

Debugging Java

Developing a Debugging Mindset



Craig Golightly

Senior Software Consultant

@seethatgo | www.seethatgo.com

Debugging Java

Version Check



Version Check



This version was created by using:

- Java SE 17



Version Check



This course is 100% applicable to:

- Previous and future versions of Java



Relevant Notes



A note on frameworks and libraries:

- You will learn debugging features that exist in all major IDEs
 - You can apply what you learn to the IDE of your choice



Overview



Debugging

- What is a bug?

How to avoid bugs

- Common mistakes
- Tools to help you

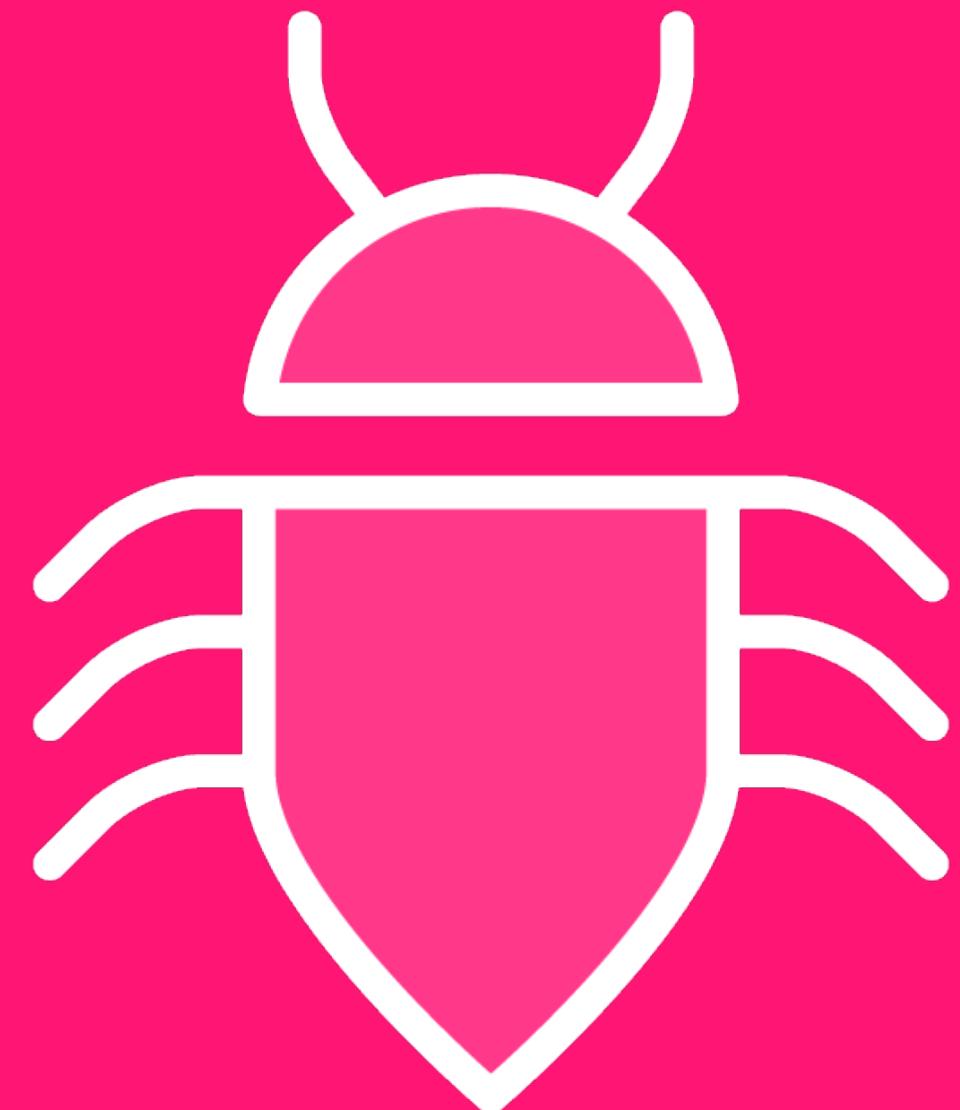
Fixing bugs

- Reading logs for clues

Other common problems

IDE debugging tools





Writing Bugs Fixing Code

Bugs are there.
You just haven't found them yet.



When to Fix Code?

