

A PROJECT REPORT

ON

SPORTIFY

Sports Goods Shopping Website



SUBMITTED IN PARTIAL FULFILLMENT

FOR THE AWARD OF

**POST GRADUATION DIPLOMA IN ADVANCE COMPUTING
(PG-DAC)**

UNDER THE GUIDANCE OF

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AT

**CENTER FOR DEVELOPMENT OF ADVANCE COMPUTING
ADVANCE COMPUTING TRAINING SCHOOL (C-DAC ACTS)**

PUNE

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ABSTRACT

The project details the development of a shopping website for sports goods. It supports the business-to-consumer (B2C) model by providing a platform for the business to showcase and sell their products directly to consumers, eliminating the need of intermediaries or aggregators.

Freely available software are used in the development of this project viz. React for frontend, Java Spring Boot for backend, and MySQL for database management. A simple and robust project is developed by following the principles of software engineering and incorporating the Java Lombok library.

From displaying new products and updating stocks, to adding employees in the system, this project empowers the business to provide secure access to role-appropriate functionalities to various actors by using Spring Security and JSON Web Tokens. Email integration also alerts the consumer on registration, while the BCrypt password encoder provides safe storage of the password. Moreover, with the help of RESTful API and Swagger UI, this full-stack project provides a lightweight, reusable and scalable shopping website for sports goods.

1. INTRODUCTION

The project details the development of “Sportify”, a shopping website for sports goods. It supports the business-to-consumer (B2C) model by providing a platform for the business to showcase and sell their products directly to consumers, eliminating the need of intermediaries or aggregators. From browsing products to tracking the delivery status of orders, this full-stack project aims to provide a seamless experience for consumers, website administrators and support staff.

The highlights of the project are as follows:

- Uses freely available software – React for frontend, Java Spring Boot for backend, and MySQL for database management.
- Developed by following the principles of software engineering.
- Provides secure access to role-appropriate functionalities to various actors by using Spring Security and JSON Web Tokens.
- Alerts the consumer on registration via email.
- Enables safe storage of the password by implementing BCrypt password encoder.
- Provides a lightweight, reusable and scalable shopping website with the help of RESTful API and Swagger UI.
- Incorporates the Java Lombok library to achieve clean and simple code.

2. PROJECT OVERVIEW

2.1. OBJECTIVES

The main objectives of this project are:

- To provide a platform that helps connect sports goods businesses directly to their customers.
- To facilitate easy navigation and provide seamless shopping experience for customers.
- To enable quick maintenance and updation of the shopping website for the business.
- To create a secure environment for all transactions and restrict access to role-appropriate functionalities.

2.2. SCOPE

“Sportify” aims to deliver an e-commerce website that hosts a wide collection of sports goods. The customers can login and purchase the showcased products directly from the business by adding a delivery address and selecting a payment method. They can also view their order history and check the status of their orders. On the other hand, website administrators (admins) can manage various product and order details. This project does not support the actual logistics of delivery of products, nor does it connect to a payment portal. However, these can be easily integrated in the application as per the preferences of the business owners.

2.3. OVERVIEW

A. REQUIREMENTS AND SPECIFICATIONS:

i. Hardware requirement:

- 1) Ram: - 8 GB
- 2) Hard-disk: - 500 GB
- 3) Processor: - Intel Core i3
- 4) Video Card: - Intel Integrated Graphics
- 5) Operating System: - Windows 10/ Linux Cent OS 6.4/ Fedora 8.0/ Ubuntu

ii. Software requirement:

- 1) Application Tools: - STS-3.9.18 IDE, JDK 11, Visual Studio Code 1.71.2
- 2) Server: - Apache-tomcat-9.0.36
- 3) Database: - MySql 5.7

B. FEATURES PROVIDED

I. FOR CUSTOMERS

- a. Browse – Customers can login and browse products by selecting a category. They can explore the entire collection of sports goods available, as well as view details for individual products.
- b. Register, Login & Logout – New customers can register on the site. Existing customers can then login to access their account information and logout when the account is not in use.
- c. View and Edit Profile – When logged in, customers can view and amend their profiles, if required.
- d. Add to Cart – If customers find suitable products, they can save the products in their carts until they decide to purchase them.
- e. Remove from Cart – Customer may remove the product from the cart by deleting it or reducing its quantity to zero.

- f. Place Orders – When customers wish to purchase the products which they have saved in their carts, they can place orders for those products by selecting or adding a delivery address and selecting a payment method registered in their account.
- g. Delivery Address – Customers can add, edit or delete addresses from My Addresses. They can also add a new address while placing an order.
- h. Payment Method – While placing orders, customers have the freedom to choose from various payment methods associated with their accounts.
- i. Order History – Customers can view their order history and order status in My Products.

II. FOR ADMIN

- a. Login & Logout – Similar to customers, admins can login & logout to access their account.
- b. View and edit Profile – When logged in, admins can view and edit their profiles.
- c. Add Employee or Delivery Person – Only admins can add employees or delivery personnels.
- d. Remove Employee or Delivery Person – Admins can remove an employee's or delivery person's account.
- e. Add New Categories or Products – Admins can add new Categories or Products with all the necessary details like category name, product name, description, price etc.
- f. Update Categories or Product Details – Often, the details of a categories or products such as the price, quantity etc. change over time. In such cases, the admins can update the category or product details to reflect the change on the website.
- g. Delete Categories or Products – Admins may remove any category or product which is not available, which will reflect in the database.
- h. Stock – Only admins can see the stock of products.

III. FOR EMPLOYEE

- 1. Login & Logout – Similar to customers, employees can login & logout to access their accounts.
- 2. View and Edit Profile – When logged in, employees can view and edit their profiles.

3. Add New Categories or Products – Employees can add new Categories or Products with all the necessary details like category name, product name, description, price etc.
4. Update Categories or Product Details – Often, the details of a category or product such as the price, quantity etc., change over time. In such cases, the employees can change those category or product details to reflect the change on the website.
5. Delete Categories or Products – Employees may remove any category or product which is not available, which will reflect in the database.
6. Manage Orders – Employees can see the list of all orders. Then they may assign orders to themselves and prepare them for the delivery person to pick up.

IV. FOR DELIVERY PERSON

- a. Login & Logout – Similar to customers, delivery personnel can login & logout to access their accounts.
- b. View and Edit Profile – When logged in, delivery personnel can view and edit their profiles.
- c. Deliver Orders – Delivery personnel can see the list of ready orders and assign the orders to themselves for delivery.
- d. Taken back – After assigning the order to himself/herself, the delivery person can give up the assignment. The status of the picked order changes back to “Ready” which allows another delivery person to assign it to himself/herself.

2.4. FEASIBILITY STUDY

The following feasibility studies were carried out before undertaking the project, in accordance with basic principles of software engineering.

A. TECHNICAL FEASIBILITY

Feasibility of developing the requested system with the available manpower, software, hardware was assessed as follows:

Backend: This project makes use of cross-platform software and solutions like Java, and hence can run on any operating system. Spring boot provides a quick way to set up, configure and run web-based applications. The combination of Spring Boot, Spring Data JPA and Hibernate for backend make for a fast, easy set-up and reliable system to interact with the database, as they are secure and transactional in nature.

Database: Since the sensitive data of customers and admins need to be stored in a robust and secure database, MySQL database management system was chosen as it is an industry standard. It allows us to implement database operations on tables, rows, columns and indexes.

Frontend: React, used in front-end, is swift and a single page framework when it comes to delivering the requested page as it doesn't reload the entire page for every HTTP request. It only re-renders the components that need to fetch new data. Also, as React is modular in nature, it is easy to develop new components and scale up existing components in order to add new features to the system.

B. OPERATIONAL FEASIBILITY

From browsing products to tracking the delivery status of orders, this full-stack project aims to provide a seamless experience for consumers, website administrators and support staff. Various software used also provide for a robust, scalable and secure system.

C. ECONOMIC FEASIBILITY

All the software and technologies used in our project are freely and widely available, with extensive community support. This makes “Sportify” an economically feasible solution to the organizations that wish to implement it.

3. REQUIREMENTS FULFILLED

3.1. FUNCTIONAL REQUIREMENTS

Following are some of the functional requirements fulfilled by our project:

- Customers can browse through all available sports goods.
- Customers can add product to the cart.
- Customers can place orders for sports goods and view their order history.
- Admin can manage various sports goods details like product name, price, adding/updating/deleting new product, etc.
- Employee can manage orders like assign orders, ready orders, etc.
- Admins can add or delete employees or delivery person if the need arises.
- Delivery person can deliver the orders.

3.2. NON-FUNCTIONAL REQUIREMENTS

Following are the non-functional requirements fulfilled by our project:

- **Usability** – Since the website uses lightweight and established software components that are also cross-platform, it supports most operating system. Well-known icons and symbols used throughout the website provides a consistent theme and user-friendly interface that anyone can grasp easily, even without a technical background.
- **Performance** – The use of React for front end and Spring Boot, Spring Data JPA and Hibernate for back end delivers quick response times to admin and customers alike.
- **Security** – Spring Security working in tandem with JSON Web Tokens provides robust methods for authentication and restricts role-appropriate access. Encrypted passwords enable safe storage of credentials.
- **Maintainability** – Simple and flexible systems provide easy maintenance.
- **Scalability** – RESTful API and Swagger UI enable scalability.

