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SpringBoot E-Commerce Platform

Introduction

The SpringBoot E-Commerce Platform is a comprehensive web application designed to facilitate online shopping experiences. Developed using the robust Spring Boot framework, this platform leverages Java to create a secure, efficient, and user-friendly environment for both customers and administrators.

This platform features secure registration and login processes for users, including role-based access control for regular users and administrators. It offers a detailed overview of available products with intuitive search and filter functionalities, ensuring customers can easily find and purchase products. The ordering process is simplified with an easy-to-use order form and order tracking capabilities, enhancing the user experience.

For administrators, the platform provides an extensive dashboard with tools to manage products, user roles, and order statuses, ensuring smooth operation and maintenance. Advanced security configurations protect user data and application integrity, including encrypted passwords and customizable access restrictions.

1. Technology Used

1.1 POM.XML

The `pom.xml` file is used in the Maven project for an application written in Java, utilizing the Spring Boot framework. This file contains detailed configuration information for the project, including dependencies, framework versions, and other tools and libraries used in the application.

The project uses Spring Boot version `2.6.1`.

The project is configured with various Maven dependencies, including:

- `spring-boot-starter-thymeleaf`: for creating views based on Thymeleaf.
- `spring-boot-starter-web`: basic support for creating web applications, including RESTful applications.
- `spring-boot-starter-jdbc`: support for JDBC.

- `spring-boot-starter-security`: tools for application security.
- `spring-boot-starter-data-jpa`: support for the Java Persistence API.
- JDBC driver for Oracle (`ojdbc11`).
- Various testing tools (`spring-boot-starter-test`, `spring-security-test`).

The `pom.xml` file also contains information about the Java version used (`java.version` set to 11) and other dependencies such as Lombok (`lombok.version`), Bootstrap (`bootstrap.version`), and various libraries supporting webjars and validation.

1.2 Models

In the Spring Boot project, the `models` folder serves as the repository for model classes, which represent the application's data and business logic. It contains entity classes where each class represents a database table, and its fields correspond to table columns. Annotations like `@Entity`, `@Table`, `@Id`, and `@Column` are used to specify mappings.

These are later used in controllers, views, and DAO classes.

1.3 DAO Files

Each DAO class typically corresponds to one database table or a specific set of data-related operations. These classes contain methods for performing CRUD (Create, Read, Update, Delete) operations and other application-specific queries.

DAO classes are used to retrieve, update, delete, or add data to the database. This adheres to the Single Responsibility Principle, where the DAO is responsible only for database operations, while business logic is handled in the service layer.

1.4 Controllers

Controllers are crucial in the MVC (Model-View-Controller) architecture. They are responsible for processing incoming client requests, deciding on actions to be performed, and delegating tasks to appropriate application components.

Controllers contain methods that respond to various HTTP requests (GET, POST, PUT, DELETE, etc.). These methods are marked with appropriate annotations such as `@GetMapping` and `@PostMapping`.

The project also includes an exception handling controller to manage errors during request processing.

1.5 Security Configuration

The Security Configuration file is set up to secure the web application by specifying which resources are publicly accessible and which require authentication. For example, paths such as “/”, “/index”, and “/register” are publicly accessible, allowing access to main and registration pages without logging in.

A `CustomUserDetailsService` is used to define a custom method for retrieving user data. A `PasswordEncoder` (BCryptPasswordEncoder in this case) is used for secure hashing and verifying user passwords.

Different access levels are specified for different user roles (ADMIN, USER), allowing control over access to specific parts of the application. For instance, only users with the “ADMIN” role can access “/main admin”.

