ECOLE NORMALE SUPÉRIEURE DE L'ENSEIGNEMENT TECHNIQUE DE MOHAMMEDIA

UNIVERSITÉ HASSAN II DE CASABLANCA

ENSET

المدرسة العليا لأساتذة التعليم التقني
المحمدية
جامعة الحسن الثاني بالدار البيضاء

Travaux Pratiques

FI BDCC S4 : Architecture distribuée JEE

TP : Gestion des produits (Spring Boot MVC)

● Introduction :

Thymeleaf est un Java XML/XHTML/HTML5 Template Engine qui peut travailler à la fois dans des environnements Web (Servlet) et celui de non Web. Il est mieux adapté pour diffuser XHTML/HTML5 sur View (View Layer) des applications Web basées sur MVC. Mais il peut traiter n'importe quel fichier XML même dans des environnements hors ligne (offline). Il fournit une intégration complète de Spring Framework.

● Enoncé :

On souhaite créer une application qui permet de gérer les produits en respectant les exigences fonctionnelles : Gérer les produits (ajouter, modifier, supprimer, consulter) et les exigences techniques : les données sont stockées dans une base de données MySQL, l'application se compose de trois couches (la couche DAO, la couche Métier, la couche Web basée sur MVC coté serveur en utilisant Thymeleaf, la sécurité est basée sur Spring Security).

● Architecture et conception :
o Architecture technique :
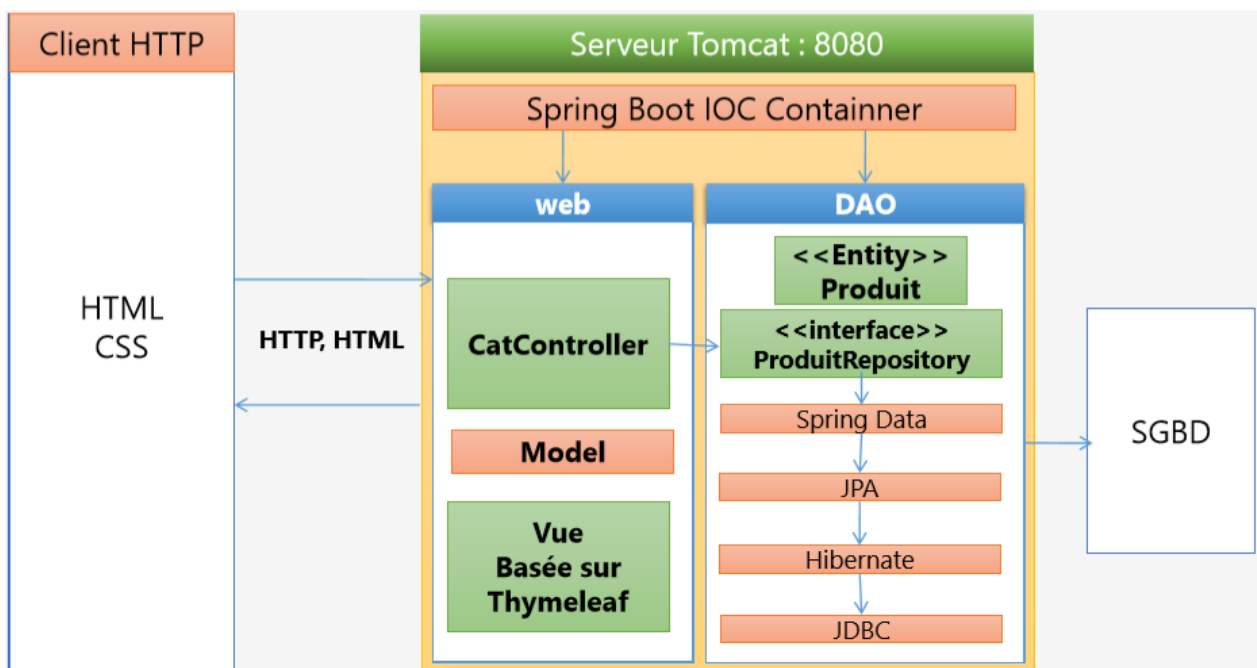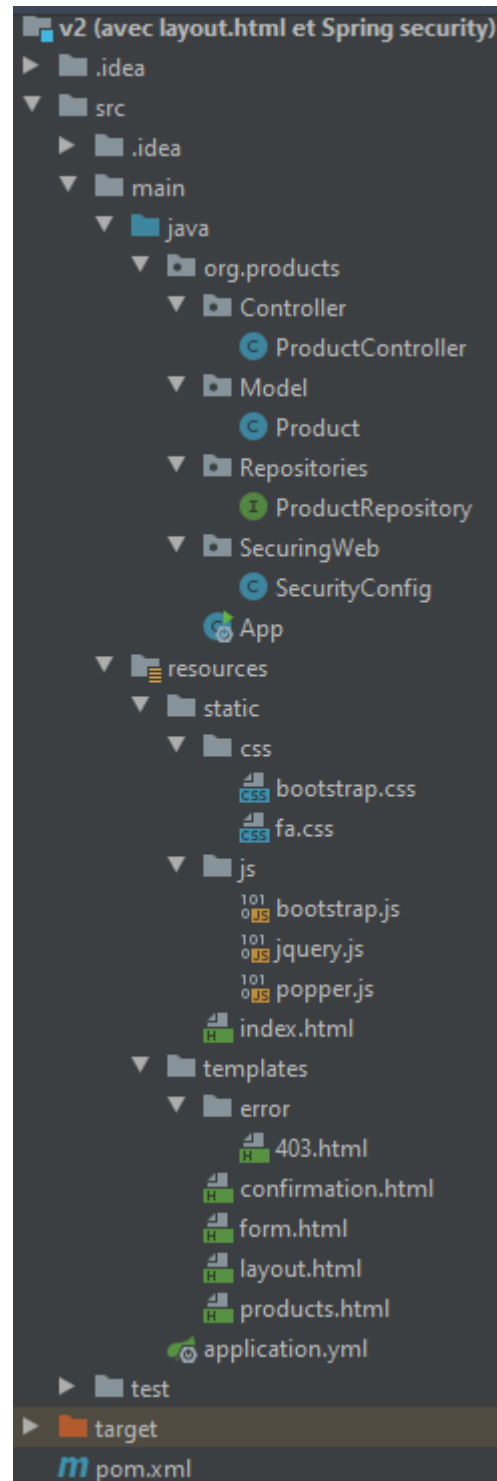

