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Assignment for Module 2.8
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About the Project

To develop a cloud-native, B2C e-commerce software platform for an online retail business selling men/women clothing, accessories, shoes, etc.

The implementation goals of the software platform are as follows:

• Provide both 1-Click Buying and Same-Day Delivery services for greater customer satisfaction.
• Implement an AI-based customer product recommendation system with closed-loop feedback that offers customers the right products at the right time, right place with the right deals.
• Offer a loyalty-based, rebate system that encourages first-time and ongoing customer purchases.
• Support high resilience, availability and scalability to ensure the best-in-class uptime of '24x7 shopping'.

The Right Methodology for the Project

Agile software development ('Asd') is best suited for delivering a highly responsive, customer-focused, and resilient e-commerce platform because:

• Rapid Iteration and Flexibility: Asd's iterative approach enables the quick development and refinement of features like 1-Click Buying and Same-Day Delivery. The flexibility of Asd ensures that these services can be continually optimized based on customer feedback and evolving market demands, enhancing overall customer satisfaction.
• Customer-Centric Development: Asd emphasizes continuous stakeholder feedback, which is crucial for implementing an AI-based customer product recommendation system. This system, with its closed-loop feedback mechanism, can be iteratively improved to ensure customers receive the right products at the right time, in the right place, with the right deals, thereby increasing relevance and customer engagement.
• Incremental Delivery: Asd's focus on delivering small, functional increments allows for the early rollout of essential features, such as a loyalty-based rebate system. This approach encourages both first-time and repeat purchases by gradually enhancing the platform's capabilities while ensuring a swift time-to-market.
• Collaboration and Communication: The Asd framework fosters close collaboration among developers, AI specialists, and business stakeholders, which is critical for the seamless integration of features like high resilience and scalable infrastructure. This ensures the platform can support 24x7 shopping with best-in-class uptime, providing a reliable and consistent shopping experience.
• Continuous Improvement: Asd's emphasis on retrospectives and iterative

refinement helps in continuously enhancing the platform's resilience, availability, and scalability. This ensures the platform remains robust, capable of handling high traffic and providing uninterrupted services.

The Right Software Deployment for the Project

Basing on the implementation goals, Continuous Deployment (CD) combined with Blue-Green Deployment is the most suitable software deployment methodology because:

1. Continuous Deployment (CD):
• Rapid Feature Releases: CD allows for the automatic deployment of code changes to production as soon as they pass automated testing. This is critical for maintaining and enhancing features like 1-Click Buying, Same-Day Delivery, and the AI-based recommendation system, enabling swift updates and continual improvements.
• Frequent Updates: CD supports the iterative nature of Agile, ensuring that updates to the loyalty-based rebate system or AI algorithms can be deployed frequently without manual intervention, keeping the platform up-to-date and responsive to customer needs.
• Reduced Risk: By deploying small, incremental changes continuously, CD reduces the risk associated with large-scale deployments, ensuring that any issues can be quickly identified and resolved with minimal impact on the platform's availability.

2. Blue-Green Deployment:
• Zero Downtime: Blue-Green Deployment ensures that your platform can achieve the best-in-class uptime required for 24x7 shopping. By maintaining two identical productions environments (blue and green), traffic can be switched seamlessly between them during updates, allowing for new features or updates to be deployed without affecting the live system.
• Easy Rollback: If an issue arises during deployment, Blue-Green Deployment allows for an instant rollback to the previous stable environment, ensuring high resilience and maintaining customer trust.
• Testing in Production: This methodology allows for the testing of new features in a production-like environment (the blue or green instance) before they are fully rolled out, ensuring that the AI recommendations, 1-Click Buying, and other critical features work as intended under real-world conditions.

CI/CD Pipeline Tools to use for the Project

It is recommended as follows:
• Source Control: AWS CodeCommit or GitHub.
• CI/Build: Jenkins or AWS CodeBuild.
• Testing: Integrated with Jenkins pipelines or using AWS CodeBuild.
• CD/Deployment: AWS CodeDeploy with Blue-Green deployment strategy.
• Infrastructure Management: Terraform for IaC.
• Containerization & Orchestration: Docker and Kubernetes.
• Monitoring & Observability: Prometheus for metrics and alerting, Grafana for visualization.
• Application & Infrastructure Monitoring: Amazon CloudWatch, integrated with Prometheus and Grafana for a comprehensive monitoring solution.