General Ideas: Web App Testing

CS 3250
Software Testing

[R. Chopra, “Software Testing,” Ch. 11]

Web App Testing

• Increasingly reliance on web apps

• Many types of users connected – web apps should respond according to the user requirements

• Reliable behavior of the apps is crucial

• Two main categories
  • Functional testing
  • Non-functional testing *(good to know, will not be tested)*
Functional Testing

Verify and Validate (V&V) that the software behaves as expected (static and dynamic)

CS 3250 mainly focuses on functional testing using coverage criteria
Non-Functional Testing

- Configuration testing
- Usability Testing
- Performance testing
- Scalability testing
- Security testing
- Recoverability testing
- Reliability testing

- Requirements and assumptions are understood by the development team
- Test environments with those choices are put in place to properly test
Non-Functional Testing

- Configuration testing
- Usability Testing
- Performance testing
- Scalability testing
- Security testing
- Recoverability testing
- Reliability testing

- Compliance with standards and guidelines established throughout the industry
- Shneiderman’s 5 criteria for measuring usability:
  - Time to learn
  - Speed of UI performance
  - Avoiding user errors
  - Retention of skills
  - Subjective satisfaction
Non-Functional Testing

- Configuration testing
- Usability Testing
- Performance testing
- Scalability testing
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- Reliability testing

- Timely responses: compare time needed to complete an action against
  - Time to perform a similar action in previous version of the same program
  - Time to perform the identical action in a similar program
- Load testing: test for performance slow-downs that occur as additional users use the app
- Done through “browser” or directly on the “server”
## Non-Functional Testing

- Configuration testing
- Usability Testing
- Performance testing
- Scalability testing
- Security testing
- Recoverability testing
- Reliability testing

### Details:

- **Ability to sustain its required number of simultaneous user and/or transactions** while maintaining adequate response times to its end users.

- **Configuration of the server under test** is critical:
  - (Almost) identical on the test environment and the production environment

- **Threshold requirement**:
  - Based on existing traffic levels
Non-Functional Testing

- Configuration testing
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- Reliability testing

- Regulate access to information
- Verify user identities
- Encrypt confidential information
- HTTP POST vs. HTTP GET
- State maintenance: cookies, server-side sessions
- Forward vs. redirect control connections
Non-Functional Testing

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Test the rerouting mechanism
- A backup, duplicate, or distributed server to which the traffic is rerouted when the primary server fails
Non-Functional Testing

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Evaluate the product’s ability to perform its required functions and give responses under stated conditions for specified period of time.