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HACKATHON DAY 6
Deployment Preparation and Staging
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Staging Environment Setup, Deployment, and Testing Documentation

Overview

This documentation outlines the steps involved in setting up the staging environment, deploying the marketplace, and conducting detailed tests for the marketplace project. It covers activities from Day 1 to Day 6 and includes proper organization of the GitHub repository, documentation, and test reports.

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1. Setting Up the Staging Environment

Objective:

The primary objective of setting up the staging environment is to create a replica of the production environment where the marketplace can be tested thoroughly before going live.

Steps to Set Up Staging Environment:

1. **Create a Staging Branch:**
   - Create a new branch in the GitHub repository called `staging` to ensure that the staging environment reflects the latest features and fixes without affecting the production branch.
   - Use Git commands to create and push the branch:

   ```bash
   CopyEdit
   git checkout -b staging
   git push origin staging
   ```

2. **Set Up the Deployment Platform (Vercel):**
   - Connect the GitHub repository to Vercel for seamless deployments.
   - Set up the staging deployment on Vercel by selecting the `staging` branch for deployment.
   - Configure environment variables in the Vercel dashboard for any API keys, secrets, or configuration settings specific to the staging environment.

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3. **Configure Database (If Applicable):**
   o Set up a staging database that mirrors the production database but contains test data. This ensures that the marketplace can be tested without affecting real user data.
   o Ensure that the database connection strings are correctly set in the environment variables for the staging environment.
4. **Ensure Proper Access Control:**
   o Limit access to the staging environment to only team members or stakeholders to avoid external traffic.
   o Set up password protection or restrict access via IP addresses if necessary.
5. **Monitor Logs and Errors:**
   o Implement logging to capture errors and monitor performance. Tools like Sentry, LogRocket, or Vercel's built-in logs can be used to capture any issues during the staging phase.

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2. Deploying the Marketplace to Staging

Objective:

Deploy the marketplace to the staging environment to simulate real-world usage and perform testing on the deployed version.

Deployment Process:

1. **Push Code to Staging Branch:**
   o Ensure that all the latest features, bug fixes, and code changes are pushed to the `staging` branch of the GitHub repository.
   o Merge any pull requests into the staging branch for the latest updates.
2. **Deploy to Vercel:**
   o Vercel will automatically deploy the latest code from the `staging` branch to the staging environment.
   o Once deployed, Vercel provides a URL where the staging version of the marketplace can be accessed for testing.
3. **Verify Deployment:**
   o After the deployment, verify that the marketplace is accessible via the staging URL.
   o Ensure that all pages (e.g., Home, Product, Cart, Checkout) load correctly and that the application functions as expected.

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4. **Check Logs and Performance:**
   o Review the logs for any errors or issues that may have occurred during deployment.
   o Check the performance using tools like Lighthouse to ensure the application is optimized for speed and usability.

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3. Conducting Detailed Tests

Objective:

Conduct detailed tests on the deployed staging environment to ensure that all functionality works as expected and that the marketplace is ready for production deployment.

Types of Tests to Perform:

1. **Functional Testing:**
   o **Homepage Load Test:** Verify that the homepage loads correctly and all elements (e.g., banners, products, navigation) are displayed.
   o **Product Page Test:** Verify that product details are shown correctly and that the "Add to Cart" functionality works.
   o **Cart Functionality Test:** Test adding and removing items from the cart, as well as verifying the cart's total.
   o **Checkout Process Test:** Ensure the checkout process works, including the form validation, payment gateway integration, and order confirmation.
   o **Wishlist Functionality Test:** Verify that users can add and remove items from their wishlist.
2. **Performance Testing:**
   o Use **Lighthouse** or **WebPageTest** to evaluate the performance of the marketplace in terms of load time, accessibility, SEO, and best practices.
   o **Load Testing:** Simulate traffic to the marketplace to see how it handles multiple concurrent users.
3. **Security Testing:**
   o **Cross-Site Scripting (XSS) and Cross-Site Request Forgery (CSRF) Tests:** Ensure that the application is secure from common web vulnerabilities.
   o **HTTPS and Secure Cookies:** Verify that the application uses HTTPS and that cookies are set with secure attributes.
4. **Usability Testing:**

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- o **User Interface (UI) Testing:** Ensure that the marketplace is intuitive and easy to navigate on both desktop and mobile devices.
- o **Responsive Design:** Test the marketplace on different screen sizes (mobile, tablet, desktop) to ensure a seamless user experience.
5. **API Testing:**
   - o Test the APIs used by the marketplace (e.g., for product data, user authentication) to ensure they are working correctly.
   - o Check for proper error handling and fallback mechanisms in case of API failures.

Test Reports:

- **CSV Test Report:** A CSV file will be generated to document the status of each test case. The report will include test case IDs, names, steps, expected results, and statuses (Done, Pending, Failed).
- **HERE IS A LINK:** https://github.com/MehwishSheikh15/testing-report

- **Dashboard (Optional):** If using an automated testing tool like Cypress or Playwright, the results can be displayed in a testing dashboard to track the status of each test case in real-time.

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4. Organizing GitHub Repository

Objective:

Ensure that all activities from Day 1 to Day 6 are properly organized in the GitHub repository for easy reference and collaboration.

Repository Structure:

- **/src**: Contains all the source code for the marketplace, including pages, components, and API routes.
- **/tests**: Includes test files for both unit tests and end-to-end tests.
- **/docs**: Contains all documentation files, including the test reports, setup instructions, and any other relevant project documentation.
- **/scripts**: Includes deployment and setup scripts, if any, used for staging or production environments.
- **/public**: Contains static files such as images, fonts, and icons.

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- `README.md`: The main readme file, which provides an overview of the project, setup instructions, and links to documentation.

Commit Messages:

- Ensure all commit messages are clear and descriptive, such as:
    - `Added product page with dynamic data fetching`
    - `Fixed cart functionality issue with product quantity`
    - `Updated staging environment configuration for Vercel deployment`

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5. Final Steps and Production Deployment

Objective:

Once all tests are successful and the staging environment is stable, prepare for production deployment.

Steps for Production Deployment:

1. **Merge Staging Branch into Production:**
    - Once all tests pass and the staging environment is verified, merge the `staging` branch into the `production` branch.
    - Use GitHub's pull request feature to review and merge the changes.
2. **Deploy to Production:**
    - Deploy the production branch to the production environment using the same deployment platform (e.g., Vercel).
    - Ensure that all production environment variables are correctly set.
3. **Monitor Production Deployment:**
    - After deployment, monitor the production environment for any issues.
    - Continue to monitor logs and performance to ensure a smooth user experience.

Conclusion

This documentation covers the process of setting up the staging environment, deploying the marketplace, conducting detailed tests, and organizing the GitHub repository. By following these

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steps, you ensure that your marketplace is thoroughly tested and deployed in a controlled, organized manner before going live.