Type

Spelling errors

Syntax errors

Fastest to fix

Compile

Real-time (IDE)

Overall project build

Build logs

Run

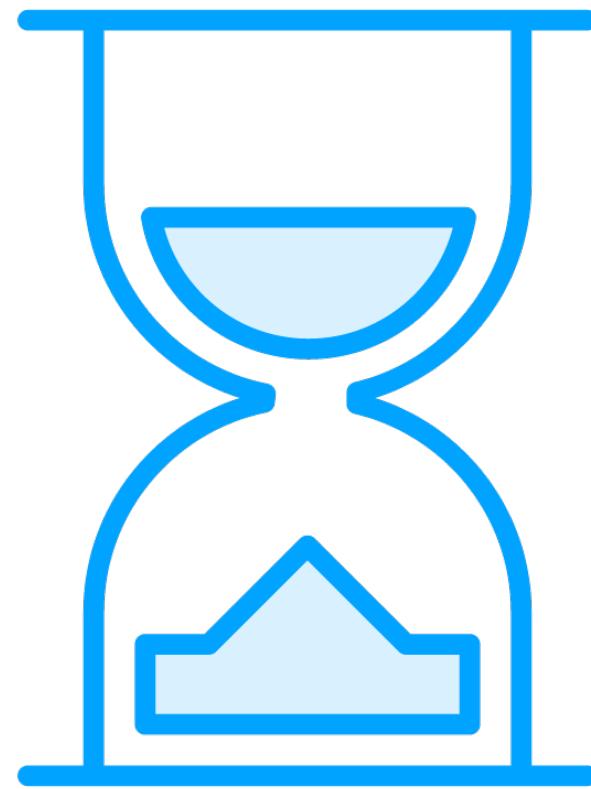
Running code in env

Unexpected behavior

Runtime or data errors



Iteration Cycle



Time from finding bug to test if fixed

Typos (local)

- A few seconds

Integrated test environment (shared)

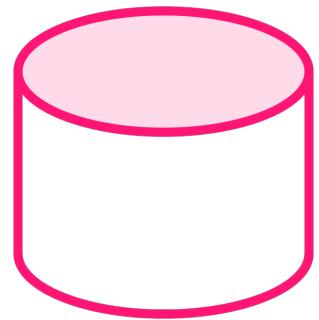
- Minutes – days

Shorten the iteration cycle

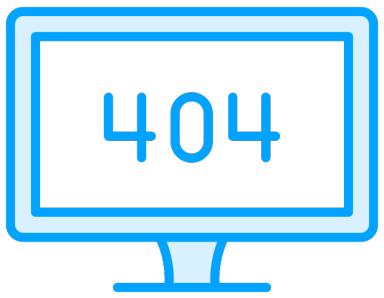
- Fix code earlier in process
- Increase quality and velocity



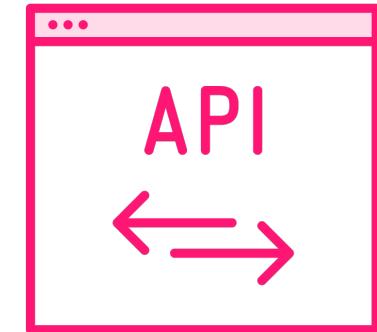
Common Problems



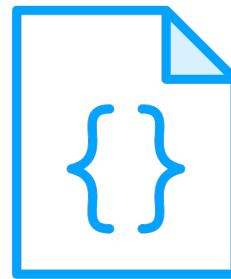
**Database
configuration**



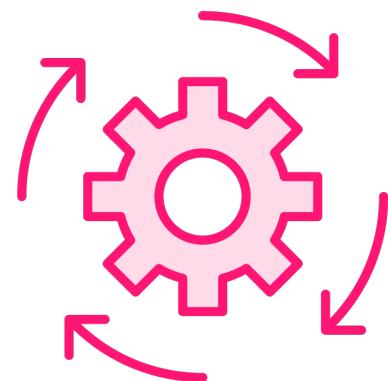
API endpoint down



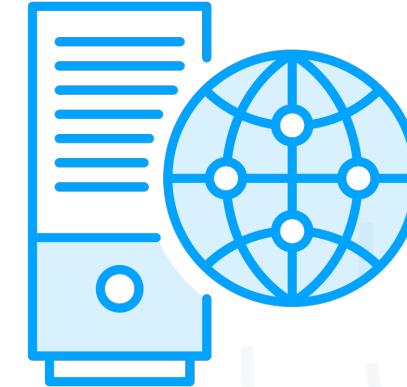
API change



**Environment
variables**



Code deployment



Network problems



Understanding Verification and Validation



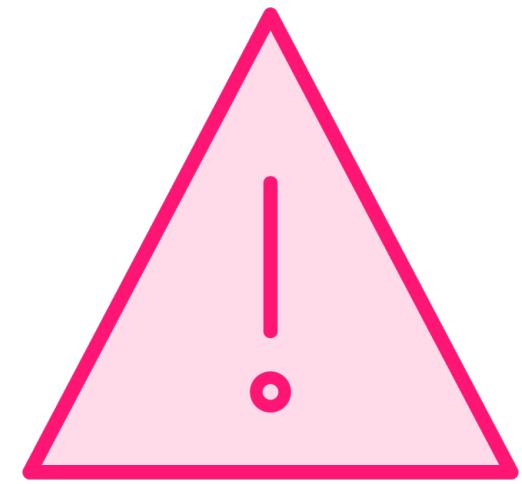
Verification
Did you build it correctly?