o Diagramme de cas d'utilisation :
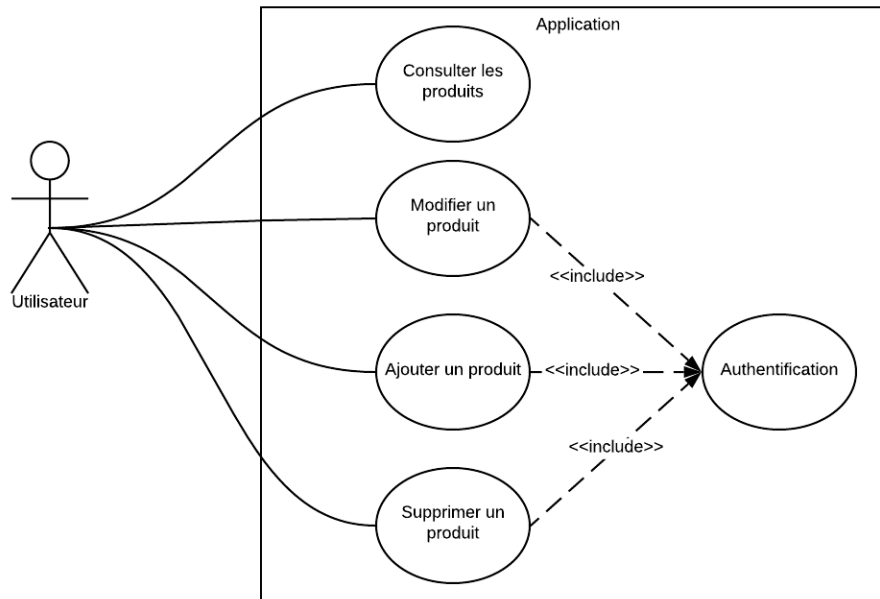
o Tableaux utilisés :

Product
- id : Long - designation : String - price : double - quantity : int

Nom	Type	Interclassement	Attributs	Null	Valeur par défaut	Commentaires	Extra
id 🔑	int(11)			Non	*Aucun(e)*		AUTO_INCREMENT
username	varchar(50)	utf8_general_ci		Non	*Aucun(e)*		
password	varchar(200)	utf8_general_ci		Non	*Aucun(e)*		
active	tinyint(1)			Non	*Aucun(e)*		
role	varchar(10)	utf8_general_ci		Non	user		

Users
- id : Long - username : String - password : String - active : boolean - role : String

