



# **Kresil - Kotlin Resilience**

## **Kotlin Multiplatform Library for Fault-Tolerance**

Francisco José Barbosa Engenheiro

Supervisor: Pedro Félix

Final report written for Project and Seminary  
BSc in Computer Science and Engineering

July 2024



INSTITUTO SUPERIOR DE ENGENHARIA DE LISBOA

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# Abstract

Text of the abstract. Brief description of the project, important results, and conclusions: the goal is to provide the reader with an overview of the project (should not exceed one page).

**Keywords:** list of keywords separated by ;.



# Resumo

Texto do resumo. Breve descrição do projeto, dos resultados importantes e das conclusões: o objetivo é dar ao leitor uma visão global do projeto (não deve exceder uma página).

**Palavras-chave:** lista de palavras-chave separadas por ;.





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# Chapter 1

## Introduction

### 1.1 Context

Problem 1 [1]

### 1.2 Resilience Mechanisms

Solution 1

### 1.3 Technologies

Kotlin Multiplatform (not in depth)

### 1.4 Project Goal

Multiplatform library for kmp with resilience mechanisms

### 1.5 Related Work

#### 1.5.1 Ktor

Mention plugin integration

#### 1.5.2 Other solutions

Other libraries with resilience mechanisms: Polly, resilience4j, Hystrix, Arrow

### 1.6 Document Structure



## Chapter 2

# Kotlin Multiplatform

### 2.1 Project Structure

Mention gradle project (divide in modules, gradle build file)

### 2.2 Platform-Dependent Code

### 2.3 Running Tests

### 2.4 Other Aspects

What was done to have concurrency, logging, CI integration, etc



## Chapter 3

# Common Design and Implementation Strategy

For all mechanisms

### 3.1 Design Aspects

All the design and implementation aspects that are common to all mechanisms - use mechanism model

### 3.2 Implementation Aspects

- configuration - decoration - ktor pipeline plugin integration





# Chapter 4

## Retry

### 4.1 Introduction

- Why it exists (1) - Functional characterization (2)

### 4.2 Configuration

- mention default values and why they were chosen

### 4.3 Implementation Aspects

### 4.4 Ktor Integration



## Chapter 5

# Circuit Breaker

### 5.1 Introduction

- Why it exists (1) - Functional characterization (2)

### 5.2 Configuration

- mention default values and why they were chosen

### 5.3 Implementation Aspects

### 5.4 Ktor Integration



# Bibliography

- [1] Wikipedia contributors. Big data — Wikipedia, the free encyclopedia, 2019. [Online; accessed 28-February-2019].



## Appendix A

### Appendix Example

Etiam ac leo a risus tristique nonummy. Donec dignissim tincidunt nulla. Vestibulum rhoncus molestie odio. Sed lobortis, justo et pretium lobortis, mauris turpis condimentum augue, nec ultricies nibh arcu pretium enim. Nunc purus neque, placerat id, imperdiet sed, pellentesque nec, nisl. Vestibulum imperdiet neque non sem accumsan laoreet. In hac habitasse platea dictumst. Etiam condimentum facilisis libero. Suspendisse in elit quis nisl aliquam dapibus. Pellentesque auctor sapien. Sed egestas sapien nec lectus. Pellentesque vel dui vel neque bibendum viverra. Aliquam porttitor nisl nec pede. Proin mattis libero vel turpis. Donec rutrum mauris et libero. Proin euismod porta felis. Nam lobortis, metus quis elementum commodo, nunc lectus elementum mauris, eget vulputate ligula tellus eu neque. Vivamus eu dolor.

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