



Technical Presentation Milestone

## Comparing Testing Frameworks for Android Applications

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Comparing Testing Frameworks for Android Applications

### Goal of Presentation

- Highlight importance of testing
- Illustrate how each testing framework works
  - Espresso vs. Robolectric
- Help audience decide which framework is right for their projects

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### Types of Tests

#### Unit Tests:

- Assert properties of single programmatical function
- Stub functionality not related to function being tested
- Isolated in terms of code

#### Functional Tests:

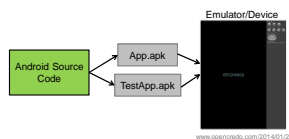
- Assert completeness and correctness of single feature
- Harder to stub functionality
- Isolated in terms of business logic

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### How Espresso Works

- Espresso decorates Android Instrumentation Test Framework
- Deploys packaged app to an Android device
- Performs UI commands based on timer

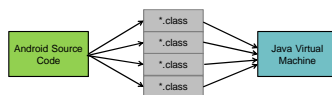


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### How Robolectric Works

- Android OS is mocked in JVM
- OS-specific operations don't happen, result is faked
- No real UI, screen operations are mocked
- Excels at unit testing



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### Motivation Behind Testing

- Flexibility
  - Change code without fear
- Maintainability
  - Tests act as documentation
- Reusability
  - Each component works

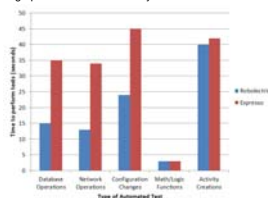
"Only judge detailed enough to test code is code."

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### Speed Evaluation

- Long operations are mocked by Robolectric

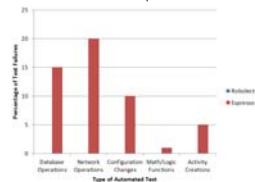


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### Reliability Evaluation

- Espresso unreliable due to timer-based system
- Robolectric reliable because operations are mocked out



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### Code Coverage Evaluation

- Robolectric performs tests using shadow objects
- Robolectric ships new shadow objects regularly, but still behind
- Perpetual lag of shadow objects vs. actual objects
- Espresso has no such limitation
- Espresso favoured in this category

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