Nom	Type	Interclassement	Attributs	Null	Valeur par défaut	Commentaires	Extra
id 🔑	int(11)			Non	*Aucun(e)*		AUTO_INCREMENT
username	varchar(50)	utf8_general_ci		Non	*Aucun(e)*		
password	varchar(200)	utf8_general_ci		Non	*Aucun(e)*		
active	tinyint(1)			Non	*Aucun(e)*		
role	varchar(10)	utf8_general_ci		Non	user		

• Code source :

o Structure du TP :

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- o ProductController :

```java
@RestController
public class ProductController {
    private final ProductRepository productRepository;
    public ProductController(ProductRepository productRepository) {
        this.productRepository = productRepository;
    }
    @RequestMapping(value="/products",method= RequestMethod.GET)
    public ModelAndView products(Model model,
                                 @RequestParam(name="page",defaultValue="0")int page,
                                 @RequestParam(name="size",defaultValue="4")int size,
                                 @RequestParam(name="mc",defaultValue="")String keyword){
        Page<Product> pageProducts = productRepository.search("%"+keyword+"%", PageRequest.of(page, size));
```

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```java
        model.addAttribute("products", pageProducts);
        model.addAttribute("currentPage", page);
        model.addAttribute("mc",keyword);
        int[] pages=new int[pageProducts.getTotalPages()];
        for(int i=0;i<pages.length;i++) pages[i]=i;
        model.addAttribute("pages", pages);
        return new ModelAndView("products");
    }

    @RequestMapping(value = "/admin/products/delete",method= RequestMethod.GET)
    public RedirectView delete(Model model, @RequestParam(name="id",required = true)Long id){
        productRepository.deleteById(id);
        return new RedirectView("/products");
    }

    @RequestMapping(value="/admin/form",method= RequestMethod.GET)
    public ModelAndView form(Model model, @RequestParam(name="id",defaultValue = "0") Long id){
        Product p = (productRepository.existsById(id))? productRepository.getOne(id):new Product();
        model.addAttribute("product", p);
        return new ModelAndView("form");
    }
    @RequestMapping(value="/admin/save",method=RequestMethod.POST)
    public ModelAndView save(Model model, @Valid Product p, BindingResult bindingResult){
        if(bindingResult.hasErrors()) return new ModelAndView("form");
        productRepository.save(p);
        model.addAttribute("product", p);
        return new ModelAndView("confirmation");
    }
    @RequestMapping(value="/403",method= RequestMethod.GET)
    public ModelAndView error(){
        return new ModelAndView("error/403");
    }
}
```

o Product :

```java
@Entity
@Data
public class Product {
    @Id
    @GeneratedValue(strategy = GenerationType.IDENTITY)
    private Long id ;
    @NotNull
    @Size(min=5,max=12)
    private String designation ;
    @NotNull
    @DecimalMin(value="100")
    private double price ;
    @NotNull
    @DecimalMin(value="0")
    private double quantity ;
}
```

o ProductRepository :

```java
public interface ProductRepository extends JpaRepository<Product,Long> {
    List<Product> findByDesignation(String designation);
    @Query("select p from Product p where p.designation like :x")
    Page<Product> search(@Param("x")String mc, Pageable pageable);
}
```

o SecurityConfig :

```java
@Configuration
@EnableWebSecurity
public class SecurityConfig extends WebSecurityConfigurerAdapter {
    private final DataSource dataSource;
    public SecurityConfig(DataSource dataSource) {
```

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```java
        this.dataSource = dataSource;
    }
    @Override
    protected void configure(AuthenticationManagerBuilder auth) throws Exception {
        auth.jdbcAuthentication().dataSource(dataSource).
                usersByUsernameQuery("select username as principal, password as credentials, active
from users where username = ?").
                authoritiesByUsernameQuery("select username as principal, role, active from users where
username = ?").rolePrefix("ROLE_").
                passwordEncoder(new BCryptPasswordEncoder());
    }
    protected void configure(HttpSecurity http) throws Exception {
        http.formLogin();
        http.authorizeRequests().antMatchers("/admin/*").hasRole("ADMIN");
        http.exceptionHandling().accessDeniedPage("/403");
    }
}
}
```