4. PROJECT DESIGN

4.1. DATA MODEL

The following tables depict the database design used for “Sportify” application:

A. TABLES RELATED TO USER DETAILS

a. Users Table

```
21 • describe users;
```

```
22
```

Field	Type	Null	Key	Default	Extra
id	int	NO	PRI	NULL	auto_increment
email	varchar(30)	YES	UNI	NULL	
first_name	varchar(30)	YES		NULL	
last_name	varchar(30)	YES		NULL	
password	varchar(350)	NO		NULL	
phone	varchar(15)	YES		NULL	
role	varchar(255)	YES		NULL	

b. Address Table

```
14 • describe addresses;
```

Field	Type	Null	Key	Default	Extra
id	int	NO	PRI	NULL	auto_increment
address_line_1	varchar(45)	YES		NULL	
address_line_2	varchar(45)	YES		NULL	
city	varchar(30)	YES		NULL	
country	varchar(30)	YES		NULL	
pin_code	varchar(10)	YES		NULL	
state	varchar(30)	YES		NULL	
user_id	int	NO	MUL	NULL	

B. Tables Related to Orders

a. Cart Table

15 • `describe cart;`

Field	Type	Null	Key	Default	Extra
id	int	NO	PRI	<code>NULL</code>	auto_increment
quantity	int	NO		<code>NULL</code>	
customer_id	int	YES	MUL	<code>NULL</code>	
product_id	int	YES	MUL	<code>NULL</code>	

b. Orders Table

17 • `describe orders;`

Field	Type	Null	Key	Default	Extra
id	int	NO	PRI	<code>NULL</code>	auto_increment
order_date	datetime(6)	YES		<code>NULL</code>	
order_status	varchar(25)	YES		<code>NULL</code>	
status_update_date	datetime(6)	YES		<code>NULL</code>	
total_price	double	YES		<code>NULL</code>	
customer_id	int	NO	MUL	<code>NULL</code>	
delivery_address_id	int	YES	MUL	<code>NULL</code>	
employee_id	int	YES	MUL	<code>NULL</code>	

c. Order Details Table

16 • `describe order_details;`

Field	Type	Null	Key	Default	Extra
id	int	NO	PRI	<code>NULL</code>	auto_increment
price	double	NO		<code>NULL</code>	
quantity	int	NO		<code>NULL</code>	
order_id	int	NO	MUL	<code>NULL</code>	
product_id	int	NO	MUL	<code>NULL</code>	

d. Payment Table

```
18 • describe payments;
```

Field	Type	Null	Key	Default	Extra
id	int	NO	PRI	NULL	auto_increment
amount	double	NO		NULL	
payment_date	datetime(6)	YES		NULL	
status	varchar(12)	YES		NULL	
type	varchar(12)	YES		NULL	
order_id	int	YES	MUL	NULL	

C. Tables Related to Products

a. Product Table




```
19 describe products;  
20 • describe stock;
```

Field	Type	Null	Key	Default	Extra
id	int	NO	PRI	NULL	auto_increment
amount	double	NO		NULL	
payment_date	datetime(6)	YES		NULL	
status	varchar(12)	YES		NULL	
type	varchar(12)	YES		NULL	
order_id	int	YES	MUL	NULL	

b. Category Table

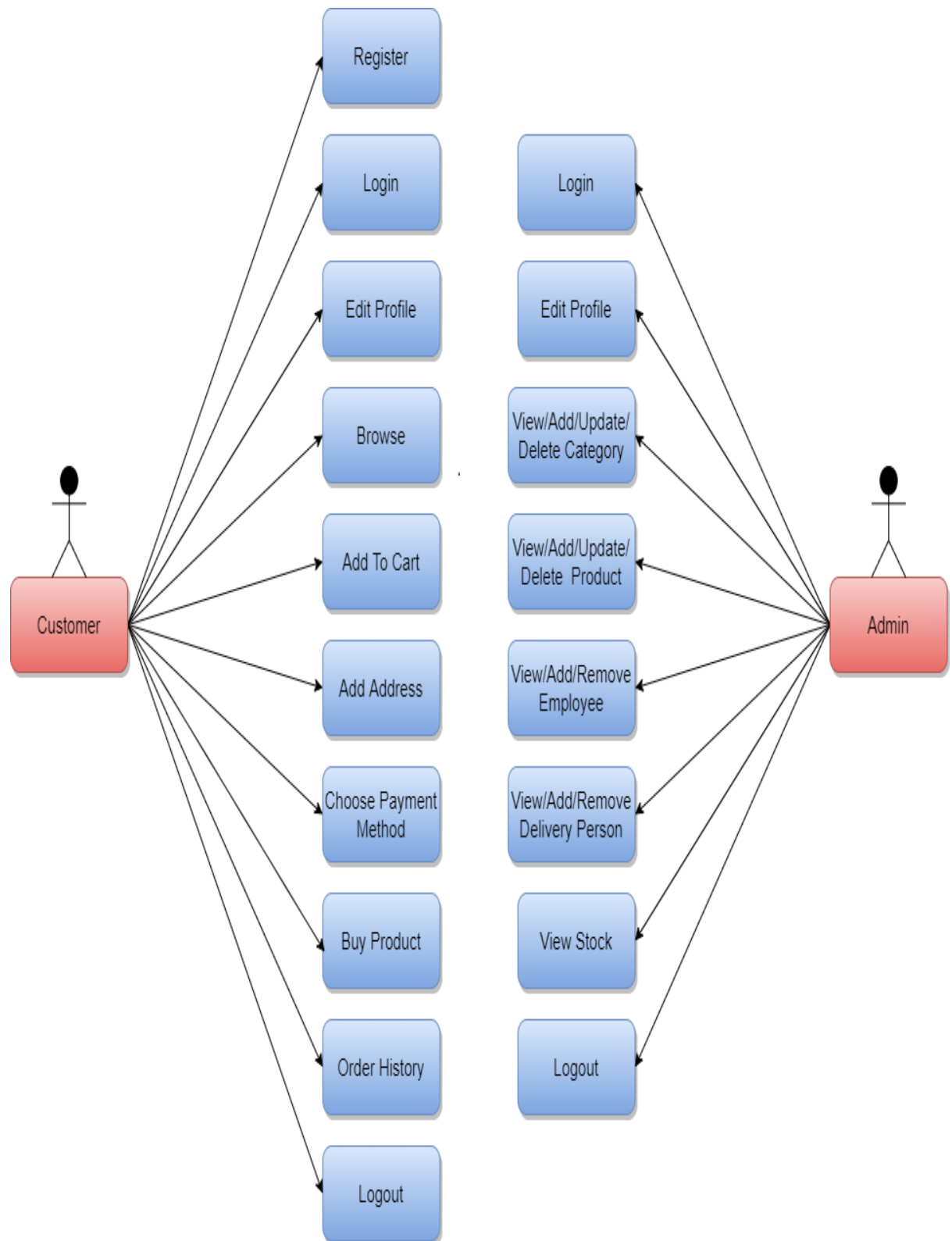
Field	Type	Null	Key	Default	Extra
id	int	NO	PRI	NULL	auto_increment
name	varchar(30)	YES		NULL	
status	varchar(30)	YES		NULL	

