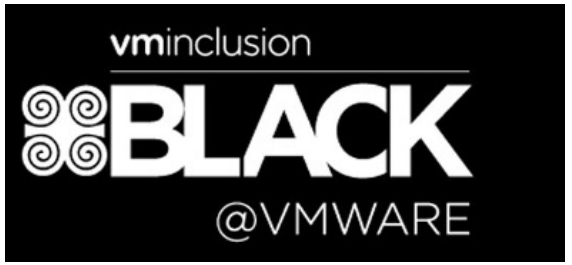



# Testing Driven Development (TDD)

## Squashing software bugs

Gregory Green & Morgan Iverson

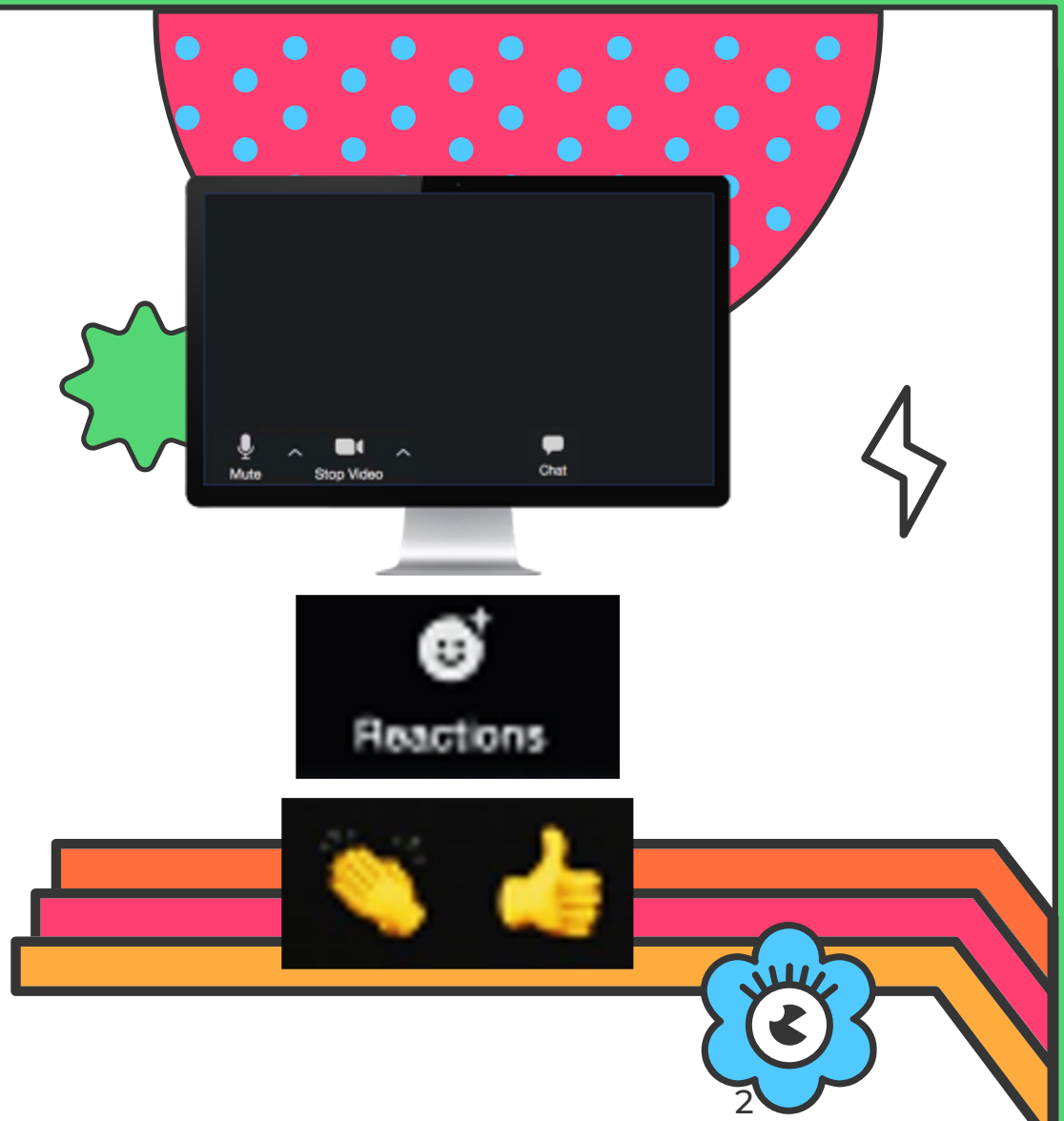
https://via.vmw.com/bhm-tdd

# Zoom

Look to the options at the bottom of your Zoom Window:

- Q&A - type any questions
- Chat - ways to give feedback

**Zoom**



# *Who are we?*
# *Introductions*

Morgan Iverson

Software Engineer

Gregory Green

Solution Engineer

https://via.vmw.com/bhm-tdd

# Agenda

Traditional Software Testing Methods

- Challenges

What is Test Driven Development (TDD)

- How does it help?

