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Project : E-commerce application

1. Use cases

1. User Registration:

- Description: A new user registers by providing a unique username and password.
- Precondition: User accesses the registration page.
- Postcondition: User's registration details are stored in the database, and they are redirected to the profile setup page.
- Flow of Events:
 1. User navigates to the registration page.
 2. User enters a unique username and password.
 3. System validates the uniqueness of the username and password strength.
 4. User submits the registration form.
 5. System stores the user's registration details and redirects them to the profile setup page.

2. Browse and Filter Products:

- Description: Users can browse products by categories and apply filters based on ratings, specifications, and sorting options.
- Precondition: User accesses the product browsing page.
- Postcondition: User views filtered product listings based on selected criteria.
- Flow of Events:
 1. User navigates to the product browsing page.
 2. User selects a category to view products.
 3. Users apply filters for ratings, specifications, or sorting options.
 4. System retrieves and displays product listings based on applied filters.

3. Add to Cart and Checkout:

- Description: Users can add products to the cart, proceed to checkout, and choose a payment method.
- Precondition: User is logged in and has products in the cart.
- Postcondition: User completes the checkout process, and the order is recorded.
- Flow of Events:
 1. User selects a product and adds it to the cart.
 2. User navigates to the cart page.
 3. User reviews cart items and proceeds to checkout.
 4. System prompts the user to log in if not already logged in.
 5. User selects a payment method (PayPal or Cash on Delivery).
 6. System records the order and updates the inventory.

4. Product Ratings and Reviews:

- Description: Users can provide ratings and reviews for products.
- Precondition: User accesses the product details page.
- Postcondition: User's ratings and reviews are stored and displayed for the product.
- Flow of Events:
 1. User navigates to the product details page.
 2. User submits a star rating and a written review.
 3. System validates and stores the user's ratings and reviews.
 4. Ratings and reviews are displayed on the product page.

5. Admin Management:

- Description: Admin can manage users, products, orders, and website content.
- Precondition: Admin logs in to the admin panel.
- Postcondition: Admin performs administrative tasks such as adding new products, managing user accounts, and updating order statuses.
- Flow of Events:
 1. Admin logs in to the admin panel.
 2. Admin navigates to the desired management section (e.g., user management, product management).
 3. Admin performs actions such as adding new products, managing user accounts, and updating order statuses.

6. Real-Time Sales Chart:

- Description: Admin can view real-time sales data.
- Precondition: Admin accesses the sales analytics dashboard.
- Postcondition: Admin analyzes real-time sales trends and makes informed decisions.
- Flow of Events:
 1. Admin accesses the sales analytics dashboard.
 2. System displays real-time sales data in the form of chart.

7. Real-Time Chat:

- Description: Users can engage in real-time chat with admin for assistance.
- Precondition: User accesses the chat feature.
- Postcondition: User and admin engage in real-time conversation until one party leaves the chat.
- Flow of Events:
 1. User initiates a chat request.
 2. System checks admin availability.
 3. If admin is available, user and admin exchange messages in real-time.
 4. If admin is not available, the system displays a message indicating that no admin is currently available.

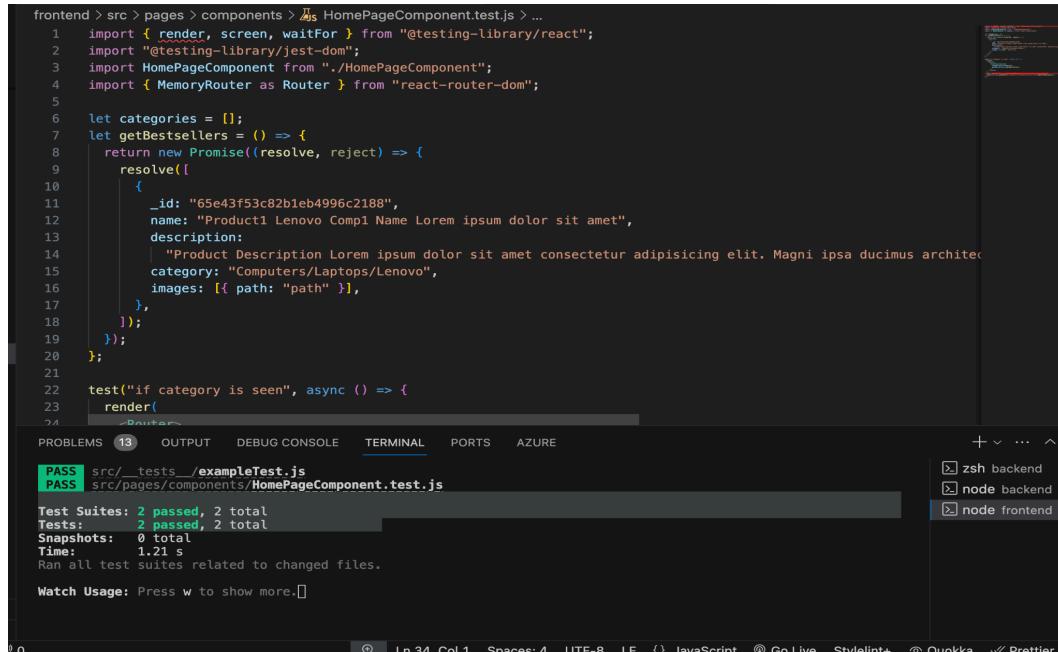
2. Tools, Technologies, APIs and Libraries used