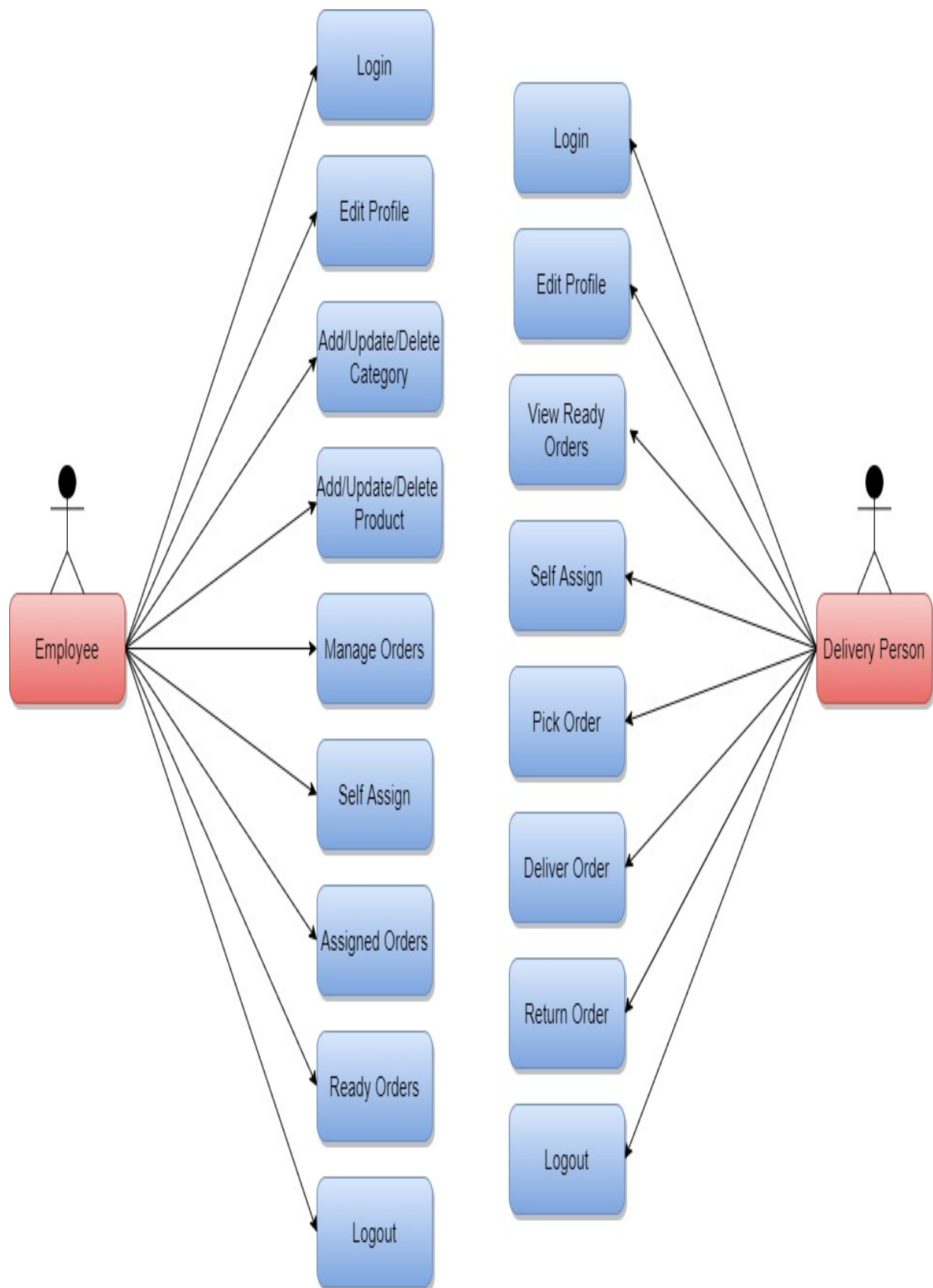
c. Stock Table

result Grid  Filter Rows: <input type="text"/> Export:  Wrap Cell Content: 					
Field	Type	Null	Key	Default	Extra
product_id	int	NO	PRI	NULL	
quantity	int	NO		NULL	
unit	varchar(10)	YES		NULL	

