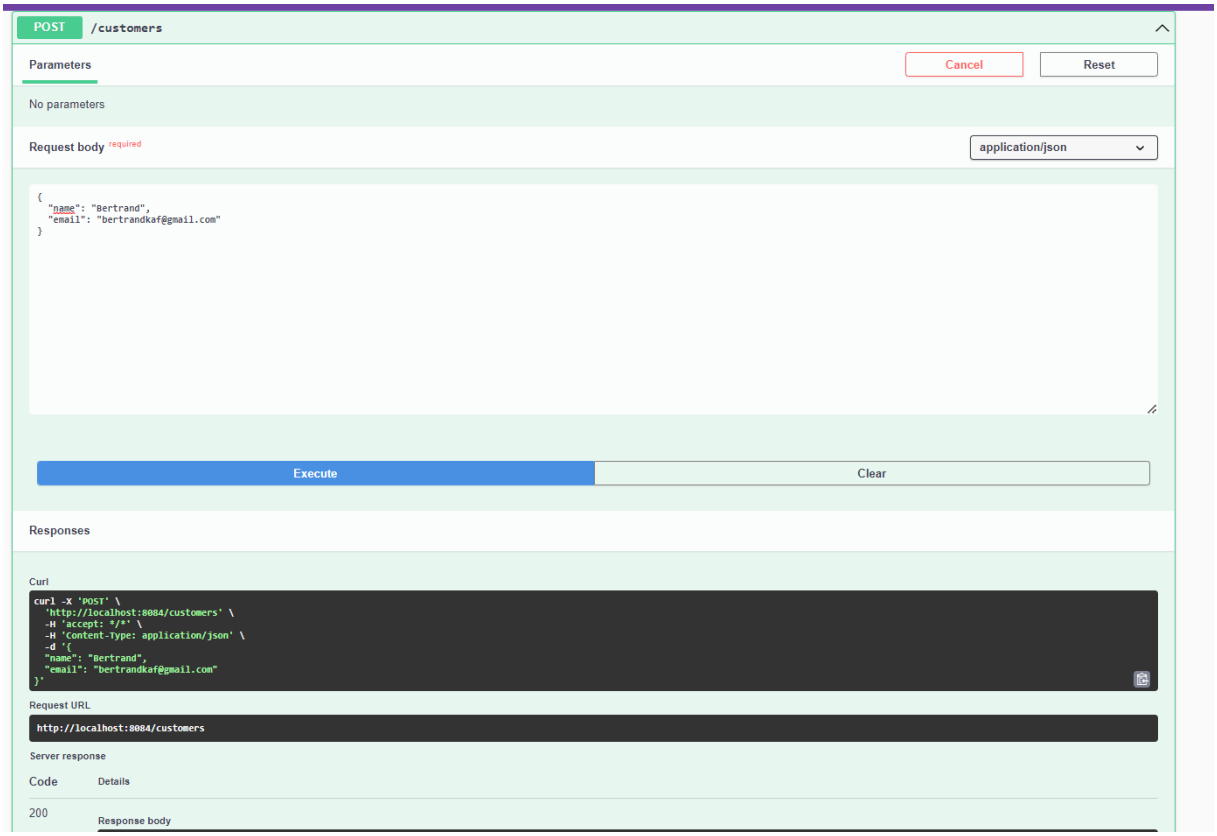
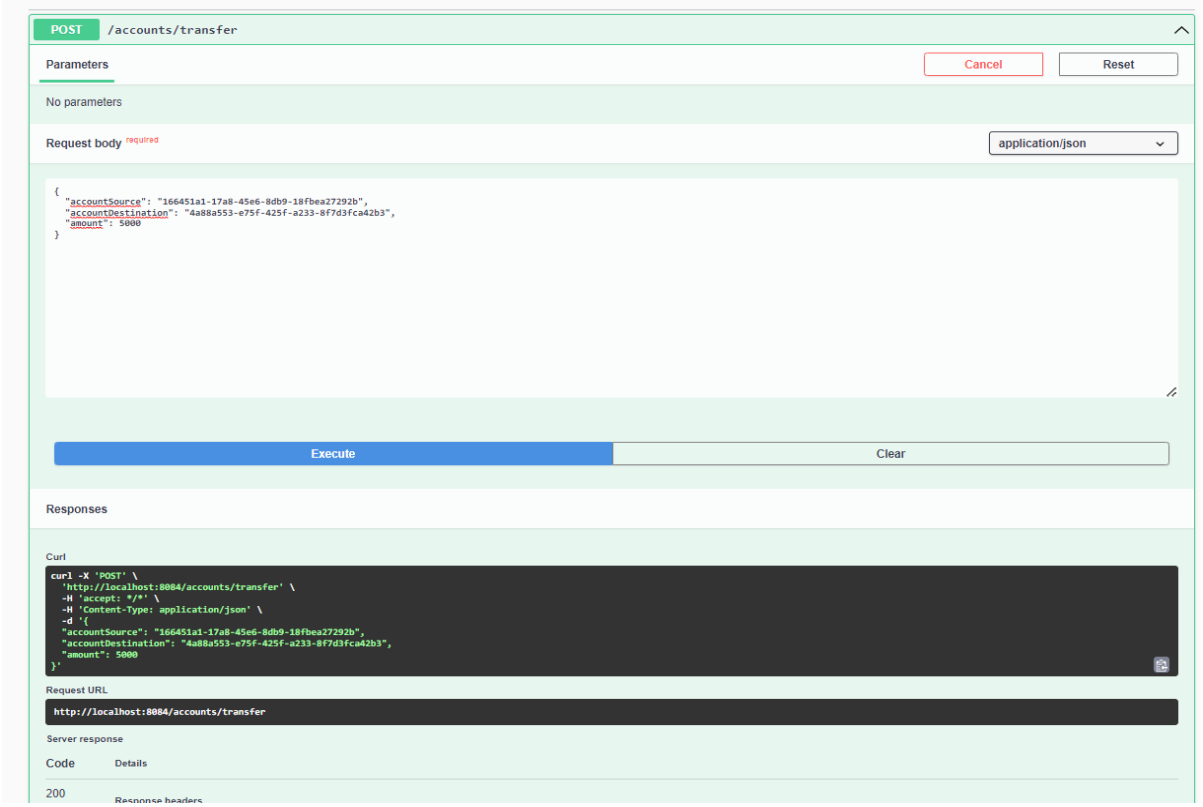