- React: A JavaScript library for building user interfaces, commonly used for creating single-page applications.
- Bootstrap: A popular CSS framework for building responsive and mobile-first websites.
- Socket.io-client: A JavaScript library for real-time bidirectional communication between clients and servers using WebSockets.
- Jest: A JavaScript testing framework for testing React applications and components.
- Node.js: A JavaScript runtime environment that allows developers to run JavaScript code on the server-side.
- Express: A minimal and flexible Node.js web application framework that provides a robust set of features for building web applications and APIs.
- MongoDB: A NoSQL document database that stores data in flexible, JSON-like documents.
- Mongoose: An Object Data Modeling (ODM) library for MongoDB and Node.js, providing a higher level of abstraction for interacting with MongoDB databases.
- JWT (JSON Web Tokens): A compact, URL-safe means of representing claims to be transferred between two parties, commonly used for user authentication and authorization.
- Bcryptjs: A library for hashing passwords and verifying hashed passwords securely.
- PayPal API: Integrates PayPal's payment processing functionality into the e-commerce platform, allowing users to make secure transactions.

3. Testing Strategies and report

1. Unit Testing with Jest:

- Purpose: Unit testing aimed to validate the behavior of individual components and functions in isolation.
- Approach: Using Jest, unit tests were written to verify rendering, state management, and interaction logic of React components.
- Example: In `HomePage.test.js`, unit tests were written to ensure accurate display of product names and descriptions on the homepage.



```

frontend > src > pages > components > HomePageComponent.test.js > ...
1  import { render, screen, waitFor } from "@testing-library/react";
2  import "@testing-library/jest-dom";
3  import HomePageComponent from "./HomePageComponent";
4  import { MemoryRouter as Router } from "react-router-dom";
5
6  let categories = [];
7  let getBestsellers = () => {
8    return new Promise((resolve, reject) => {
9      resolve([
10        {
11          _id: "65e43f53c82b1eb4996c2188",
12          name: "Product1 Lenovo Compi Name Lorem ipsum dolor sit amet",
13          description:
14            "Product Description Lorem ipsum dolor sit amet consectetur adipisicing elit. Magni ipsa ducimus architecto",
15          category: "Computers/Laptops/Lenovo",
16          images: [{ path: "path" }],
17        },
18      ]);
19    });
20  };
21
22  test("if category is seen", async () => {
23    render(
24      <Router>

```

PASS src/_tests/_exampleTest.js
PASS src/pages/components/HomePageComponent.test.js

Test Suites: 2 passed, 2 total
Tests: 2 passed, 2 total
Snapshots: 0 total
Time: 1.21 s
Ran all test suites related to changed files.

