Abstract:

Building an e-commerce platform involves several complex components. Here's a high-level overview of how you can implement user registration and authentication, shopping cart functionality, and the checkout process using Node.js and Express.js:

\*\*1. User Registration and Authentication:\*\*

To implement user registration and authentication, you'll need to create a backend API using Node.js and Express.js and a database to store user information. You can use a database like MongoDB or PostgreSQL. Here's an outline of the steps:

- Create a registration endpoint that accepts user information (e.g., username, email, password) and stores it securely in the database.

- Implement an authentication endpoint where users can log in using their credentials (username/email and password). You can use password hashing and salting to securely store and compare passwords.

- Use JSON Web Tokens (JWT) for user authentication. When a user logs in successfully, generate a JWT and send it back to the client.

- Add middleware to protect your routes. Users must include the JWT in the headers of their requests to access protected resources.

Here's an example of how to create a simple registration and authentication route using Express.js:

```javascript

const express = require('express');

const jwt = require('jsonwebtoken');

const bcrypt = require('bcrypt');

const app = express();

// Registration

app.post('/register', async (req, res) => {

const { username, email, password } = req.body;

// Hash and salt the password before storing it in the database

const hashedPassword = await bcrypt.hash(password, 10);

// Save user information in the database

res.json({ message: 'User registered successfully' });

});

// Authentication

app.post('/login', async (req, res) => {

const { email, password } = req.body;

// Check if the user exists in the database

// Compare the hashed password with the provided password

// If authentication is successful, generate a JWT

const token = jwt.sign({ email }, 'your\_secret\_key', { expiresIn: '1h' });

res.json({ token });

});

app.listen(3000, () => {

console.log('Server is running on port 3000');

});

```

\*\*2. Shopping Cart Functionality:\*\*

To implement the shopping cart functionality, you can create a cart model in your database and associate it with the user. Here are the key steps:

- Create an API endpoint to add products to the user's cart. You'll need to associate the cart with the user's ID.

- Implement routes to view and update the cart contents (add, remove, change quantities).

- Calculate the total price of the items in the cart by fetching product prices from your database.

Here's a simplified example of how to add products to a user's shopping cart:

```javascript

// Assume you have a Cart model in your database

const Cart = require('./models/cart');

// Add a product to the user's cart

app.post('/add-to-cart', async (req, res) => {

const { userId, productId, quantity } = req.body;

// Find the user's cart by their user ID

const cart = await Cart.findOne({ userId });

// Add the product to the cart or update its quantity

// Remember to update the total price

res.json({ message: 'Product added to the cart' });

});

```

\*\*3. Checkout Process:\*\*

The checkout process involves creating an endpoint to complete the purchase. Here are the main steps:

- Create a route for the checkout process where users can review their cart and confirm the order.

- Calculate the final total, including tax and shipping fees.

- Implement payment processing using a payment gateway like Stripe or PayPal.

- Update the order status in the database.

Here's a simplified example of a checkout route:

```javascript

app.post('/checkout', async (req, res) => {

const { userId } = req.body;

// Retrieve the user's cart

const cart = await Cart.findOne({ userId });

// Calculate the final total, including taxes and shipping fees

// Process the payment using a payment gateway (e.g., Stripe)

// Create an order in the database and associate it with the user

res.json({ message: 'Order placed successfully' });

});

```

This is a high-level overview, and building a full-fledged e-commerce platform involves many more features and considerations, such as product management, order history, and security. Additionally, you may need to set up frontend components for user interfaces, like the shopping cart view and checkout forms. Make sure to implement proper error handling and security measures to protect user data and ensure a smooth shopping experience.The Leather Industry