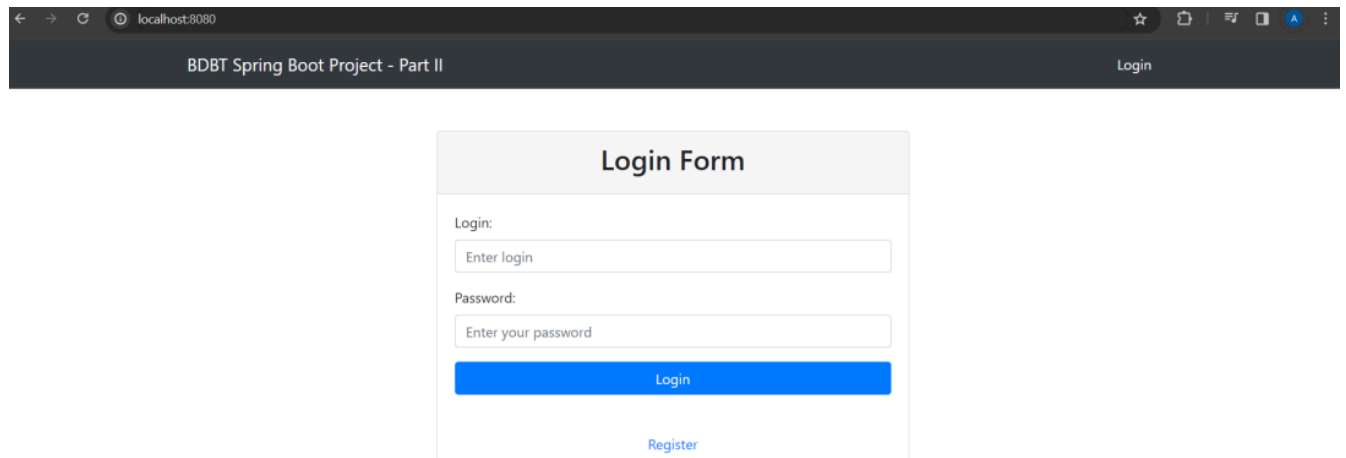
1.6 Application Properties File

The `application.properties` file in Spring Boot is used to configure various aspects of the application, such as database settings, logging, and other configuration parameters. It also allows disabling the default whitelabel error page in Spring Boot.

1.7 Templates

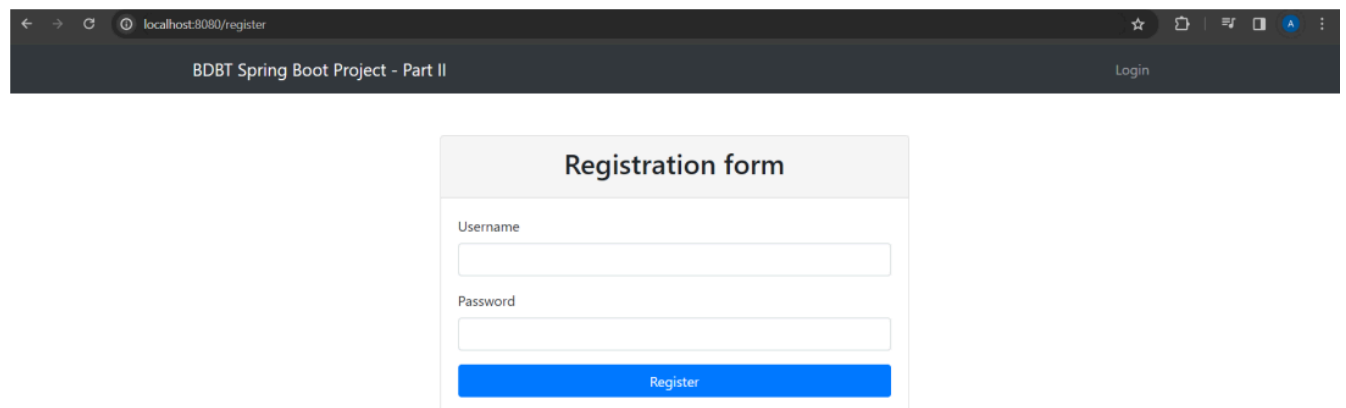
In the project, the templates folder is used to store template files, which are part of the view layer in the MVC (Model-View-Controller) architecture. These templates are used to represent data in a format understandable and accessible to the end user.

2. Application Presentation



The screenshot shows a web browser window with the address bar at `localhost:8080`. The page title is "BDBT Spring Boot Project - Part II" and there is a "Login" link in the top right. The main content is a "Login Form" with a light gray header. Below the header, there is a "Login:" label followed by a text input field with the placeholder "Enter login". Below that is a "Password:" label followed by a text input field with the placeholder "Enter your password". At the bottom of the form is a blue "Login" button and a blue "Register" link.