o 403.html :

```html
<!DOCTYPE html>
<html xmlns="http://www.w3.org/1999/xhtml"
    xmlns:layout="http://www.ultraq.net.nz/thymeleaf/layout"
    layout:decorator="layout" lang="en">
    <body>
        <div layout:fragment="content">
            <table class="position-absolute w-100 h-100">
                <tr>
                    <td style="vertical-align:middle;" class="text-center">
                        <h1>You don't have the authorization to access to this page</h1>
                    </td>
                </tr>
            </table>
        </div>
    </body>
</html>
```

o confirmation.html :

```html
<!DOCTYPE html>
<html xmlns="http://www.w3.org/1999/xhtml"
    xmlns:th="http://www.thymeleaf.org"
    xmlns:layout="http://www.ultraq.net.nz/thymeleaf/layout"
    layout:decorator="layout" lang="en">
    <body>
        <div layout:fragment="content">
            <table class="position-absolute w-100 h-100">
                <tr>
                    <td style="vertical-align:middle;">
                        <div class="w-25 m-auto">
                            <div class="card border-dark mb-3">
                                <div class="card-header">Confirmation</div>
                                <div class="card-body">
                                    <h5 class="card-title" th:text="${'ID : '+ product.id}"></h5>
                                    <h5 class="card-title" th:text="${'Designation : '+
product.designation}"></h5>
                                    <h5 class="card-title" th:text="${'Price : '+ product.price}"></h5>
                                </div>
                            </div>
                        </div>
                    </td>
                </tr>
```

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```
            </table>
            <script>
                $(function(){
                    $('ul.navbar-nav li').eq(2).addClass('active');
                });
            </script>
        </div>
    </body>
</html>
```

o form.html :

J'ai utilisé l'input **name="_csrf"** contre les attaques CSRF dans toute les formulaires.

```html
<!DOCTYPE html>
<html xmlns="http://www.w3.org/1999/xhtml"
        xmlns:th="http://www.thymeleaf.org"
        xmlns:layout="http://www.ultraq.net.nz/thymeleaf/layout"
        layout:decorator="layout" lang="en">
    <body>
        <div layout:fragment="content">
            <table class="position-absolute w-100 h-100">
                <tr>
                    <td style="vertical-align:middle;">
                        <div class="w-25 m-auto">
                            <form th:action="${'/admin/save'}" method="post">
                                <div th:object="${product}">
                                    <div class="form-group">
                                        <input type="hidden" name="_csrf" value="61390c32-08f8-4c85-
b55afe20bc7f0913" />
                                        <input class="form-control" type="hidden" name="id"
th:value="*{id}"/>
                                    </div>
                                    <div class="form-group">
                                        <label class="control-label">Designation : </label>
                                        <input class="form-control" type="text" name="designation"
th:value="*{designation}"/>
                                        <span class="valid-feedback d-block"
th:errors="*{designation}"></span>
                                    </div>
                                    <div class="form-group">
                                        <label class="control-label">Price : </label>
                                        <input class="form-control" type="number" min="100"
name="price" th:value="*{price}"/>
                                        <span class="valid-feedback d-block"
th:errors="*{price}"></span>
                                    </div>
                                    <div class="form-group">
                                        <label class="control-label">Quantity : </label>
                                        <input class="form-control" type="number" min="100"
name="quantity" th:value="*{quantity}"/>
                                        <span class="valid-feedback d-block"
th:errors="*{quantity}"></span>
                                    </div>
                                    <div>
                                        <input class="btn btn-primary" type="submit" value="Save"/>
                                    </div>
                                </div>
                            </form>
                        </div>
                    </td>
```

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```html
            </tr>
        </table>
        <script>
            $(function(){
                $('ul.navbar-nav li').eq(2).addClass('active');
            });
        </script>
    </div>
  </body>
</html>
```