Watch Usage: Press w to show more.[]

2. End-to-End Testing:

- Purpose:Limited end-to-end testing was conducted to ensure smooth integration of different components and functionalities.
- Approach:End-to-end tests simulated user interactions and workflows across multiple application pages.
- Example:In 'LoginPageComponent.js', end-to-end tests were written to validate user authentication and login functionality. Simulated user input and login events were used to verify successful login and navigation based on authentication status.

```

1 import { Container, Row, Col, Form, Button, Alert } from "react-bootstrap";
2 import { useState } from "react";
3 import { Link, useNavigate } from "react-router-dom";
4 import Spinner from "react-bootstrap/Spinner";
5
6 const LoginPageComponent = ({ loginUserApiRequest, reduxDispatch, setReduxUserState }) => {
7   const [validated, setValidated] = useState(false);
8   const [loginUserResponseState, setLoginUserResponseState] = useState({
9     success: "",
10    error: "",
11    loading: false,
12  });
13
14  const navigate = useNavigate();
15
16  const handleSubmit = (event) => {
17    event.preventDefault();
18    event.stopPropagation();
19    const form = event.currentTarget.elements;
20
21    const email = form.email.value;
22    const password = form.password.value;
23    const doNotLogout = form.doNotLogout.checked;
24
25    if (event.currentTarget.checkValidity() === true && email && password) {
26      setLoginUserResponseState({ loading: true });
27      loginUserApiRequest(email, password, doNotLogout)
28    }
29  };
30
31  return (
32    <Form onSubmit={handleSubmit}>
33      <Row>
34        <Col>
35          <Form.Group controlId="formBasicEmail">
36            <Form.Label>Email addressPassword


PASS src/pages/components/HomePageComponent.test.js  
PASS src/pages/components/LoginPageComponent.test.js  
PASS src/pages/admin/AdminChatsPage.test.js


```

3. API Testing with Jest and Mocking:

- Purpose: Extensive API testing was performed to validate the request-response cycle, error handling, and authentication mechanisms on the server-side.
- Approach: API tests were written using Jest and mocked Axios requests to simulate various scenarios.
- Example: API tests in 'LoginPageComponent.js' verified successful and failed login attempts. Mocking the 'loginUserApiRequest' function allowed testing of correct and incorrect credential scenarios, ensuring appropriate application responses.

4. Integration Testing:

- Purpose: Integration testing focused on ensuring seamless communication and functionality between different modules and components.
- Approach: Integration tests were conducted to validate interactions between frontend components, Redux state management, and backend APIs.
- Example: In AdminChatsPage.test.js, integration tests were performed to verify the display of chat messages in the admin interface. Mocked Redux state and React Redux hooks facilitated testing of component behavior under various chat room scenarios.

The screenshot shows a code editor in VS Code with the file `AdminChatsPage.test.js` open. The code is a Jest test for a React component, specifically testing if a chat message is seen. It includes imports for `render`, `waitFor`, `MemoryRouter`, and `AdminChatsPage`. It uses `useSelectorMock` and `useDispatchMock` from `react-redux` to mock state and dispatch actions. The test suite includes a `beforeEach` block to clear mocks, and a `test` block that passes.

```

1 import { render, screen, waitFor } from "@testing-library/react";
2 import "@testing-library/jest-dom";
3 import { MemoryRouter as Router } from "react-router-dom";
4 import AdminChatsPage from "./AdminChatsPage";
5 import * as reactRedux from "react-redux";
6
7 const useSelectorMock = jest.spyOn(reactRedux, "useSelector");
8 const useDispatchMock = jest.spyOn(reactRedux, "useDispatch");
9
10 beforeEach(() => {
11   useSelectorMock.mockClear();
12   useDispatchMock.mockClear();
13 });
14 // afterEach(() => {});
15 // beforeEach(() => {});
16 // afterEach(() => {});
17
18 var mockState = {
19   chatRooms: [
20     X0jxqBwG7WgCoFD_AAAI: [
21       {
22         client: "Hello my dear admin!",
23       },
24     ],
25   },
26   socket: { connected: true },
27 }
28

```

Below the code editor, the terminal shows the test results:

```

Test Suites: 3 passed, 3 total
Tests:      3 passed, 3 total
Snapshots:  0 total
Time:       1.425 s
Ran all test suites related to changed files.