Figure 1: Login menu



The screenshot shows a web browser window with the address bar at `localhost:8080/register`. The page title is "BDBT Spring Boot Project - Part II" and there is a "Login" link in the top right. The main content is a "Registration form" with a light gray header. Below the header, there is a "Username" label followed by a text input field. Below that is a "Password" label followed by a text input field. At the bottom of the form is a blue "Register" button.

Figure 2: Registration page

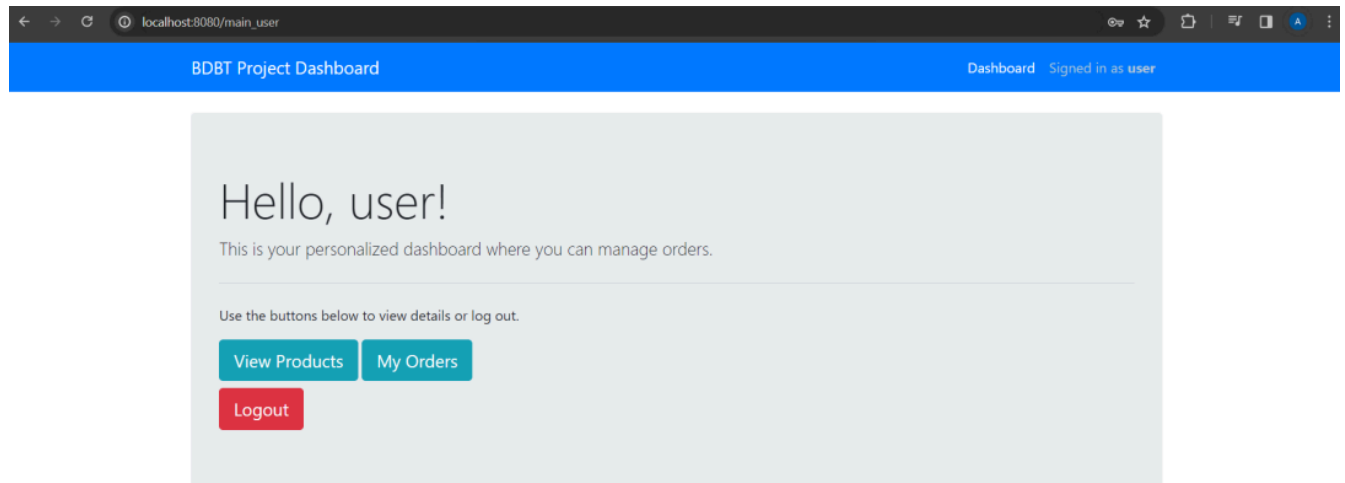


Figure 3: Customer's page

The screenshot shows a web browser at localhost:8080/towaryUser. The page has a blue header with 'BDBT Project Dashboard' on the left and 'Dashboard Signed in as user Logout' on the right. The main content area is white and features a table titled 'Towary'. The table has five columns: ID, Name, Price, Installation Type, and Category. The data is as follows:

ID	Name	Price	Installation Type	Category
1	TRANZYSTOR FET wzm 7	12.0	powierzchniowy	Bezzrodlowy
2	TRANZYSTOR FET wzm 1	7.0	powierzchniowy	Bezzrodlowy
4	Rezystor ZMIENNY rz3	8.5	przewlekany	Pasywny
8	Plytka jednostronna	10.5	powierzchniowy	Zrodlo
9	Rezystor test	8.5	przewlekany	Pasywny
43	test	250.0	powierzchniowy	Zrodlo
45	TRANZYSTOR FET wzm 7	12.0	powierzchniowy	Bezzrodlowy
46	TRANZYSTOR FET wzm 6	18.0	mieszany	Bezstratny
52	test13	130.0	przewlekany	Pasywny
54	test13	150.0	przewlekany	Pasywny

Figure 4: Available products page

Place Order

Product:

Quantity:

Kod Rabatowy:

