

# Contents

<b>Introduction</b>	<b>5</b>
This stuff is hard	
How to follow this guide	
Concurrency vs parallelism	
Understanding threads and queues	
Main thread and main queue: what's the difference?	
Where is Swift concurrency supported?	
Dedication	
<b>Async/await</b>	<b>16</b>
What is a synchronous function?	
What is an asynchronous function?	
How to create and call an async function	
How to call async throwing functions	
What calls the first async function?	
What's the performance cost of calling an async function?	
How to create and use async properties	
How to call an async function using async let	
What's the difference between await and async let?	
Why can't we call async functions using async var?	
How to use continuations to convert completion handlers into async functions	
How to create continuations that can throw errors	
How to store continuations to be resumed later	
How to fix the error "async call in a function that does not support concurrency"	
<b>Sequences and streams</b>	<b>57</b>
What's the difference between Sequence, AsyncSequence, and	

- AsyncStream?
- How to loop over an AsyncSequence using for await
- How to manipulate an AsyncSequence using map(), filter(), and more
- How to create a custom AsyncSequence
- How to convert an AsyncSequence into a Sequence

## Tasks and task groups 77

- What are tasks and task groups?
- How to create and run a task
- What's the difference between a task and a detached task?
- How to get a Result from a task
- How to control the priority of a task
- Understanding how priority escalation works
- How to cancel a Task
- How to make a task sleep
- How to voluntarily suspend a task
- How to create a task group and add tasks to it
- How to cancel a task group
- How to handle different result types in a task group
- What's the difference between async let, tasks, and task groups?
- How to make async command-line tools and scripts
- How to create and use task local values
- How to run tasks using SwiftUI's task() modifier
- Is it efficient to create many tasks?

## Actors 145

- What is an actor and why does Swift have them?
- How to create and use an actor in Swift
- How to make function parameters isolated
- How to make parts of an actor nonisolated
- How to use @MainActor to run code on the main queue
- Understanding how global actor inference works
- What is actor hopping and how can it cause problems?
- What's the difference between actors, classes, and structs?
- Important: Do not use an actor for your SwiftUI data models

## Solutions

178

How to download JSON from the internet and decode it into any Codable type