Example – Workshop

Q&A

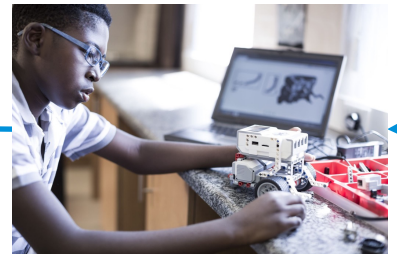
https://via.vmw.com/bhm-tdd

# Traditional Software Testing Methods

Design

Development

Testing



Deployment

Requirements

https://via.vmw.com/bhm-tdd

# Traditional Software Testing Methods - challenges

- Lots of Manually testing
- Needed lots of testing resources
- Potentially low test-coverage (is each block of code checked)
- Takes more time to test with more and more code
- Time to market – long time between an idea (requirement) to deployment

Not instrumented →

Covered by tests →

Not covered by tests →

```
516 INSTANTIATE_TEST_SUITE_P(NativeSequenced,
517                          ThreadPoolWorkerPoolTest,
518                          ::testing::Values(PoolExecuti
519                              test::PoolType::NATIVE,
520                              test::ExecutionMode::SEQU
521 #endif
522
523 TEST(TaskSchedulerWorkerPoolTest, TestCodeCoverage) {
524   bool flag = true;
525   if (!flag) {
526     int value = 10;
527     EXPECT_EQ(10, value);
528   }
529   EXPECT_TRUE(flag);
530 }
```

https://via.vmw.com/bhm-tdd

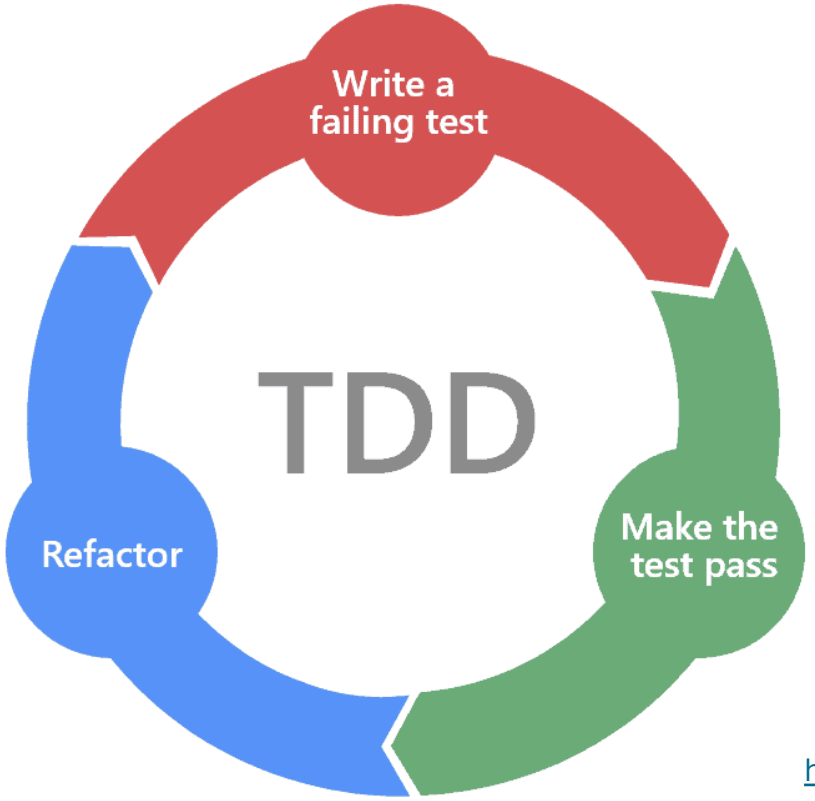
# What is Test Driven Development

- Write code to test code first
- Start with writing code first
- The test code drives the requirements and design
- Paired programming
  - “Two are better than one”

## Test-driven development

From Wikipedia, the free encyclopedia

**Test-driven development** (**TDD**) is a software development process relying on software requirements being converted to test cases before software is fully developed, and tracking all software development by repeatedly testing the software against all test cases. This is opposed to software being developed first and test cases created later.




https://via.vmw.com/bhm-tdd

# How does TDD help?

- Automated testing
- Minimize manual people processing
- Improve software quality with test-coverage
- Its less to test with more and more code
- Reduces time to market from idea (requirement) to deployment

https://via.vmw.com/bhm-tdd

# Basics - Computer Language is English

## Programming Language

### English

1. Noun
2. Verb

### Computer Language: Kotlin

1. Class
2. Methods/Functions

Game starts

Player wins

https://via.vmw.com/bhm-tdd

# Given-When-Then TDD Test

## Essential idea is to break down writing a scenario (or test) into sections

**Feature:** description of a software feature

**Scenario:** Example or outline of test

### GIVEN

- Describes the state of the **class** before you begin. You can think of it as the pre-conditions to the test. This part can be optional.

### WHEN

- The **when** section can be **method/function** that your testing.

### THEN

- Finally the **then** section describes the changes you expect due to the specified behavior.