POST /customers
Parameters
Cancel
Reset
No parameters
Request body required
application/json
{
"name": "Bertrand",
"email": "bertrandkaf@gmail.com"
}
Execute
Clear
Responses
Curl
curl -X 'POST' \
'http://localhost:8084/customers' \
-H 'accept: */*' \
-H 'Content-Type: application/json' \
-d '{
"name": "Bertrand",
"email": "bertrandkaf@gmail.com"
}'
Request URL
http://localhost:8084/customers
Server response
Code
Details
200
Response body

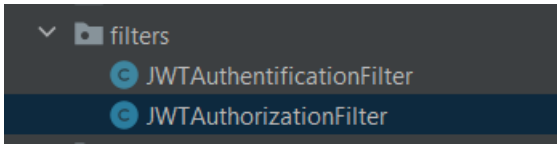
Transfert :


POST /accounts/transfer
Parameters
Cancel
Reset
No parameters
Request body required
application/json
{
"accountSource": "166451a1-17a8-45e6-8db9-18fbea27292b",
"accountDestination": "4a88a553-e75f-425f-a233-8f7d3fca42b3",
"amount": 5000
}
Execute
Clear
Responses
Curl
curl -X 'POST' \
'http://localhost:8084/accounts/transfer' \
-H 'accept: */*' \
-H 'Content-Type: application/json' \
-d '{
"accountSource": "166451a1-17a8-45e6-8db9-18fbea27292b",
"accountDestination": "4a88a553-e75f-425f-a233-8f7d3fca42b3",
"amount": 5000
}'
Request URL
http://localhost:8084/accounts/transfer
Server response
Code
Details
200
Response headers

Partie 3 : Security AuthentificationStatless : JWT && Spring

Il ajouter le package de l'authentification stateful avec userDetails plus un JWT filtre qui implémente 02 fonctions qui traitent le traitement sur une tentative d'authentification et le traitement après la réussite.