```

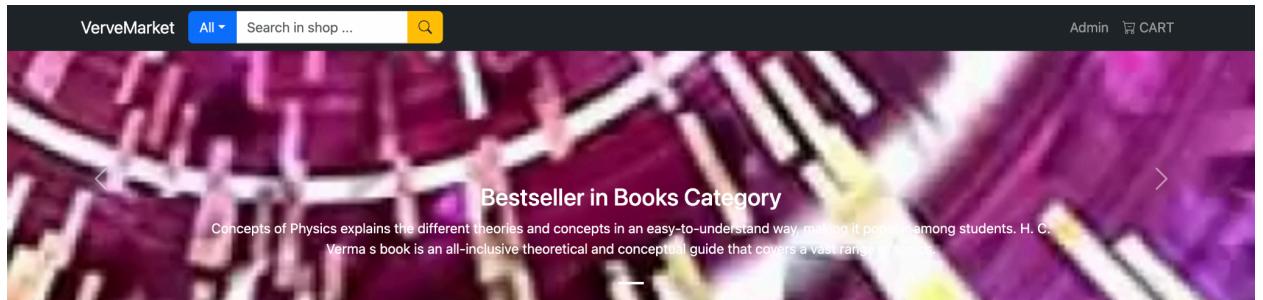
The bottom status bar shows the current line (Ln 32, Col 13), character count (Spaces: 2), encoding (UTF-8), and file type (JavaScript). There are also icons for Go Live, Stylelint+, Quokka, and Prettier.

5. Testing Reports and Outcomes:

- While the testing scope was limited to unit testing and basic end-to-end testing, the outcomes were highly satisfactory, with all tested functionalities performing as expected.
- The selected test cases provided valuable insights into the robustness and reliability of the application. Any identified issues were promptly addressed, contributing to the overall quality assurance of the project.

4. Screenshots

Homepage



Registration Page

The screenshot shows the registration page for VerveMarket. The URL in the browser bar is 'localhost:3000/register'. The page has a dark header with the 'VerveMarket' logo, a search bar, and links for 'Login', 'Register', and 'CART'. The main content area is titled 'Register' and contains fields for 'Your name' (Rithik), 'Your last name' (Singh), 'Email address' (rithik1@rithik1.com), 'Password' (a redacted field), and 'Repeat Password' (a redacted field). A note below the password field states 'Password should have at least 6 characters'. At the bottom, there is a link 'Do you have an account already? [Login](#)' and a blue 'Submit' button. A small blue circular icon with a white speech bubble is located in the bottom right corner of the page.

Profile setup Page

VerveMarket All Search in shop ...  Rithik Singh  CART

Change your profile

Your name

Your last name

Email address

Phone number

Address

Country

Zip Code

City



Product page

VerveMarket All Search in shop ...  Rithik Singh  CART

SORT BY

FILTER:
Price no greater than: 500\$ 

Rating
 ★★★★★
 ★★★★★★
 ★★★★★★★
 ★★★★★★★★
 ★★★★★★★★★

Genre
 movie
 comedy
 thriller
 History
 Educational literature

Language
 Hindi
 English

Binding
 Paperback

Filter **Reset filters**



Concept Of Physics - HC Verma

Concepts of Physics explains the different theories and concepts in an easy-to-understand way, making it popular among students. H. C. Verma's book is an all-inclusive theoretical and conceptual guide that covers a vast range of topics.

★★★★★ (0)

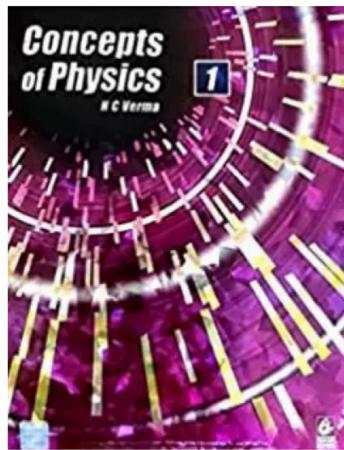
\$10 [See product](#)

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Concept Of Physics - HC Verma

(1)

Price \$10

Concepts of Physics explains the different theories and concepts in an easy-to-understand way, making it popular among students. H. C. Verma's book is an all-inclusive theoretical and conceptual guide that covers a vast range of topics.

REVIEWS

Rithik Singh

2024-04-22

Nice book. You get to learn many things from basics to advance.

Write a review

Nice book. You get to learn many things from basics to advance.

4 (good)

Submit You successfully reviewed the product!



Status: in stock

Price: \$10

Quantity:

1

Add to cart

Cart Page

Shopping Cart



Concept Of
Physics - HC
Verma

\$10

1



Subtotal (1 Product)

Price: \$10

Proceed To Checkout



Order page

VerveMarket All Search in shop ... 