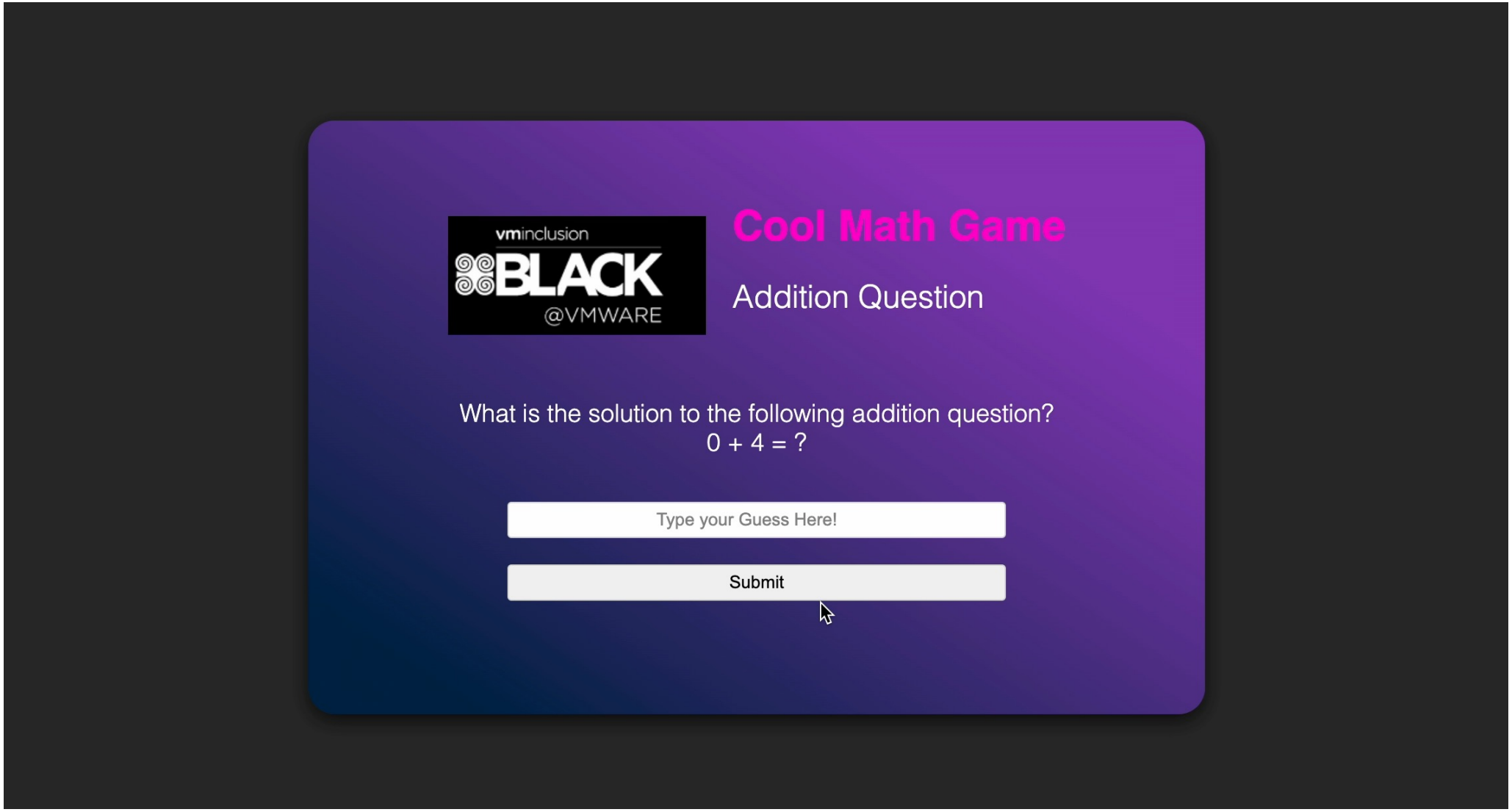
Feature <description>
Scenario: <test>

GIVEN <Noun-Class> description

WHEN **<Verb-Method-Function>** description

THEN expected outcome

# Our Cool Math Game



# Our Development

## Assurance Tools

Development



IntelliJ IDEA

Unit Testing


Building Tools


https://via.vmw.com/bhm-tdd

# Test Driven Case 1

**Feature:** Addition Question

Scenario: Guess the correct answer

GIVEN

WHEN

THEN


https://via.vmw.com/bhm-tdd

# Test Driven Case 1

**Feature:** Addition Question

Scenario: Guess the correct answer

GIVEN Addition Question with 1 and 2

WHEN

THEN


https://via.vmw.com/bhm-tdd

# Test Driven Case 1

**Feature:** Addition Question

Scenario: Guess the correct answer

GIVEN Addition Question with 1 and 2

WHEN Is Guess Correct given 3

THEN


https://via.vmw.com/bhm-tdd

# Test Driven Case 1

**Feature:** Addition Question

Scenario: Guess the correct answer

GIVEN Addition Question with 1 and 2

WHEN Is Guess Correct given 3

THEN Returns true


https://via.vmw.com/bhm-tdd

# THANK YOU