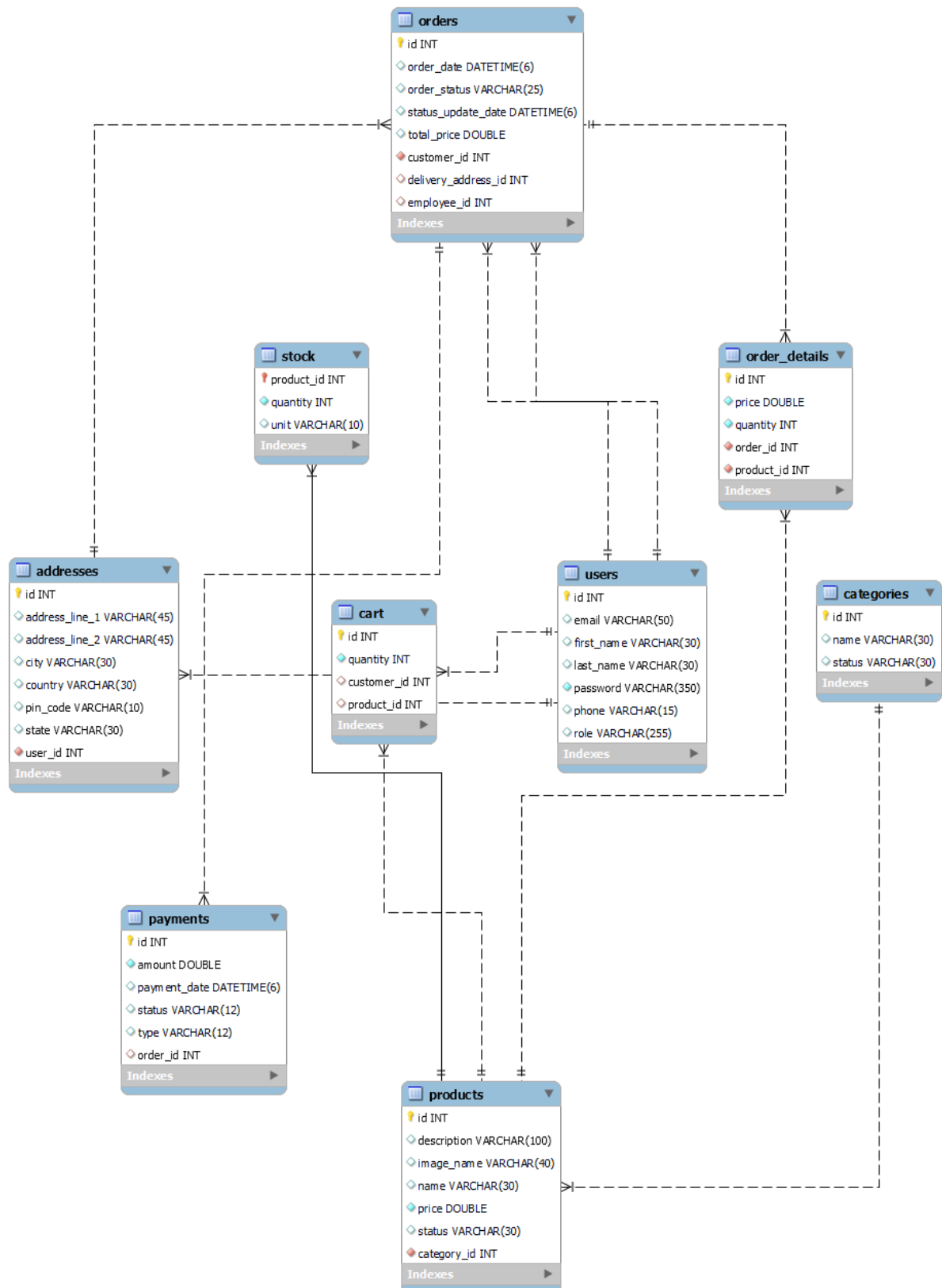
4.2. DIAGRAMS

USE CASE DIAGRAM



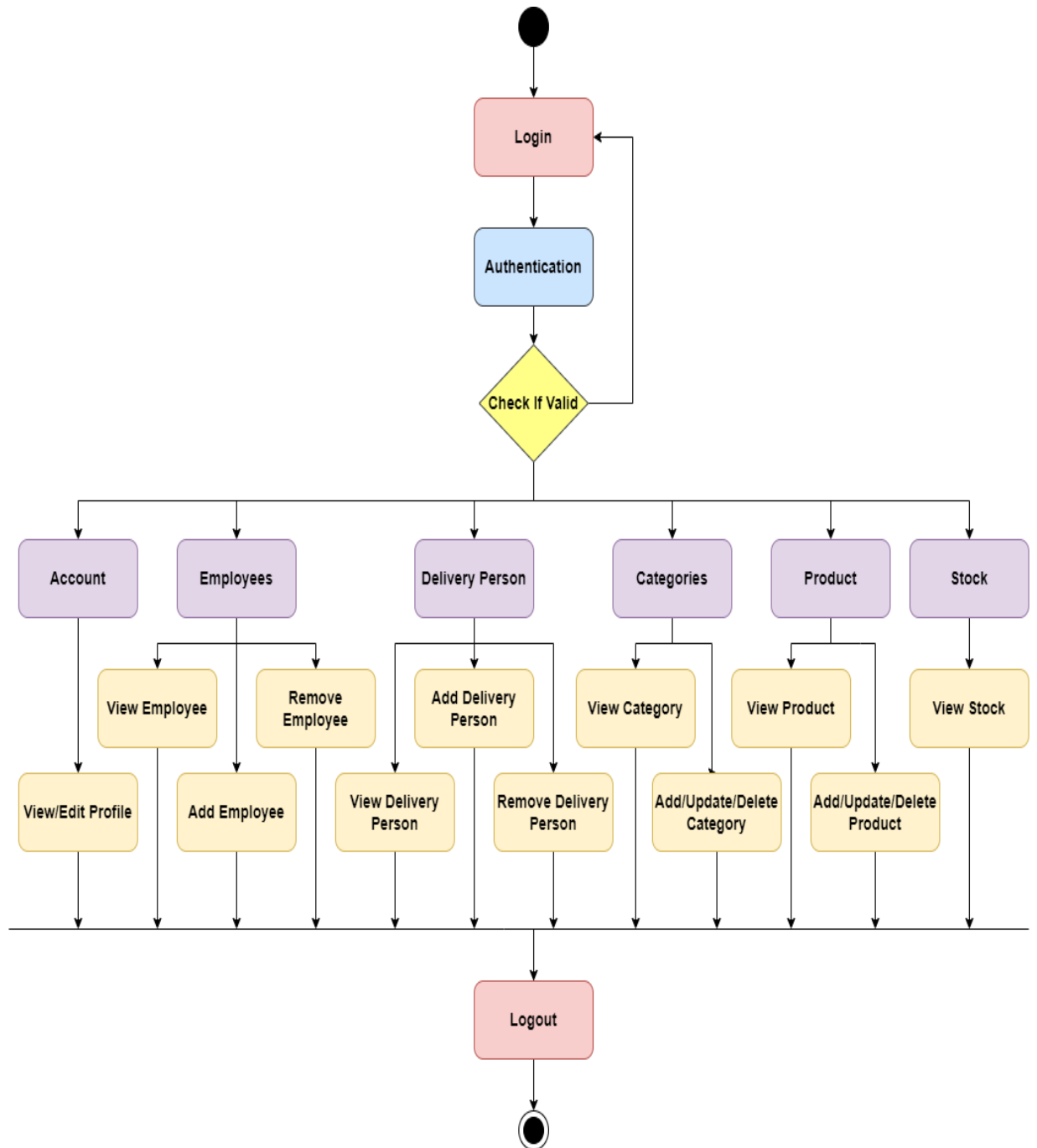


ER DIAGRAM

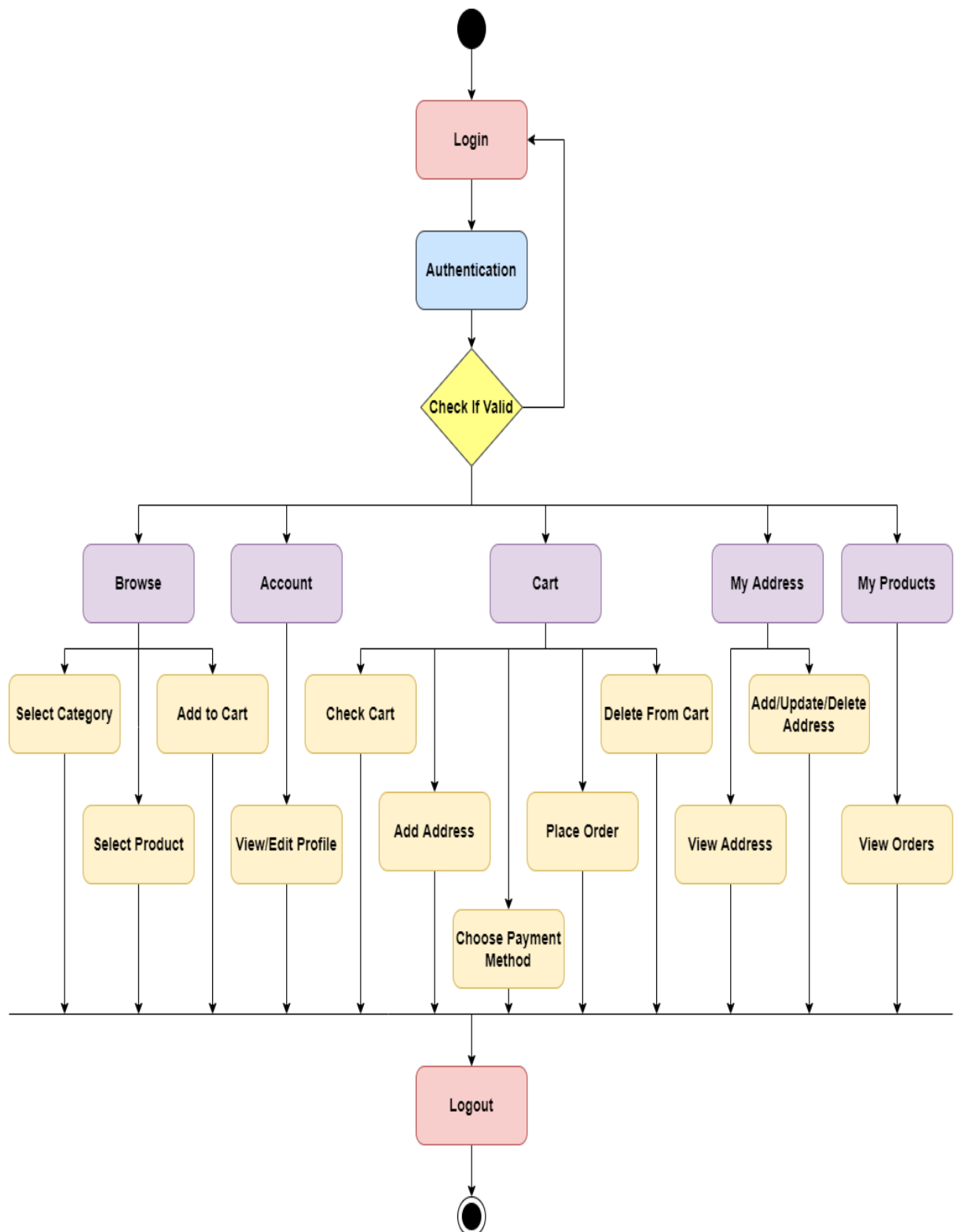


ACTIVITY DIAGRAM

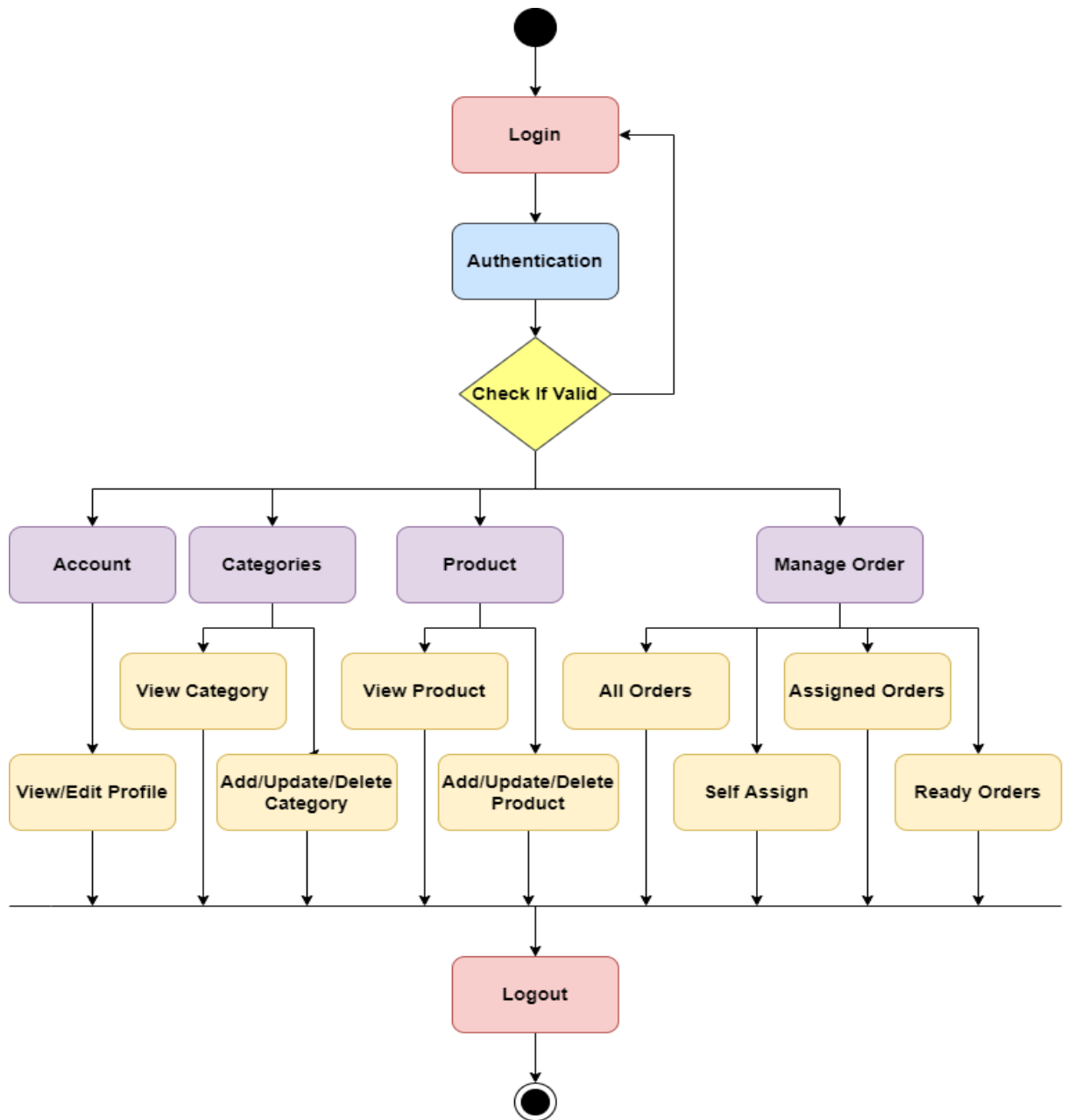
a. Admin



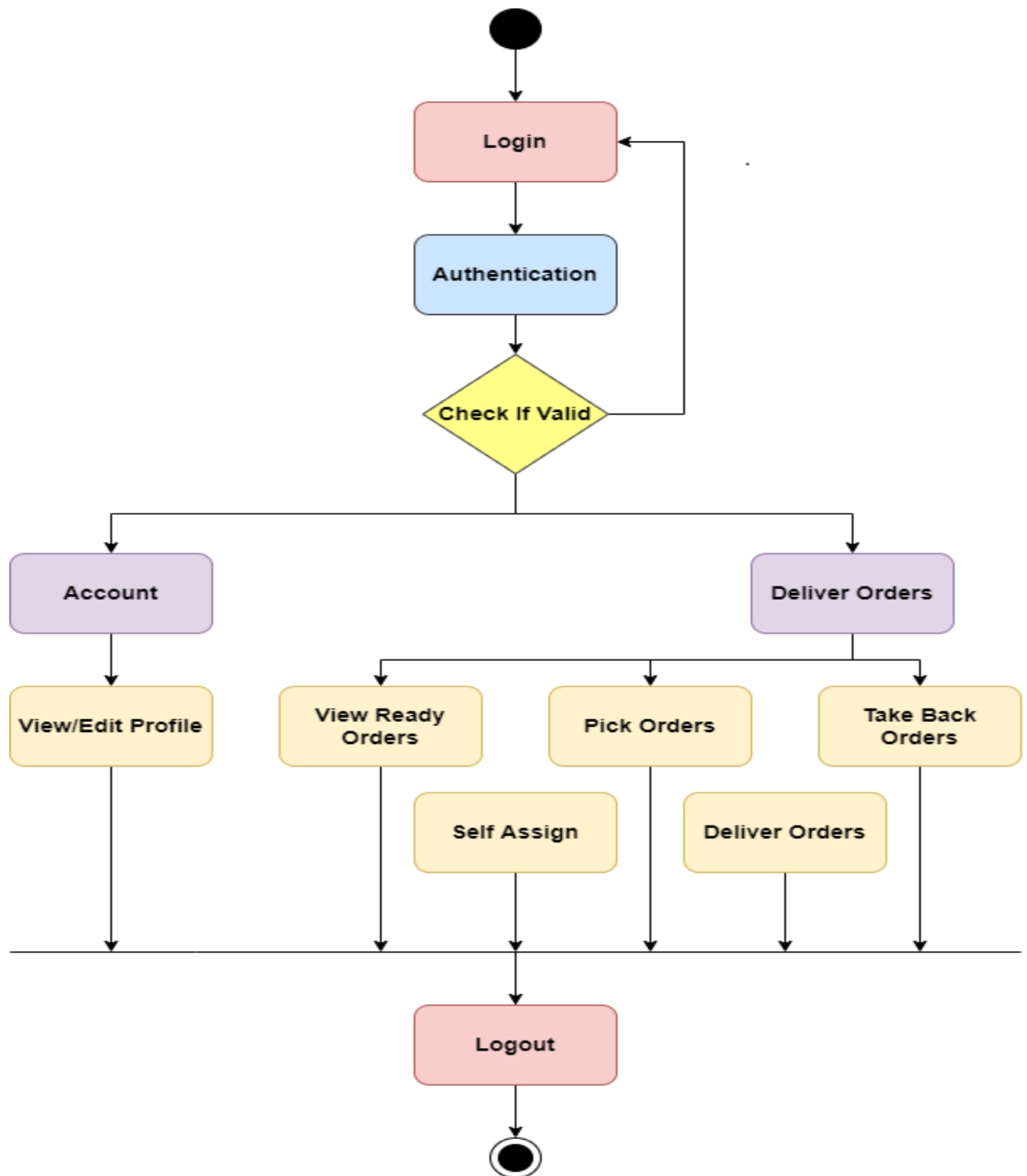
b. **Customer**



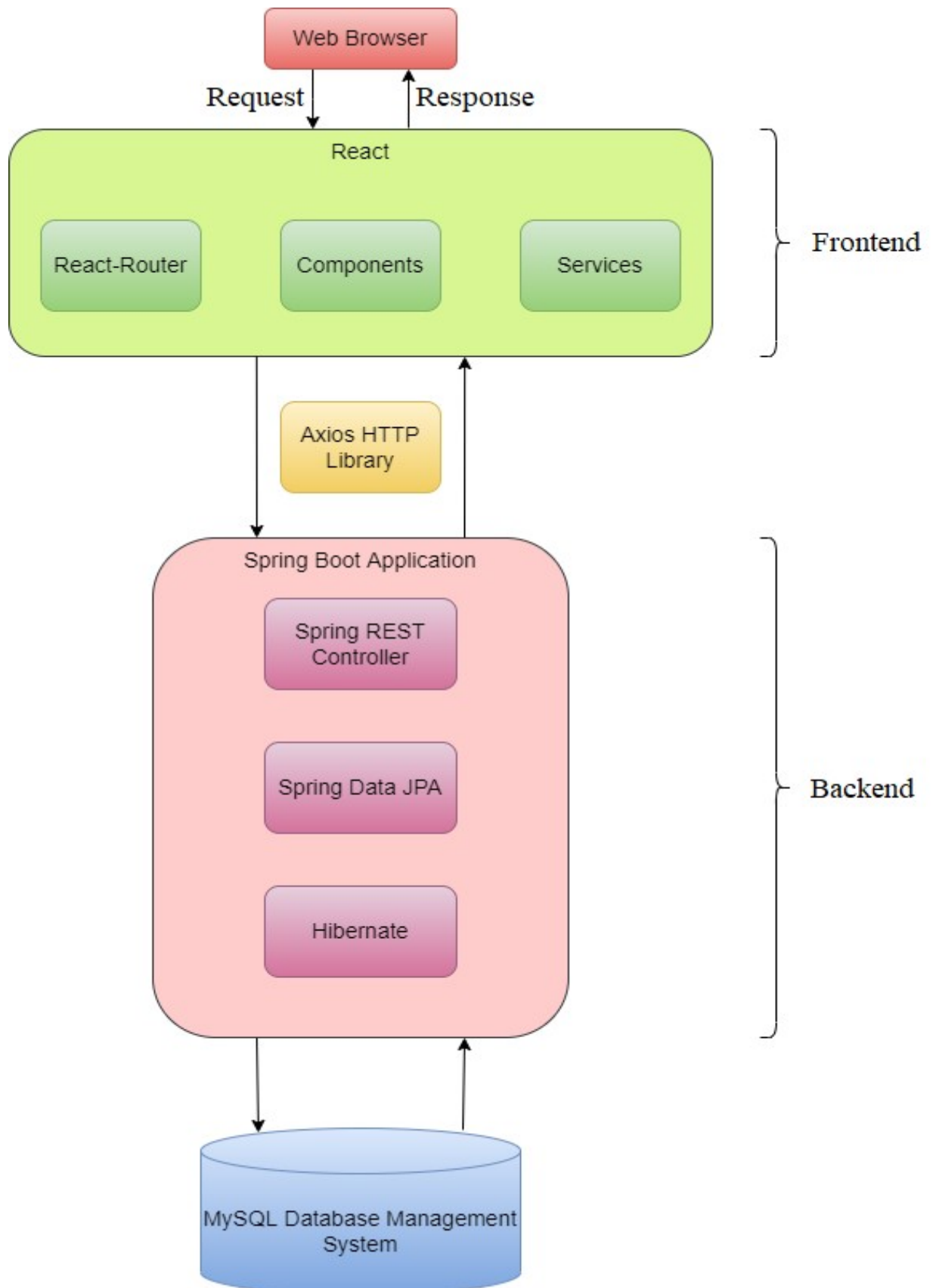
c. **Employee**



d. **Delivery Person**

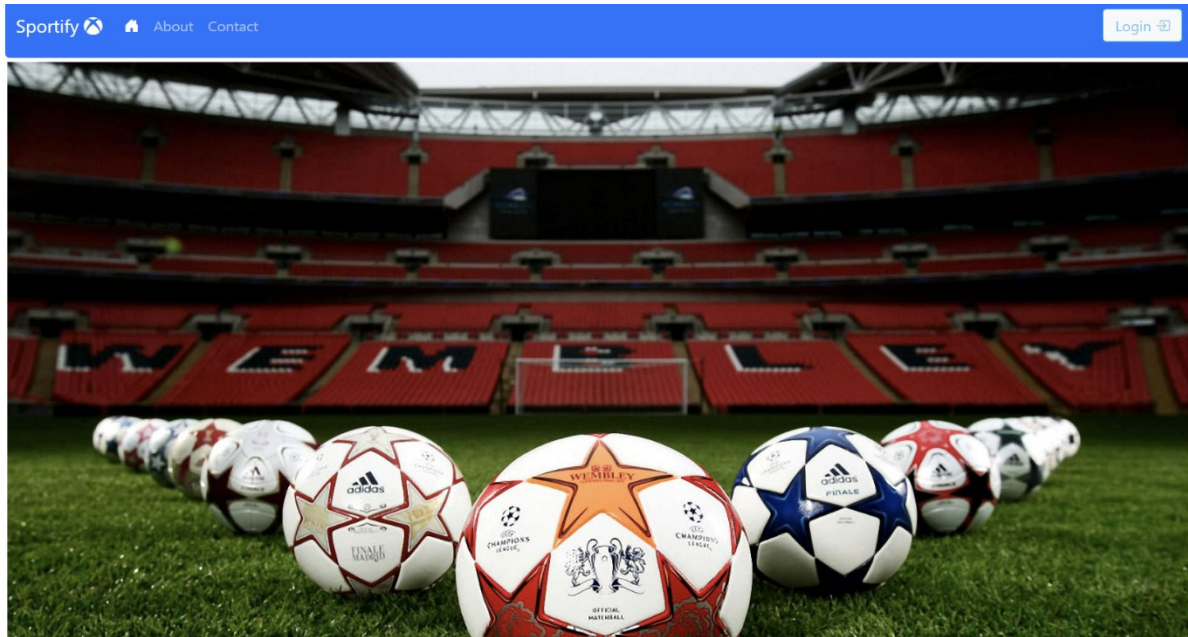


4.3. PROJECT ARCHITECTURE

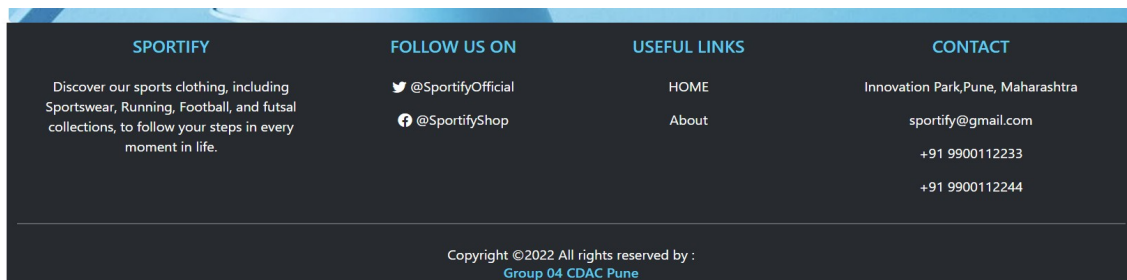


5. PROJECT SCREENSHOTS

Homepage



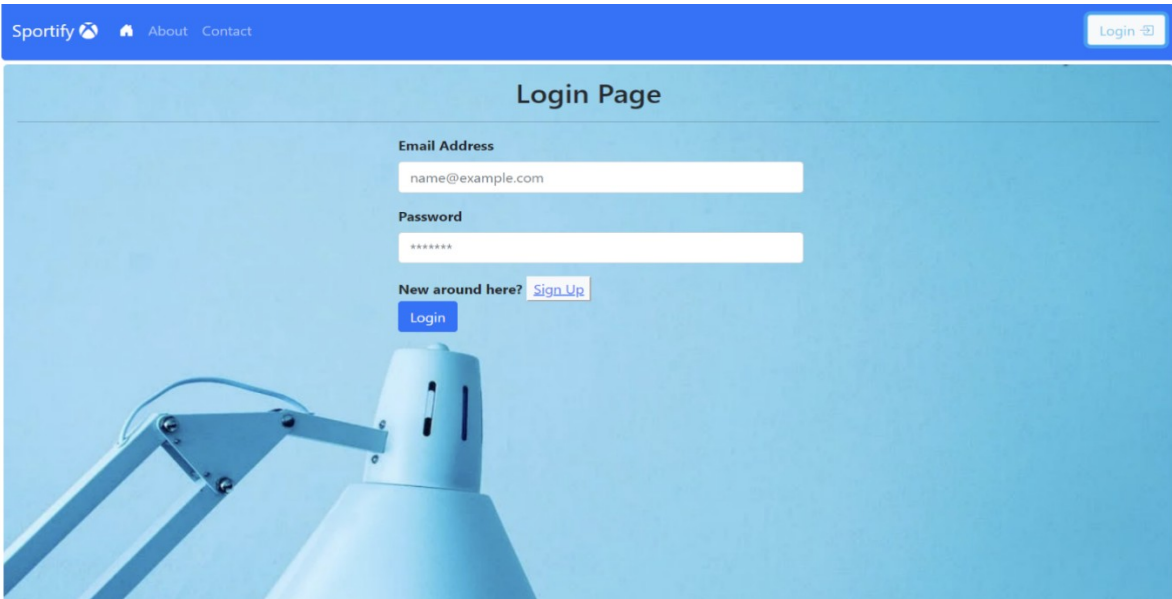
Footer





Register

The screenshot shows the registration page of the Sportify website. It has a blue header with the Sportify logo, navigation links, and a 'Login' button. The