- o layout.html :

```html
<!DOCTYPE html>
<html xmlns:th="http://www.thymeleaf.org"
      xmlns:layout="http://www.ultraq.net.nz/thymeleaf/layout" lang="en">
    <head>
        <meta charset="UTF-8">
        <title>Title</title>
        <link href="/css/bootstrap.css" rel="stylesheet" type="text/css">
        <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-
awesome/4.7.0/css/font-awesome.min.css">

        <script src="/js/jquery.js" type="application/javascript"></script>
        <script src="/js/popper.js" type="application/javascript"></script>
        <script src="/js/bootstrap.js" type="application/javascript"></script>
    </head>
    <body>
        <nav class="navbar fixed-top navbar-expand-lg navbar-dark bg-dark">
            <a class="navbar-brand" href="/">TP_CAT_MVC</a>
            <button class="navbar-toggler" type="button" data-toggle="collapse" data-
target="#navbarSupportedContent" aria-controls="navbarSupportedContent" aria-expanded="false" aria-
label="Toggle navigation">
                <span class="navbar-toggler-icon"></span>
            </button>
            <div class="collapse navbar-collapse" id="navbarSupportedContent">
                <ul class="navbar-nav mr-auto">
                    <li class="nav-item">
                        <a class="nav-link" href="/">Home</a>
                    </li>
                    <li class="nav-item">
                        <a class="nav-link" href="/products">Products</a>
                    </li>
                    <li class="nav-item">
                        <a class="nav-link" href="/admin/form">Add product</a>
                    </li>
                    <li class="nav-item">
                        <a class="nav-link " href="/login?logout">Log out</a>
                    </li>
                </ul>
                <form class="form-inline my-2 my-lg-0" action="/products?page=0" method="GET">
                    <input name="mc" class="form-control mr-sm-2" type="search" placeholder="Keyword"
aria-label="Search">
                    <button class="btn btn-outline-success my-2 my-sm-0" type="submit">Search</button>
                </form>
            </div>
        </nav>
        <section layout:fragment="content">

        </section>
```

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```html
        </body>
</html>
```

- o products.html :

```html
<!DOCTYPE html>
<html xmlns="http://www.w3.org/1999/xhtml"
      xmlns:th="http://www.thymeleaf.org"
      xmlns:layout="http://www.ultraq.net.nz/thymeleaf/layout"
      layout:decorator="layout" lang="en">
    <body>
        <div layout:fragment="content">
            <br/><br/><br/><br/><br/>
            <div class="container">
                <div class="card border-dark mb-3">
                    <div class="card-header">List of products</div>
                    <div>
                        <table class="table table-striped">
                            <thead>
                            <tr>
                                <th>Id</th>
                                <th>Designation</th>
                                <th>Price</th>
                                <th>Quantity</th>
                                <th style="width: 70px;">#</th>
                            </tr>
                            </thead>
                            <tbody>
                            <tr th:each="p:${products.content}">
                                <td th:text="${p.id}"></td>
                                <td th:text="${p.designation}"></td>
                                <td th:text="${p.price}"></td>
                                <td th:text="${p.quantity}"></td>
                                <td>
                                    <a th:href='${"/admin/form?id="+p.id}' class="fa fa-
edit"></a> 

                                    <a th:href="${'/admin/products/delete?id='+p.id}" class="fa fa-
trash"></a>
                                </td>
                            </tr>
                            </tbody>
                        </table>
                        <nav aria-label="Page navigation example">
                            <ul class="pagination justify-content-end">
                                <li th:class="${currentPage == 0}?'page-item disabled':'page-item'">
                                    <a class="page-link" th:href="@{products(page=${currentPage -
1},mc=${mc})}" aria-label="Previous">
                                        <span aria-hidden="true">&laquo;</span>
                                    </a>
                                </li>

                                <li th:each="p:${pages}" th:class="(${currentPage==p}? 'page-item
active': 'page-item')">
                                    <a th:href="@{products(page=${p},mc=${mc})}" th:text="${p}"
class="page-link"></a>
                                </li>

                                <li th:class="${currentPage == products.getTotalPages()-1}?'page-item
disabled':'page-item'">
```

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```html
                        <a class="page-link" th:href="@{products(page=${currentPage +
1},mc=${mc})}" aria-label="Next">
                                <span aria-hidden="true">&raquo;</span>
                        </a>
                    </li>
                </ul>
            </nav>
        </div>
    </div>
</div>
<script>
    $(function(){
        $('ul.navbar-nav li').eq(1).addClass('active');
    });
</script>
        </div>
    </body>
</html>
```

o application.yml :

```yaml
server:
  port: 8082
spring:
  datasource:
    url: jdbc:mysql://localhost:3306/db_cat_mvc_1
    username: root
    password:
  jpa:
    hibernate:
      ddl-auto: update
```