Rithik Singh  CART

Order Details

Shipping

Name: Rithik Singh
Address: 123- Asd, Plot-2 Ghaziabad Uttar Pradesh 201010
Phone: 9999999999

Not delivered

Payment method

PayPal

Not paid yet

Order items



Concept Of Physics - HC Verma

\$10

1



Order summary

Items price (after tax): \$10

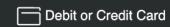
Shipping: included

Tax: included

Total price: \$10

To pay for your order click one of the buttons below

 PayPal

 Debit or Credit Card

Powered by  PayPal

Pay with

  PayPal balance \$10.00

Make this my preferred way to pay

 CREDIT UNION 1 (AK)
Checking ****8992

 Visa
Credit ****5984

 PayPal Credit
Apply for PayPal Credit Pay over time for your purchase of \$10.00 with PayPal Credit. Subject to credit approval. [See terms](#)

[+ Add debit or credit card](#)

Pay Later

  Pay in 4
4 interest-free payments on eligible purchases of \$30.00-\$1,500.00.
Not available for this transaction.

  Pay Monthly
Pay over time for eligible purchases of \$199.00-\$10,000.00. Not available for this transaction.

[Complete Purchase](#)

[Payment method rights](#)

VerveMarket All Search in shop ...  Rithik Singh  CART

Order Details

Shipping

Name: Rithik Singh
Address: 123- Asd, Plot-2 Ghaziabad Uttar Pradesh 201010
Phone: 9999999999

Not delivered

Payment method

PayPal

Paid on 2024-04-22T11:46:56.592Z

Order summary

Items price (after tax): \$10
Shipping: included
Tax: included
Total price: \$10

Thank you for your payment!



My Orders Page

VerveMarket All Search in shop ...  Rithik Singh  CART

My Orders

#	User	Date	Total	Delivered	Order details
1	You	2024-04-22	10	✗	go to order



localhost:4000/orders/1

Admin Orders Page

VerveMarket All ▾ Search in shop ... 

Admin  CART

Orders						
#	User	Date	Total	Delivered	Payment Method	Order details
1	John Doe	2024-04-21	100	X	pp	go to order
2	Rithik Singh	2024-04-22	10	X	pp	go to order
3	John Doe	2024-04-21	100	✓	cod	go to order
4	John Doe	2024-04-21	200	✓	cod	go to order
5	John Doe	2024-04-21	100	X	cod	go to order

Admin Product List page

VerveMarket All ▾ Search in shop ... 

Admin  CART

#	Product Name	Price	Category	Edit/Delete
1	IAS Samanya Adhyayan Notes For UPSC Prelims	50	Books	 / 
2	Concept Of Physics - HC Verma	10	Books	 / 
3	WORLD LITERATURE IN YOUR FIST An Assortment Of English Literature (3rd Edition) (Paperback, Dr. PREM SHANKAR PANDEY)	70	Books	 / 
4	ASUS Vivobook Go 15 (2023) AMD Ryzen 3 Quad Core 7320U - (8 GB/512 GB SSD/Windows 11 Home) E1504FA-NJ321WS Thin and Light Laptop (15.6 Inch, Cool Silver, 1.63 Kg, With MS Office)	1000	Computers/Laptops	 / 
5	Lenovo V15 Series AMD Athlon Dual Core 7120U	800	Computers/Laptops	 / 

Admin : User list

VerveMarket		All ▾	Search in shop ...	🔍	Admin	CART	
	Orders						
	Products	#	First Name	Last Name	Email	Is Admin	Edit/Delete
	Users	1	admin	admin	admin@admin.com	✓	☒ / ⚡
	Chats	2	John	Doe	john@doe.com	✗	☒ / ⚡
	Analytics	3	Rithik	Singh	rithik1@rithik1.com	✗	☒ / ⚡
	Logout						

Admin : Create Product

VerveMarket		All ▾	Search in shop ...	🔍	Admin	CART
<h3>Create a new product</h3> <p>Go Back</p> <p>Name HP Laptop 15s, 12th Gen Intel Core i3, 15.6-inch</p> <p>Description crisp, stunning visuals.;?Upgraded memory and storage? 8GB DDR4 RAM and 512GB SSD help you undertake improved multitasking with ample of storage and higher-bandwidth memory. Now, create, browse, and work as you please! ↗</p> <p>Count in stock 7</p> <p>Price 800</p> <p>Category X (remove selected) Computers/Laptops</p> <p>Or create a new category (e.g. Computers/Laptops/Intel)</p> <p>Choose attribute and set value SSD Capacity</p> <p>Attribute value 512 GB</p>						

Or create a new category (e.g. Computers/Laptops/Intel)

Choose attribute and set value Attribute value

SSD Capacity	512 GB
--------------	--------

Attribute	Value	Delete
RAM	8 GB	X
color	black	X
Operating System	Windows 11	X
SSD Capacity	512 GB	X

Create new attribute Attribute value

first choose or create category	first choose or create category
---------------------------------	---------------------------------

Images

Choose files	Screenshot 2024-04-22 at 5.39.35PM
--------------	------------------------------------

Create

Copyright © VerveMarket

Admin chat

VerveMarket All Search in shop ...

