COSC 499: Capstone Software Engineering Project

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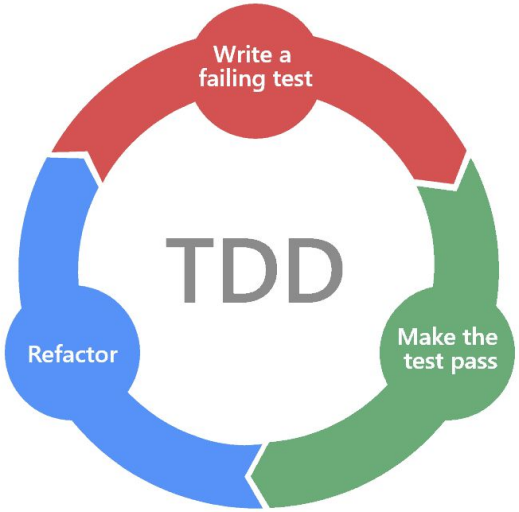
Project Assignment

- Each project option should have a similar number of teams
- What are your preferences?
  - Image Aesthetics
  - Charity Donations
  - Insurance Policy Checks
  - Transactions Querying
- Take 5-10 minutes to finalize your team's preferred projects
- We will assign teams after that

Rest of this Class

- Discuss requirements for your project
  - Become familiar with your project option
  - Who are your target user groups?
  - What are their usage scenarios?
  - What requirements are needed to satisfy those scenarios? (use case diagram)
  - How do you test *each* requirement?
- Use case pre-conditions and post-conditions
  - These should be tested too!
- Review report expectations
- Consider alternative workflows and additional use cases

Test Driven Development (TDD)

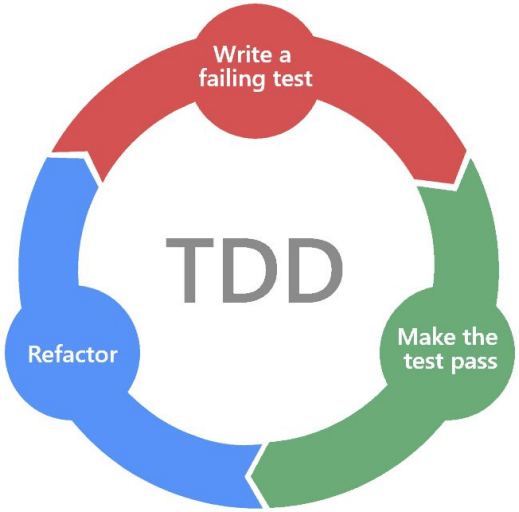


- Given a feature:

test before code

- Easy to do for unit testing or component testing

Test Driven Development (TDD)



- Given a feature:
  - What does it need to do to meet the requirement?
  - Translate this to:
    Which tests does this feature need to pass?

- Easy to do for unit testing or component testing

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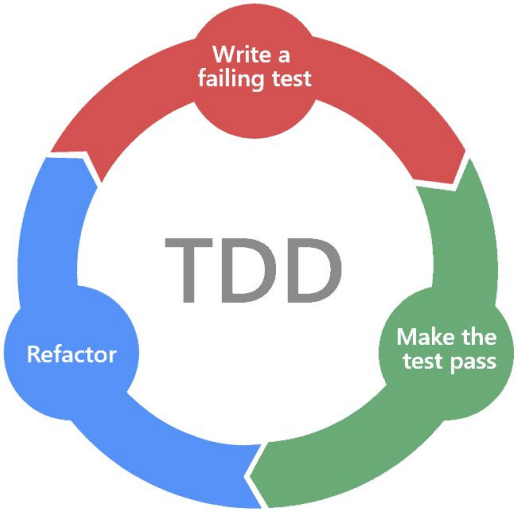

- Given a feature:
  - What does it need to do to meet the requirement?
  - Translate this to:
    Which tests does this feature need to pass?
  - Write the tests:
    - Include positive and negative cases
    - Include boundary cases

