



What do you want to learn?







Week 1

Week 2

Week 3

Week 4

Week 5

Week 6

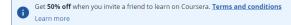
Grades

Discussion Forums

Messages

Resources

Course Info



# Week 1

Algorithmic Toolbox

#### Week 1

Discuss and ask questions about Week 1.

28 threads · Last post 10 hours ago

Go to forum

#### **Programming Challenges**









Welcome to the first module of Data Structures and Algorithms! Here we will provide an overview of where algorithms and data structures are used (hint: everywhere) and walk you through a few sample programming challenges. The programming challenges represent an important (and often the most difficult!) part of this specialization because the only way to fully understand an algorithm is to implement it. Writing correct and efficient programs is hard; please don't be surprised if they don't work as you planned—our first programs did not work either! We will help you on your journey through the specialization by showing how to implement your first programming challenges. We will also introduce testing techniques that will help increase your chances of passing assignments on your first attempt. In case your program does not work as intended, we will show how to fix it, even if you don't yet know which test your implementation is failing on.

△ Less

#### **Learning Objectives**

- Practice implementing algorithms
- Practice testing and stress testing programs
- Compare fast and slow programs
- Practice solving programming challenges

^ Less

# Welcome

▶ Video: Welcome! 3 min

Resume

- Reading: Companion MOOCBook 10 min
- Reading: What background knowledge is necessary? 10 min
- Pre-survey on HSE online courses 4 min

## **Programming Assignment 1: Programming Challenges**

- ▶ Video: Solving the Sum of Two Digits Programming Challenge (screencast) 6 min
- (4) Programming Assignment: Programming Assignment 1: Sum of Two Digits 1h Due Jul 26, 1:59 AM CDT

## (OPTIONAL) Solving The Maximum Pairwise Product Programming Challenge in C++

- Reading: Optional Videos and Screencasts 10 min
- Video: Solving the Maximum Pairwise Product Programming Challenge: Improving the Naive Solution, Testing, Debugging

13 min

- ▶ Video: Stress Test Implementation 8 min
- ▶ Video: Stress Test Find the Test and Debug 7 min

VIGEO: Stress Test - More Testing, Submit and Pass: 8 min
Reading: Alternative testing guide in Python 10 min
Maximum Pairwise Product Programming Challenge
Reading: Maximum Pairwise Product Programming Challenge 10 min
Practice Quiz: Solving Programming Challenges 5 questions
Programming Assignment: Programming Assignment 1: Maximum Pairwise Product 2h Due Jul 26, 1:59 AM CDT
Using PyCharm to solve programming challenges (optional experimental feature)
Reading: Using PyCharm to solve programming challenges 10 min
Acknowledgements (Optional)
Reading: Acknowledgements 2 min