Validation
Did you build the correct thing?



Fixing Code



Verification error
Code is incorrect
Fix the code



Validation error
Doing the wrong thing
Change code to do something different



New feature
No code exists yet
Add code for new feature



Verification bugs
Compiler finds most
Objective and binary
Correct / incorrect
Does it work?





Validation focuses on stakeholder needs

- Did you deliver what they need?

Not usually syntax errors

Subjective interpretation of requirements

- Communication is important
- Have a conversation



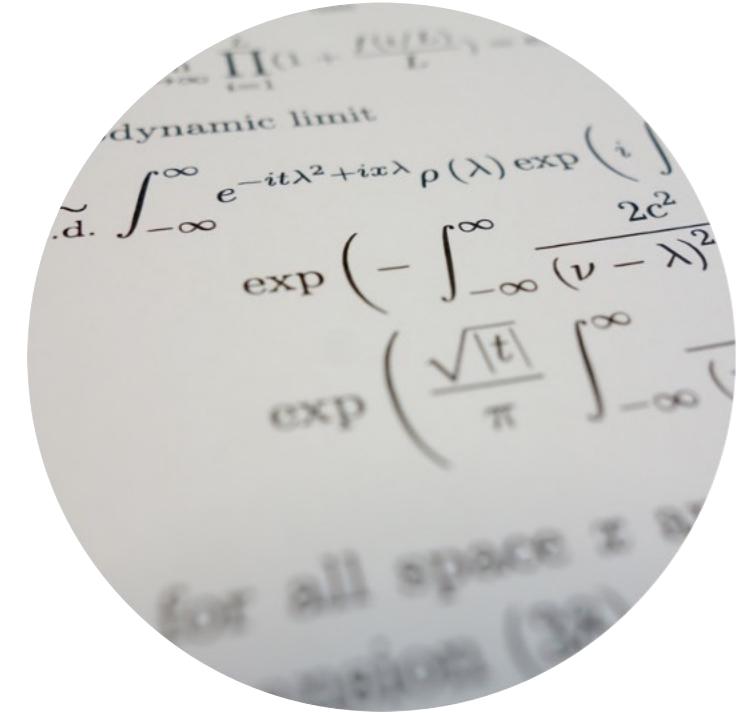
Sources of Validation Errors



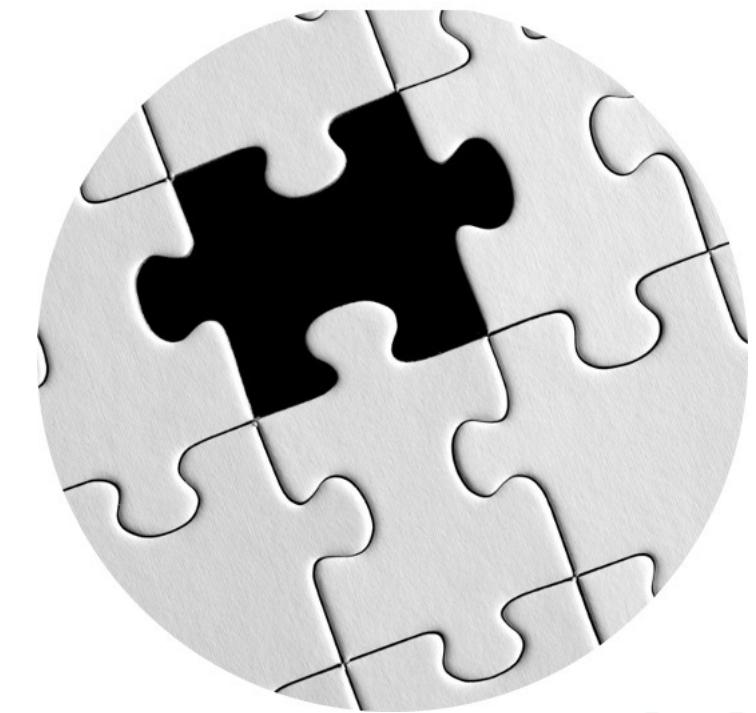
**Unclear
requirements**



**Visual / data
differences**



**Business logic
changes**



**Missing
features**



Summary



Reduce iteration cycle

- Fix code earlier in process (local)

Problems outside of your code

- Configuration, external services

Different “bugs”

- Verification
- Validation
- New feature



Up Next:

Avoiding Common Mistakes