Place Order

Figure 5: Order menu

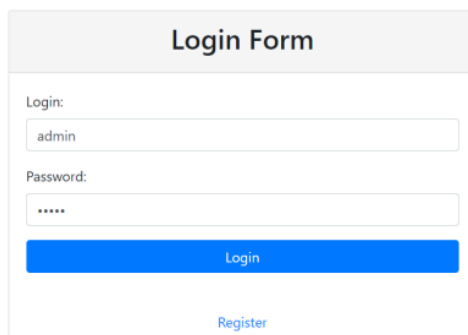
BDBT Project Dashboard

DashboardSigned in as userLogout

Moje Zamówienia

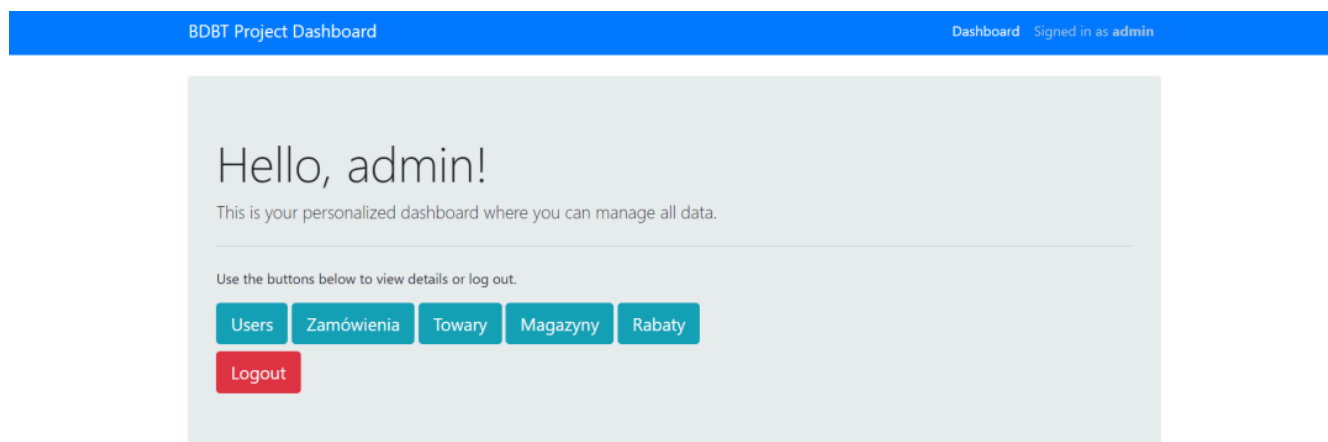
ID	NAZWA	Ilość	Cena	Rabat	Data	Status
43	TRANZYSTOR FET wzm 1	3	21.0		2024-01-10	Zwrocone
61	TRANZYSTOR FET wzm 1	30	210.0		2024-01-14	Zwrocone
41	TRANZYSTOR FET wzm 1	300	21.0		2024-01-09	Zrealizowane
65	Rezystor ZMIENNY rz3	5	0.0	1.0	2024-01-14	Odrzucone
42	Rezystor test	30	135.0		2024-01-09	Zrealizowane
63	test	2	0.0	1.0	2024-01-14	Odrzucone
64	test	5	62.5	0.95	2024-01-14	W trakcie realizacji

Figure 6: Customer's orders



The image shows a login form titled "Login Form". It contains two input fields: "Login:" with the text "admin" and "Password:" with masked characters "*****". Below the password field is a blue "Login" button. At the bottom of the form is a blue "Register" link.

Figure 7: Admin login page



The image shows the admin dashboard. The header is blue with "BDBT Project Dashboard" on the left and "Dashboard Signed in as admin" on the right. The main content area is light gray and contains the text "Hello, admin!" followed by "This is your personalized dashboard where you can manage all data." Below this is a horizontal line and the text "Use the buttons below to view details or log out." There are five teal buttons: "Users", "Zamówienia", "Towary", "Magazyny", and "Rabaty". Below these is a red "Logout" button.

Figure 8: Admin page

The screenshot shows a web browser at localhost:8080/Users. The dashboard header is blue with 'BDBT Project Dashboard' on the left, 'Dashboard Signed in as admin' in the center, and a red 'Logout' button on the right. Below the header, the title 'Users' is centered. A table with three columns: ID, USERNAME, and ROLE, lists eight users. The roles are shown as dropdown menus.

ID	USERNAME	ROLE
30	staff	STAFF
31	mainAdmin	ADMIN
28	user	USER
29	admin	ADMIN
42	sasha	USER
41	ernestiko	USER
43	kyrylo	USER
44	tanya007	USER

Figure 9: Table of registered customers

This screenshot is similar to Figure 9 but shows the role dropdown menu for the user 'user' (ID 28) open. The dropdown menu lists three options: 'USER' (highlighted in blue), 'STAFF', and 'ADMIN'. The rest of the table and dashboard header are identical to Figure 9.