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Services

Database: IBM cloud is a vast data storage method . The IBM®Cloudant distributed database has a 99.99% SLA and is completely managed. It is designed for heavy workloads and quickly expanding online and mobile apps. For hybrid or multicloud systems, Cloudant's API and replication protocols are compatible with Apache CouchDB and it elastically scales throughput and storage. We have use cloudant database with json for creating datbases which were required for storaging information in ecommerce website by using ibm cloud.three databases are created for storing information.Database1 is used for storing product details,database2 is used for storing customer details and database3 is used for sale and order Query: Datbase1:product details (IBM link for product details: { "id": "7eeb69405a1c1fee787bbe6ce927116f", "key": "7eeb69405a1c1fee787bbe6ce927116f", "value": { "rev": "2-f0122cf7f17152dbe0fead3247833748" } }) { "prod\_id":"lp001", "product\_name":"leather shoes", "description":"durability for timeless footwear ", "price":"$50", "stock":"full" } { "prod\_id":"lp002", "product\_name":"leather bags", "description":"adding a touch of sophistication to your outfit", "price":"$70", "stock":"full" } { "prod\_id":"lp004", "product\_name":"leather belts", description:"adding a polised look to your attair", price:"$40", stock:"full" } { "prod\_id":"lp005", "product\_name":"leather jackets", "description":"blend of classic and warmth", "price" :"$80", "stock":"full" } { "prod\_id":"lp006", "product\_name":"leather gloves", "description":"keeping your hands cozy", "price":"$25", "stock":"full" } { "prod\_id":"lp007", "product\_name":"leather wristwatch", "description":"making your watch stretchable", "price":"$20", "stock":"full" } { "prod\_id":"lp008", "product\_name":"leather hats", "description":"offers fashionable touch to you", "price":"$30", "stock":"full" } Database2:customer details(IBM link for customer details: { "id": "058a624389be77f19cf0e854a9ed05b0", "key": "058a624389be77f19cf0e854a9ed05b0", "value": { "rev": "1-944a1cf94daebcce92a5d811db164291" } }) { "0": { "cus id": "li001", "fname": "abi", "lname": "naya", "gender": "F", " email\_id": "abinaya06@gmail.com", "address": "no 4,keelaraja veedi ,thanjavur-614625, ph-no:9863457890" }, "1": { "cus id": "li002", "fname": "abinesh", "lname": "bath", "gender": "M", " email\_id": "abiabinesh@gmail.com", "address": "no-436,maada veedi ,cumbum,theni-600875,ph-no:8882657890" }, "2": { "cus id": "li003", "fname": "lansuri", "lname": "", "gender": "F", " email\_id": "lansu2003@gmail.com", "address": "no-436,mgr nagar ,sollinganallur,chennai-600011,ph-no:8626987090" }, "3": { "cus id": "li004", "fname": "siva", "lname": "sakthi", "gender": "O", " email\_id": "sivasakthi10@gmail.com", "address": "no-424,muslim street,old town ,cuddalore-600005,ph-no:8751723120" }, "4": { "cus id": "li005", "fname": "zach", "lname": "hamin", "gender": "M", " email\_id": "riderzachh@gmail.com", "address": "no-7,north st ,thaiyur,kallakuruchi-610875,ph-no:8229317890" }, "\_id": "058a624389be77f19cf0e854a9ed05b0", "\_rev": "1-944a1cf94daebcce92a5d811db164291" } Database 3:sales and transaction:(IBM link for sales& transaction: { "id": "0e2c158d1f8c6cbf3f1fa40285a6d5c5", "key": "0e2c158d1f8c6cbf3f1fa40285a6d5c5", "value": { "rev": "1-d3561814f3848fa3fbb2e73b84cb7ccf" } }) [{ "order id":"OCP001", "customer id":"li002", "product id":"lp002", "order date":"20/04/2023", "received by":"23/04/2023", "quantity":"1", "total":"$51" }, { "order id":"OCP002", "customer id":"li003", "product id":"lp001", "order date":"21/04/2023", "received by":"24/04/2023", "quantity":"1", "total":"$71" }, { "order id":"OCP003", "customer id":"li004", "product id":"lp004", "order date":"25/04/2023", "received by":"28/04/2023", "quantity":"1", "total":"$41" }, { "order id":"OCP004", "customer id":"li005", "product id":"lp003", "order date":"26/04/2023", "received by":"29/04/2023", "quantity":"2", "total":"$82" }, { "order id":"OCP005", "customer id":"li001", "product id":"lp007", "order date":"30/04/2023", "received by":"02/05/2023", "quantity":"1", "total":"$41" } ] Conclusion: this cloud-based e-commerce website represents the future of online retail, offering businesses the tools they need to succeed in the digital age. With its scalability, reliability, security, and flexibility, it empowers businesses to adapt to ever-changing market demands, while providing customers with a convenient, personalized, and efficient shopping experience. The cloud is the backbone of this innovative platform, ensuring it remains at the forefront of e-commerce technology.Front end involves all the user required features while the cloudant is act as a backbone for storing information via databases.