Waiting on, Joining to and Cancelling Coroutines

Kevin Jones

@kevinrjones www.rocksolidknowledge.com

Working with Coroutines

What happens if you want to wait for a coroutine to finish

- 'delay' doesn't cut it

Can wait until the coroutine has finished

- Use join

Conversely, what if you can no longer wait

- Cancel the coroutine

'join'

Similar to joining a thread

- Calling code blocks until the coroutine has finished

Job interface

'launch' returns a Job

- Can use this to 'join' the coroutine
- Can also check if the coroutine has finished

Demo

Joining coroutines

Cancelling Coroutines

What happens if a coroutine runs too long

- Can cancel

What about open resources and exceptions

Cancellation Is Co-operative

If you don't check for cancellation then will not be cancelled

All built-in suspending functions co-operate

How Do You Co-operate

Two options

Can call a built in suspending function

- 'yield' is a good choice

Can explicitly inspect cancellation state

Demo notes (remove slide)

Can show code without cancellation and with yield, then come back to slides

Demo

Cancelling

How Do You Co-operate

To co-operate use 'isActive'

- This is a property of CoroutineScope
- Available inside builders
- Not available inside suspending functions (but is coming)
- Need a different approach inside suspending functions
- Next chapter

Demo

Cancelling through co-operation

Cancellation Throws Exceptions

Suspending functions throw exception when cancelled

- CancellationException

Need to close resources in our code

May need to run suspending function in finally

- Will throw CancellationException
- Needs to execute in a special context

Can Specify the Exception

Can be used to specify the reason

- job.cancel(CancellationException("why"))

Can specify any exception

- Job.cancel(SomeExceptionType())

Be careful with this

- If using 'launch' will tear down the thread/kill the application
- Can use safely with async (see this later)

Demo

Handling exceptions

Using Timeouts

What if we could timeout the code

- May not then need cancellation

Demo

Timeouts

Summary

Often need to wait on or cancel coroutines

- Can use 'join'
- Can cancel
- Can use withTimeout

What’s Next