ID	USERNAME	ROLE
30	staff	STAFF
31	mainAdmin	ADMIN
28	user	USER STAFF ADMIN
29	admin	ADMIN
42	sasha	USER
41	ernestiko	USER
43	kyrylo	USER
44	tanya007	USER

Figure 10: Managing users page

← → ↻ 📄 localhost:8080/Orders ☆ 🗄️ 📄 📄 📄

BDBT Project Dashboard Dashboard Signed in as admin Logout

Orders

ID	IDKLIENTA	NAZWA	Ilość	Cena	Data	Rabat	Status	Actions
63	28	test	2	0.0	2024-01-14	1.0	Odrzucone	Update
64	28	test	5	62.5	2024-01-14	0.95	W trakcie realizacji	Update
65	28	Rezystor ZMIENNY rz3	5	0.0	2024-01-14	1.0	Odrzucone	Update
66	43	test	100	0.0	2024-01-14	1.0	Zrealizowane	Update
67	43	test	2	25.0	2024-01-14	0.95	W trakcie realizacji	Update
62	41	Płytki jednostronna	10	105.0	2024-01-14		W trakcie realizacji	Update
68	43	test13	100	0.0	2024-01-14	1.0	W trakcie realizacji	Update
43	28	TRANZYSTOR FET wzm 1	3	21.0	2024-01-10		Zwrocone	Update
61	28	TRANZYSTOR FET wzm 1	30	210.0	2024-01-14		Zwrocone	Update
42	28	Płytki jednokier	30	135.0	2024-01-09		Zrealizowane	Update

Figure 11: Orders managing page

← → ↻ 📄 localhost:8080/Products ☆ 🗄️ 📄 📄 📄

BDBT Project Dashboard Dashboard Signed in as admin Logout

Products

IDTOWARU	NAZWA	CENA	TYPINSTALACJI	RODZAJTOWARU	IDMAGAZYNU	Actions
1	TRANZYSTOR FET wzm 7	12.0	powierzchniowy	Bezzrodlowy	1	Delete Edit
2	TRANZYSTOR FET wzm 1	7.0	powierzchniowy	Bezzrodlowy	1	Delete Edit
4	Rezystor ZMIENNY rz3	8.5	przewlekany	Pasywny	1	Delete Edit
8	Płytki jednostronna	10.5	powierzchniowy	Zrodlo	1	Delete Edit
9	Rezystor test	8.5	przewlekany	Pasywny	2	Delete Edit

Figure 12: Table of products

Edit Product

TRANZYSTOR FET wzm 7

12,0

powierzchniowy

Bezzrodlowy

1

Update Product

Figure 13: Changing products page

BDBT Project Dashboard

Nazwa Email Nr telefonu Add Magazine

ID	NAZWA	EMAIL	NRTELEFONU	Actions
1	Glowny_magazyn	glowny.magazyn@hurtownia.pl	111-111-111	Delete Edit
2	testupdate	email@email	333333333	Delete Edit
14	test	email@123Email	123123123	Delete Edit

Figure 14: Table of users

BDBT Project Dashboard

Komunikat ze strony localhost:8080

Czy na pewno chcesz usunąć ten magazyn i wszystkie powiązane dane?

OK

Anuluj

Dashboard Signed in as admin Logout

Add Magazine

ID	NAZWA	EMAIL	NRTELEFONU	Actions
1	Główny_magazyn	glowny.magazyn@hurtownia.pl	111-111-111	<div>Delete</div> <div>Edit</div>
2	testupdate	email@email	333333333	<div>Delete</div> <div>Edit</div>
14	test	email@123Email	123123123	<div>Delete</div> <div>Edit</div>

Figure 15: Removing the chosen user

BDBT Project Dashboard

Dashboard Signed in as admin Logout

Rabaty

Add Rabat

ID	NAZWA	RABAT	Actions
3	test3	0.95	<div>Delete</div> <div>Edit</div>
4	specialforkyrylo	1.0	<div>Delete</div> <div>Edit</div>

Figure 16: Table of discounts

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