o pom.xml :

```xml
<?xml version="1.0" encoding="UTF-8"?>
<project xmlns="http://maven.apache.org/POM/4.0.0"
         xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
         xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/xsd/maven-
4.0.0.xsd">
    <modelVersion>4.0.0</modelVersion>
    <groupId>org.enset</groupId>
    <artifactId>TP_CAT</artifactId>
    <version>1.0-SNAPSHOT</version>

    <description>Project to manipulate products</description>

    <parent>
        <groupId>org.springframework.boot</groupId>
        <artifactId>spring-boot-starter-parent</artifactId>
        <version>2.2.4.RELEASE</version>
        <relativePath/>
    </parent>

    <properties>
        <java.version>1.8</java.version>
    </properties>

    <dependencies>
        <dependency>
            <groupId>org.springframework.boot</groupId>
            <artifactId>spring-boot-starter-data-jpa</artifactId>
        </dependency>
```

```xml
        <dependency>
            <groupId>org.springframework.boot</groupId>
            <artifactId>spring-boot-starter-web</artifactId>
        </dependency>
        <dependency>
            <groupId>mysql</groupId>
            <artifactId>mysql-connector-java</artifactId>
            <scope>runtime</scope>
        </dependency>
        <dependency>
            <groupId>org.projectlombok</groupId>
            <artifactId>lombok</artifactId>
            <version>1.18.8</version>
            <scope>provided</scope>
        </dependency>
        <dependency>
            <groupId>org.springframework.boot</groupId>
            <artifactId>spring-boot-devtools</artifactId>
            <scope>runtime</scope>
            <optional>true</optional>
        </dependency>
        <dependency>
            <groupId>org.springframework.boot</groupId>
            <artifactId>spring-boot-starter-thymeleaf</artifactId>
        </dependency>
        <dependency>
            <groupId>nz.net.ultraq.thymeleaf</groupId>
            <artifactId>thymeleaf-layout-dialect</artifactId>
        </dependency>
        <dependency>
            <groupId>org.springframework.boot</groupId>
            <artifactId>spring-boot-starter-security</artifactId>
        </dependency>
    </dependencies>

    <build>
        <plugins>
            <plugin>
                <groupId>org.springframework.boot</groupId>
                <artifactId>spring-boot-maven-plugin</artifactId>
            </plugin>
        </plugins>
    </build>
</project>
```
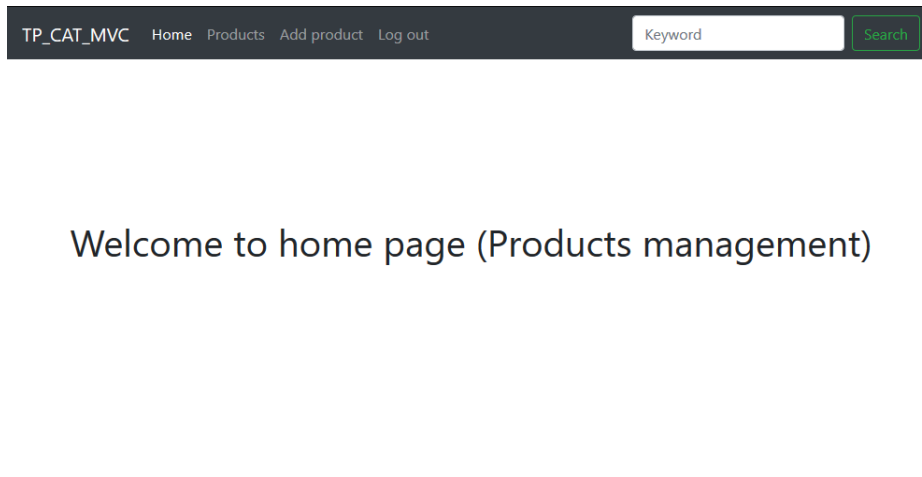
- **Exécution :**
  - Page d'accueil :

Welcome to home page (Products management)

- o Page de liste de produits :

List of products

Id	Designation	Price	Quantity	#
1	prod	478.0	5.0	
2	prod1	74.0	20.0	
4	prod	478.0	5.0	
7	prod7	478.0	100.0	

« 0 1 2 3 »

- o Ajouter un produit :

Pour ajouter un produit il faut s'authentifier autant qu'administrateur :

Please sign in

admin

••••

Sign in

Confirmation

ID : 18

Designation : TP rapport

Price : 100.0

Designation :

produit de TP rapport

size must be between 5 and 12

Price :

100.0

Quantity :

1000.0

Save

| 18 | TP rapport | 100.0 | 1000.0 | |

   o Modifier ou supprimer un produit :

Il faut aussi s'authentifier pour exécuter cette action.

• Conclusion :

En utilisant Spring Boot MVC (Spring Security, Thymeleaf …) la realization des applications Web devient très facile et aussi très performante car on sait que coté sécurité et coté optimisation il y a un framework derrière qui fait ça d'une excellente manière.

Code source GitHub : https://github.com/Medomane/JEE ainsi une simulation mp4.