- Easy to do for unit testing or component testing

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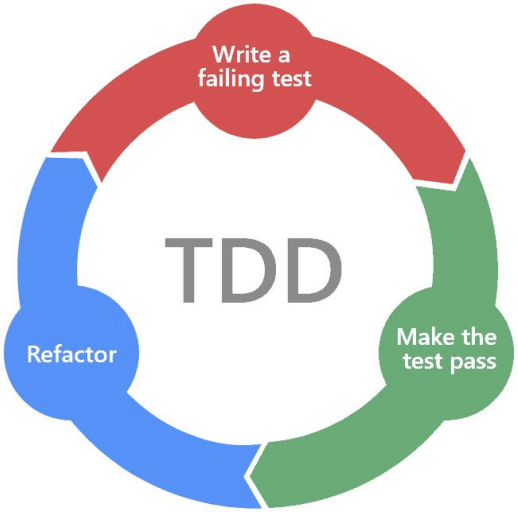

- Given a feature:
  - What does it need to do to meet the requirement?
  - Translate this to:
    Which tests does this feature need to pass?
  - Write the tests:
    - Include positive and negative cases
    - Include boundary cases
  - Let the tests fail

- Easy to do for unit testing or component testing

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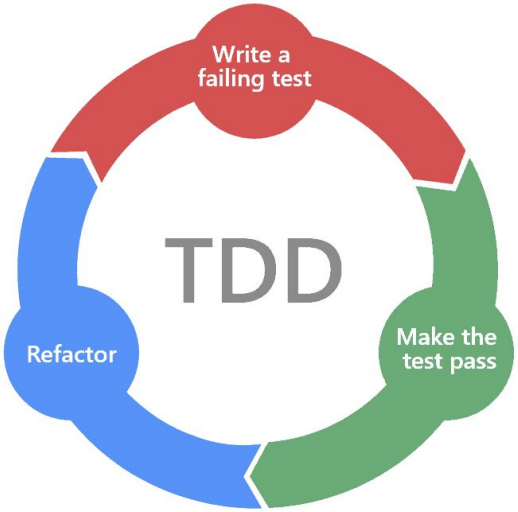

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    Which tests does this feature need to pass?
  - Write the tests:
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  - Let the tests fail
  - Write the code to pass each test

- Easy to do for unit testing or component testing

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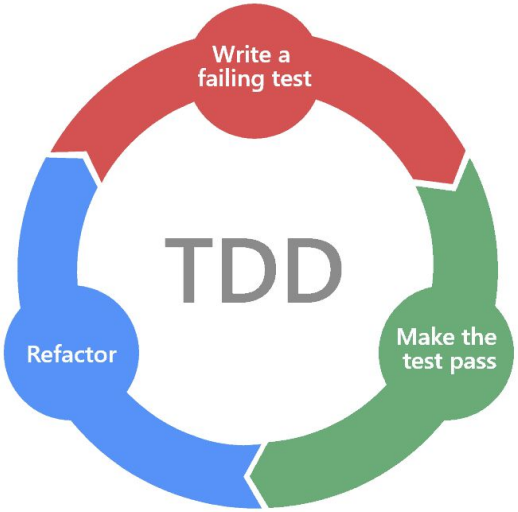

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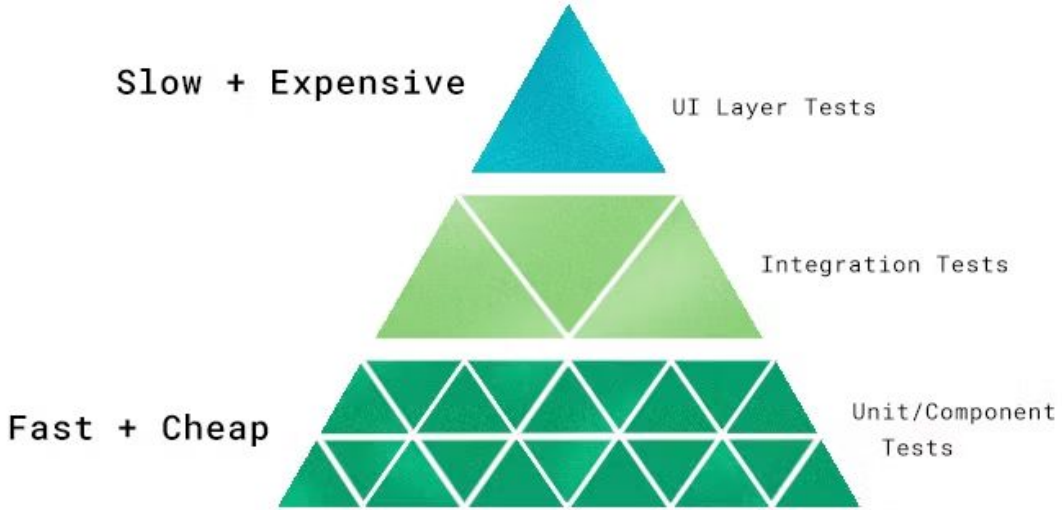
  - What does it need to do to meet the requirement?
  - Translate this to:
    Which tests does this feature need to pass?
  - Write the tests:
    - Include positive and negative cases
    - Include boundary cases
  - Let the tests fail
  - Write the code to pass each test
  - Refactor the code (clean up potential redundancies)
- Easy to do for unit testing or component testing

