# Debugging in Java

CodeHS Professional Development Online Course

## Details

**Course delivery method:** Self-Paced Online Delivery
**Contact hours:** Approximate 5 hours
**Prerequisite(s):** Some experience with Java programming

## Introduction

Finding and fixing errors in programs is a fundamental skill for new and experienced programmers to develop. This CodeHS course introduces debugging, the art and science of fixing broken programs. You'll learn techniques for finding common code errors and effective debugging strategies for Java exercises to share with students.

## Course Outcomes

Educators will understand:
- Understand that coding bugs are a normal and an excellent learning opportunity in the CS classroom
- Understand that debugging is one of the most valuable skills students can learn in any CS course and contribute to a growth mindset
- Know and utilize general debugging strategies such as formulating hypotheses, testing hypotheses, isolating problems, reproducing errors, using small steps to iterate and fix problems
- Debug many Java coding exercises using the step debugger, comments, error messages, documentation, and more
- Develop their own class lists of steps for their students to take during the debugging process

## More Information

Browse the content of this course at https://codehs.com/course/16067/explore

## Course Breakdown (App. 5 hours)

| Unit 1: Welcome to Debugging in Java! | |
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| | <ul><li>What the course is about</li><li>Planning and pacing the course</li><li>Syllabus</li><li>CodeHS teacher communities</li><li>Getting help</li></ul> |
| **Unit 2: Introduction to Debugging** | |
| | <ul><li>What is debugging</li></ul> |

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| | ● Why teach debugging?<br>● The debugging Mindset<br>● The debugging process |

## Unit 3: Basic  Debugging in Java

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| | ● Problem-solving strategies<br>● Plan well, attention to detail, question assumptions<br>● Debugging mindset<br>● Resources for debuggers |

## Unit 4: Debugging Tools

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| | ● Documentation<br>● Error messages<br>● Test cases<br>● Internet |

## Unit 5: Debugging Techniques

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| | ● Debugging with print statements<br>● Debugging with comments and questions<br>● Asking for help |

## Unit 6: Common Java Errors

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| | ● What Type of Error?<br>● Syntax errors<br>● Runtime errors<br>● Logic errors<br>● NullPointerException<br>● IndexOutOfBoundsException<br>● ArithmeticException |

## Unit 7: Common Compiler Errors

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| | ● What is a compiler error? How do they differ from runtime errors?<br>● Examples |

## Unit 8: Advanced Debugging Practice

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| | ● Tricky errors<br>● Sources of errors |

## Unit 9: Using Other IDEs

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| | ● Using the main Method in Eclipse<br>● Using the main Method in BlueJ |

| | ● Using the main Method in the terminal |
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| **Unit 10: Asking the Right Questions** | |
| | ● Moving from knowing all the answers to asking the right questions as facilitators of computer science learning<br>● Question toolbox |

## Communication & Support

The instructor(s) will communicate with students as needed for individual questions and feedback.

## Getting Help with Activities

Students can use the Conversation tab in the code editor to ask questions about any of the activities in the course. Course instructor(s) will respond to questions and provide feedback in this area as well.

You can find more information about getting help with your coursework HERE.

## Course Criteria for Completion

Once students have successfully completed all activities in the course, a Certificate of Completion will be available.