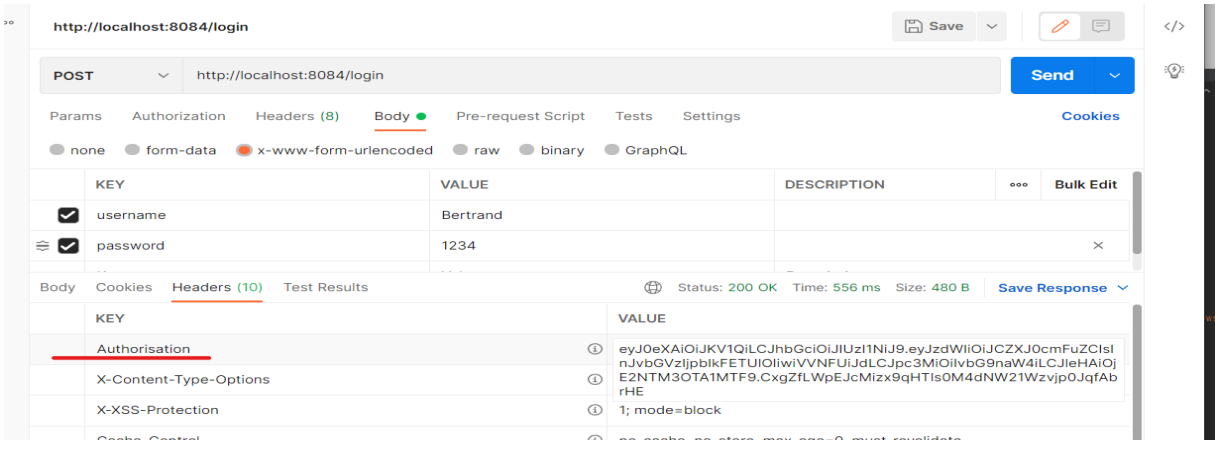
Et un autre filtre qui gère l'authentification avant de lasser la requête passée au 2 ème.




```java
public class JWTAuthentificationFilter extends UsernamePasswordAuthenticationFilter {
    1 usage
    private AuthenticationManager authenticationManager;
    @Override
    public Authentication attemptAuthentication(HttpServletRequest request, HttpServletResponse response) throws AuthenticationException {
        System.out.println("Attempt auth");
        String username=request.getParameter( s: "username");
        String password=request.getParameter( s: "password");
        System.out.println(username);
        System.out.println(password);
        UsernamePasswordAuthenticationToken authenticationToken=new UsernamePasswordAuthenticationToken(username,password);
        return authenticationManager.authenticate(authenticationToken);
    }

    @Override
    protected void successfulAuthentication(HttpServletRequest request, HttpServletResponse response, FilterChain chain, Authentication authResult) throws
        System.out.println("auth sucess");
        User user=(User) authResult.getPrincipal();
        Algorithm algorithm=Algorithm.HMAC256( secret: "mySecret1234");
        String jwtacessToken= JWT.create()
                .withSubject(user.getUsername())
                        .withExpiresAt(new Date(System.currentTimeMillis()+5*60*1000))
                                .withIssuer(request.getRequestURI().toString())
                                        .withClaim( name: "roles",user.getAuthorities().stream().map(
                                                ga->ga.getAuthority()
                                        ).collect(Collectors.toList()))
                                                .sign(algorithm);
        //envoie dans header
        response.setHeader( s: "Authorisation",jwtacessToken);
    }
```

Test de l'authentification sur postman



Gestion des accès par des annotations

```java
@RestController
@AllArgsConstructor
public class BankSecurityController {
    4 usages
    private SecurityServiceI securityServiceI;
    @PostAuthorize("hasAuthority('USER')")
    @GetMapping("/users")
    public List<AppUser>appUsers(){
        return  securityServiceI.listUsers();
    }

    @PostAuthorize("hasAuthority('ADMIN')")
    @PostMapping("/users")
    public AppUser addUser(@RequestBody AppUser appUser){
        return  securityServiceI.saveNewUser(appUser);
    }

    @PostMapping("/role")
    public AppRole addRole(@RequestBody AppRole appRole){
        return  securityServiceI.saveNewRole(appRole);
```