main content area has a light blue background with a 'SignUp' heading. Below the heading are four input fields: 'First Name', 'Last Name', 'Email address' (with the placeholder 'name@example.com'), and 'Password' (with a masked password '*****'). A blue 'Register' button is below the password field. To the right of the button is a link that says 'Already a User? [Signin](#)'. The background of the form area features a close-up image of a blue sports lamp.

Login

A screenshot of a web application's login page. The page has a blue header with the 'Sportify' logo and navigation links 'About' and 'Contact'. A 'Login' button with a user icon is in the top right. The main content area is titled 'Login Page' and features a light blue background with a desk lamp image. It contains input fields for 'Email Address' (with 'name@example.com') and 'Password' (with masked characters). Below these are links for 'New around here?' including 'Sign Up' and a 'Login' button.

Sportify  [About](#) [Contact](#) [Login](#) 

Login Page

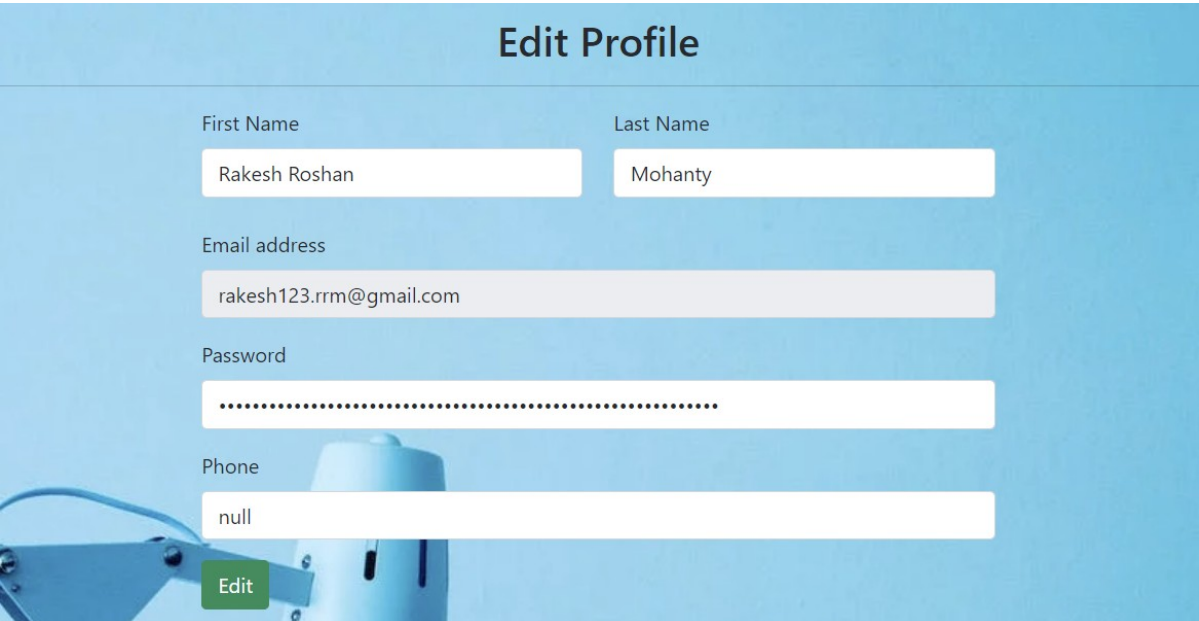
Email Address

Password

New around here? [Sign Up](#)

[Login](#)

Edit Profile

A screenshot of a web application's 'Edit Profile' page. The page has a blue header and a light blue background with a desk lamp image. It contains input fields for 'First Name' (Rakesh Roshan), 'Last Name' (Mohanty), 'Email address' (rakesh123.rrm@gmail.com), 'Password' (masked), and 'Phone' (null). An 'Edit' button is at the bottom left.