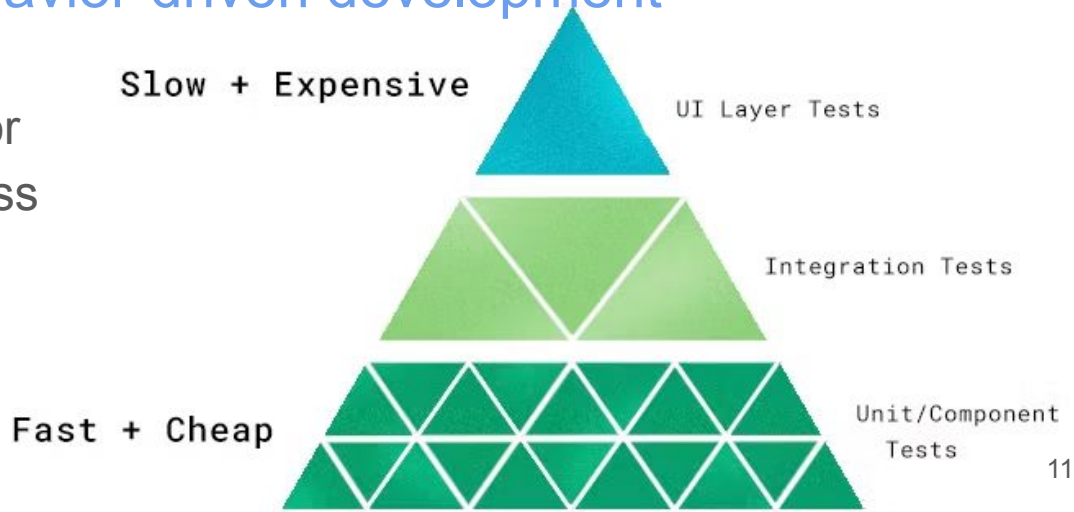
Types of Testing

- Integration and unit/component testing can be mocked and stubbed
- UI testing is often manual



Types of Testing

- Integration and unit/component testing can be mocked and stubbed
- UI testing is often manual
- Alternative is to use behavior-driven development
  - Automated testing while anticipating user behavior
  - Check: Selenium, Cypress



Next Class: Project Requirements Discussion

- Come prepared with 6 printed copies of your project requirements
- Instructor meetings with groups in each project option
  - ~20 min per project option
  - Discuss use case coverage, requirements completeness, automated testing approach
  - Critique each other's drafts
  - If time: discuss technology stack

Image taken from freepix.com

Remaining Process

- **Week 3:** Submit list of client questions on Canvas
  - Be clear and specific
  - Give examples if needed
- **Week 4:** Client information session
  - Make sure your questions are answered
- **Week 5:** Submit project plan
- **Week 6:** Given standardized core and bonus requirements
  - Re-distribute feature assignment
  - Update project plan in repository
  - Milestone grading will be based on these requirements

Changes to Approved Requirements

Image taken from smartsheet.com

- Formally request with the instructor a replacement feature of equivalent complexity
- Discuss the potential impact of project quality and timeline
- Receive instructor approval or denial
- If approved:
  - Update project plan in repository (strikethrough old feature, clearly indicate replacement feature)
  - Implement the change in the project

Next Steps

- Start project plan
- Complete project option spreadsheet
- Submit client questions
- Complete team exercise
- Complete your team's first checkpoint logs

- Next week:
  - Client information sessions - be on time and professional!
  - Attendance:
    - Split up based on assigned project options