

## Practice Questions: Lecture 10: Testing, Deployment and DevOps

1. Explain the concept of Blue-Green deployment and how it ensures zero-downtime deployments. Apply this concept to the Hostel Booking System and outline the steps involved.
2. Describe the role of CI/CD in the software development lifecycle. How would you implement CI/CD pipelines for the Hostel Booking System? Highlight specific tools and processes.
3. Discuss the advantages of containerisation (e.g., Docker) and orchestration tools (e.g., Kubernetes) in a deployment environment. Provide a scenario where these technologies could benefit the Hostel Booking System.
4. Define the key characteristics of Progressive Web Apps. How can these characteristics benefit users of the Hostel Booking System?
5. How does responsive design contribute to the overall user experience in a PWA? Explain how accessibility considerations can be integrated into the design of the Hostel Booking System.
6. Given a code snippet, write a Jest unit test for a function in the Hostel Booking System that calculates the total cost of a booking. Ensure that edge cases, such as invalid inputs, are covered.
7. Explain the importance of unit testing in ensuring the reliability of individual functions.
8. Propose a usability test scenario for the Hostel Booking System user interface. Include specific tasks and success criteria.
9. Discuss how usability testing enhances the user experience in web applications.
10. Write a performance test script using a suitable tool to simulate concurrent user interactions with the Hostel Booking System. Analyse the results and identify potential performance bottlenecks.
11. Explain the significance of performance testing in optimising web application responsiveness.
12. You are provided with code developed by a student. Identify potential security vulnerabilities in the authentication process of the Hostel Booking System. Propose a security test to validate the system's resistance to common attacks.
13. Discuss the role of security testing in safeguarding web applications and user data.
14. You are provided with a code snippet representing a bug fix in the Hostel Booking System. Write a Jest regression test to ensure the bug does not reoccur in future releases.
15. Discuss the importance of regression testing in maintaining code stability during development.