Edit Profile

First Name

Last Name

Email address

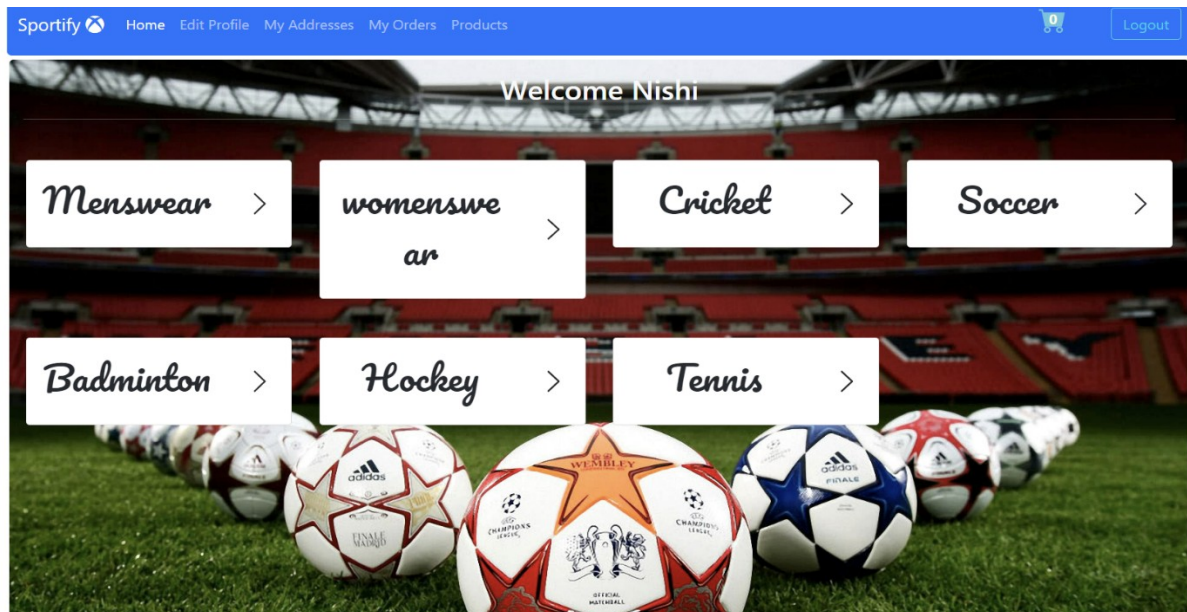
Password

Phone

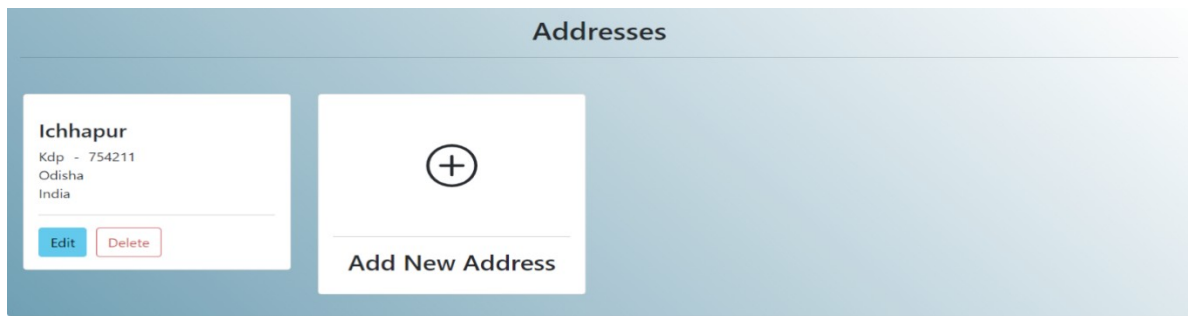
[Edit](#)

5.1. CUSTOMER

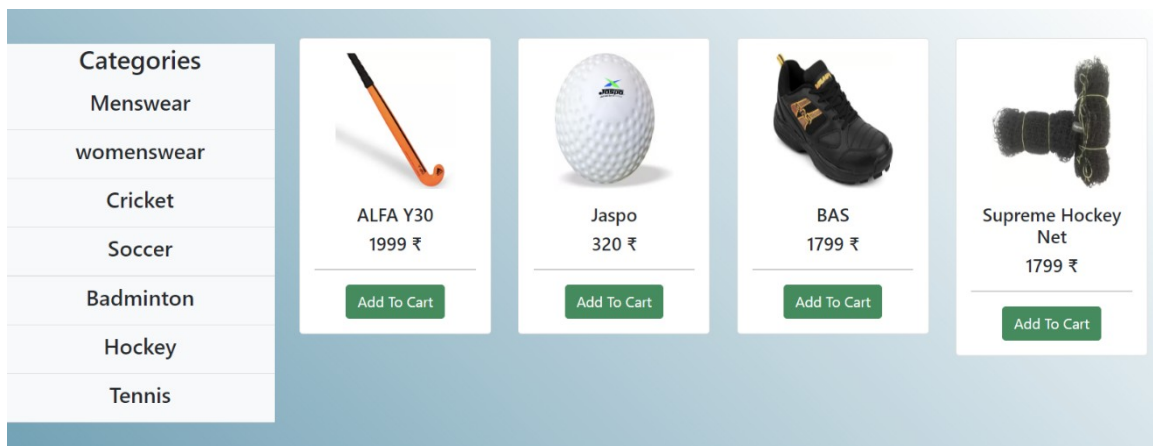
Home Page



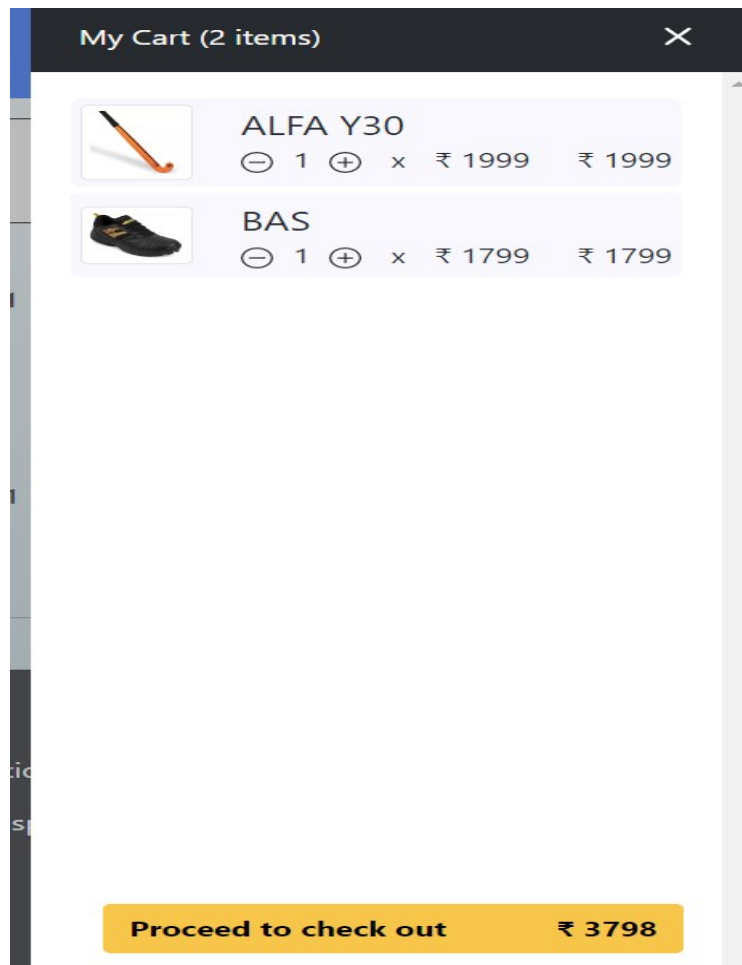
Address Page




Product Details




Cart



Checkout Page

Sportify 

[Home](#) [Edit Profile](#) [My Addresses](#) [My Orders](#) [Products](#)

 [Logout](#)

Order Summary

Sr	Product Name	Quantity	Price (₹)	Total (₹)
1	ALFA Y30	1	1999	1999
2	BAS	1	1799	1799

Sub Total : ₹ 3798
Delivery : ₹ 25
Grand Total: ₹ 3823.00

[Continue Shopping](#) [Confirm Order](#)

Address & Payment

Ichhapur

Kdp - 754211

Odisha

India





UPI

Net Banking

Cards

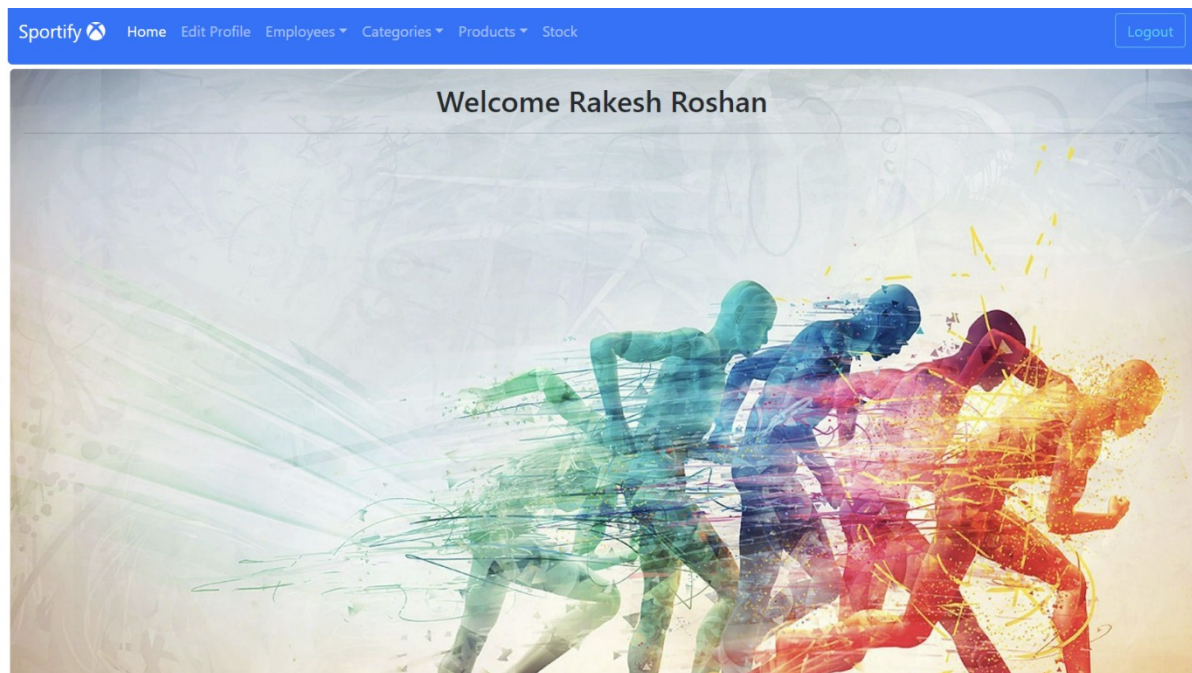
Cash On Delievery

Order History

Sportify  Home Edit Profile My Addresses My Orders Products  Logout			
Order Date	Total Price	Latest Update	Order status
2022-09-28 19:20:35	1596	2022-09-28 19:20:35	PLACED
	NIKE Printed Women Round Neck Black T-Shirt	Price: 797 x 1	
	HRX by Hrithik Roshan Solid Women Black Track Pants	Price: 799 x 1	