Rithik Singh CART

Bestseller in Books Category

Concepts of Physics explains the different theories and concepts in an easy-to-understand way, making it popular among students. Verma's book is an all-inclusive theoretical and conceptual guide that covers a vast range of topics.

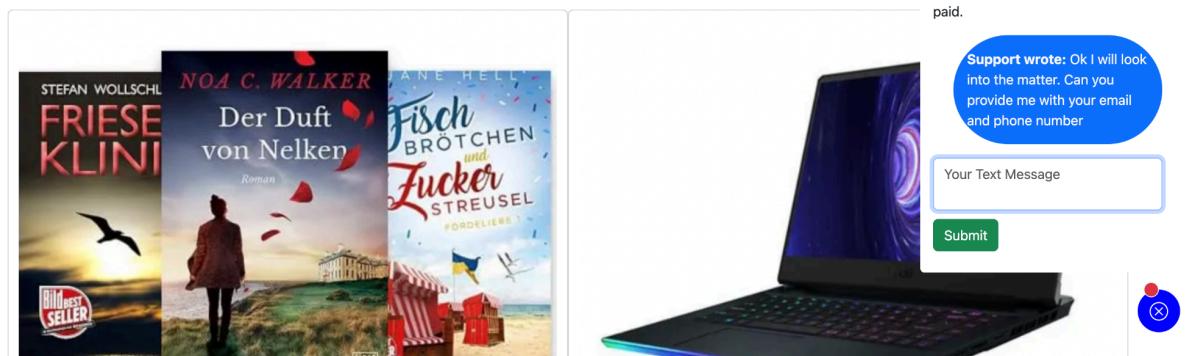
Let's Chat - Online

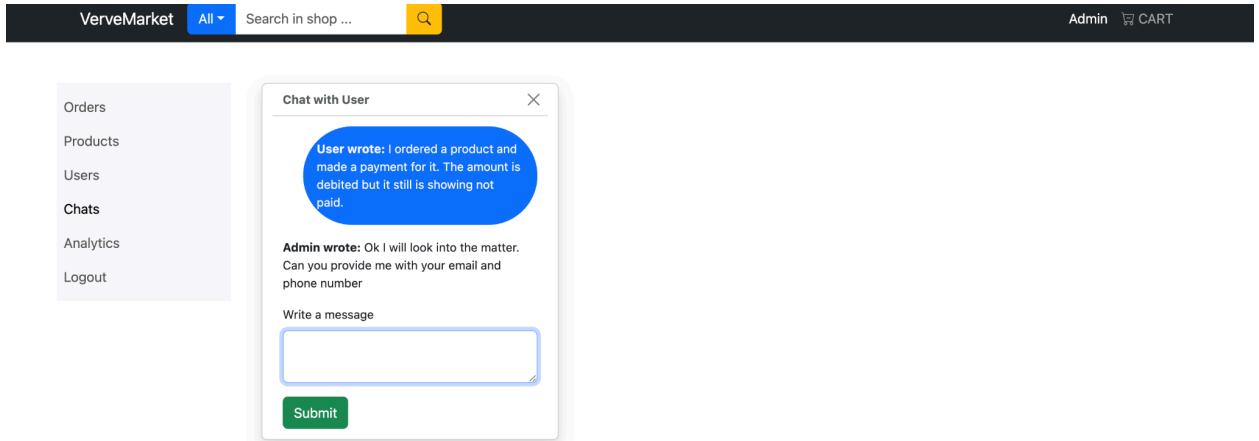
You wrote: I ordered a product and made a payment for it. The amount is debited but it still is showing not paid.

Support wrote: Ok I will look into the matter. Can you provide me with your email and phone number

Your Text Message

Submit





Admin Analytics Page