5.2. ADMIN

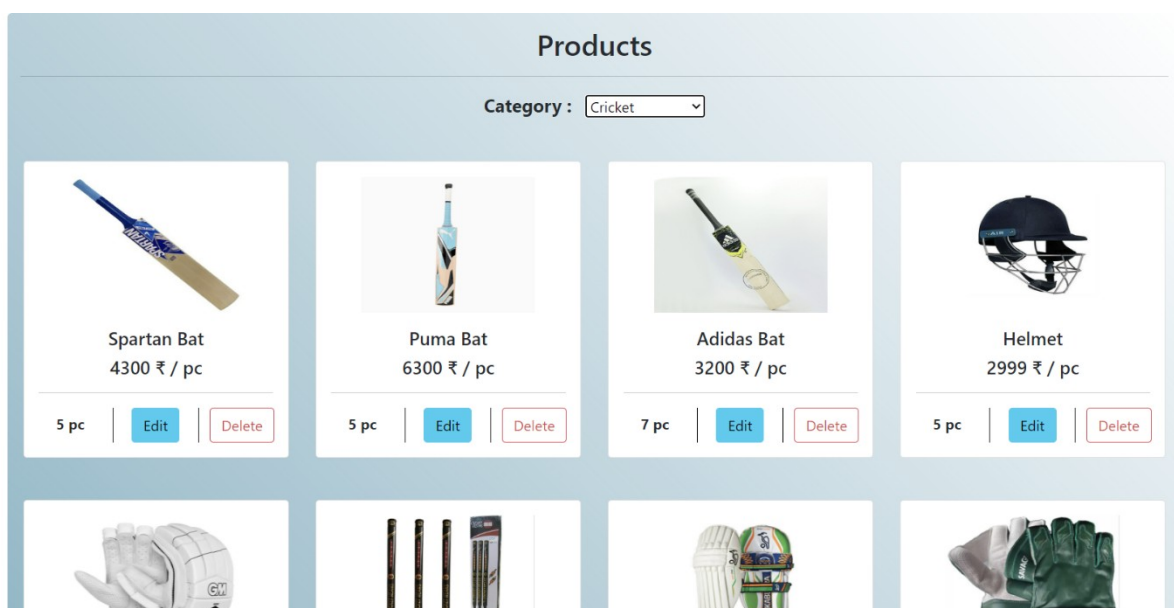
Home Page



Employee Details

All Employees			
View Employees			View Deliverers
3	Rishab	rishab@gmail.com	Not Provided
4	Papu	papu@gmail.com	Not Provided

View All Products



Category List

Categories				
1	Menswear	ACTIVE	Save	Remove
2	womenswear	ACTIVE	Save	Remove
3	Cricket	ACTIVE	Save	Remove
4	Soccer	ACTIVE	Save	Remove
5	Badminton	ACTIVE	Save	Remove
6	Hockey	ACTIVE	Save	Remove
7	Tennis	ACTIVE	Save	Remove

SPORTIFY

Discover our sports clothing, including Sportswear, Running, Football, and futsal collections, to follow your steps in every moment in life.

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USEFUL LINKS

[HOME](#)
[About](#)

CONTACT

Innovation Park,Pune, Maharashtra
sportify@gmail.com
+91 9900112233

Add Category

Add New Category

Category Name

Status


ACTIVE

Add Category

Cancel

Add product

Add Product



Product Name

Product Name

Product Description

Add Description of Product

Category:

Select Category

New Category

Price:

Rs.125

Quantity:

5

Unit:

Choose Unit

Add Product

Cancel

Add or Change Image

Choose File

No file chosen

Stock Report

Stock Report

Category :

Product ID	Product Name	Product Stock	Units
11	Adidas T-shirt	20	pc
12	Puma T-shirt	20	pc
13	Track Pant	14	pc
14	Shorts	25	pc

Add Employee/Delivery Person

SignUp

First Name

Last Name


Email address

Password

Role

5.3. EMPLOYEE

Homepage



Sportify  Home Edit Profile Manage Orders Categories Products Logout

Welcome Rishab

SPORTIFY

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HOME
About

CONTACT




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sportify@gmail.com
+91 9900112233
+91 9900112244

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Group 04 CDAC Pune

Placed Order



Sportify  Home Edit Profile Manage Orders Categories Products Logout

All Orders

Order Date	Address	Assign to self
2022-09-28 19:20:35	<div><div>NIKE Printed Women Round Neck Black T-Shirt</div></div> <div><div>HRX by Hrithik Roshan Solid Women Black Track Pants</div></div> <div>Quantity: 1</div>	Quantity: 1
2022-09-28 21:26:04	<div><div>ALFA Y30 COMPOSITE (OB) Hockey Stick</div></div> <div>Quantity: 1</div>	

Ready Order



Assigned Orders

Order Date	Assigned On	Ready
2022-09-28 19:20:35	2022-09-28 21:27:53	
<div><div>NIKE Printed Women Round Neck Black T-Shirt</div></div> <div><div>HRX by Hrithik Roshan Solid Women Black Track Pants</div></div> <div>Quantity: 1</div>	Quantity: 1	

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About

CONTACT

Innovation Park,Pune, Maharashtra
sportify@gmail.com
+91 9900112233

5.4. DELIVERY PERSON

Homepage

Sportify  Home Edit Profile Deliver Orders 


Logout


Welcome Papu

SPORTIFY

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About

CONTACT

Innovation Park,Pune, Maharashtra

sportify@gmail.com

+91 9900112233

+91 9900112244

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Group 04 CDAC Pune

Order Page

Picked Orders

Nishi Sahoo
nishi@gmail.com

Ichhapur
Kdp - 754211

NIKE 1

HRX by Hrithik Roshan 1

Order id: #1


Delivered


Taken Back

SPORTIFY

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About

CONTACT

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Group 04 CDAC Pune

Ready Order

Sportify  Home Edit Profile Deliver Orders 


Logout

All Orders

Order Date
2022-09-28 | 19:20:35

Address


Assign to self



NIKE

Printed Women Round Neck Black T-Shirt

Quantity: 1



HRX by Hrithik Roshan


Solid Women Black Track Pants


Quantity: 1

SPORTIFY

Discover our sports clothing, including Sportswear, Running, Football, and futsal collections, to follow your steps in every moment in life.

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6. TESTING

All functionalities for various actors were tested manually. Additionally, JUnit test cases were created for certain methods. The results of the JUnit test were as follows:

Sr. No.	Test	Outcome	Method Tested	Result
1	Fetch user by id	The details of the first user were retrieved and belonged to the role of admin.	UserServiceImpl .findById()	Passed
2	Fetch users by their role	List of all admins was fetched.	UserServiceImpl .getUsersByRole()	Passed
3	Fetch all products under a specific category	List of all products under category 1 was retrieved.	ProductServiceImpl .getProductsByCategory()	Passed
4	Delete product by id	Third product in the list was deleted from database.	ProductServiceImpl .deleteProduct()	Passed
5	Add product to cart	Product was added to cart.	CartServiceImpl .addItemToCart()	Passed
6	Update product quantity in cart	Product quantity in cart was increased from 1 to 5.	CartServiceImpl .updateQuantity()	Passed
7	Register new user	User was registered in database.	UserController .registerUser()	Passed
8	Fetch list of all employees	List of all employees was fetched.	UserController .getAllEmployees()	Passed
9	Delete category	First category was deleted from database.	CategoryController .deleteCategory()	Passed
10	Fetch all categories	List of all categories was fetched.	CategoryController .getAllCategories()	Passed

7. CONCLUSION

“Sportify”, an online sports goods website, was developed by our project team to simplify the online sale and purchase of sports goods. We tried using the latest technologies that are cross-platform and robust. Each and every software we used was freely available on the internet, which keeps the cost of production at a minimum. Also we have attempted to develop a secure, user-friendly online shopping management system.

This system will help them to properly manage the system and aid in growth without creating a hassle. This system is completely secure since every user is provided with username and password, so there is no chance of any unauthorized access.

The website provides a seamless shopping experience to customers. So, using this system will help in reducing the labour and provide more facility for customers who can access the website remotely.

In conclusion, “Sportify” as a website would definitely be a good choice for any sports goods trading business that wishes to enter the online market. We are confident that the numerous features and aesthetics of the application will certainly give a big boost to the business.

8. FUTURE SCOPE

Using whatever we have learnt over the duration of this course, we tried to make our project as user-friendly and gave it as many features as possible in the limited time allotted for the project work. That said, there are certainly more features that can be added to our application. Some of those are mentioned below:

1. The most purchased products can be highlighted as customer's favourite to promote those products further.
2. Allow the users to delete their account.
3. Discounts can be given on a per-user basis depending on the customer's purchase history as well as how many books they buy at the same time.
4. Customers can upvote/downvote/report feedbacks.
5. After a confirmed purchase, an email with the invoice of the orders can be sent to the customer.
6. In case the user forgets the password, a 'reset password' functionality can be added.
7. CAPTCHA can be added to login page.
8. An email notification can be sent to the users for an item in their cart, which may have been out of stock, but is now available.

9. REFERENCES

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