

A photograph of a man with dark hair and a beard, wearing a blue denim shirt, sitting at a table and eating spaghetti from a plate. He is looking down at his food. In the background, there's a painting on the wall and some kitchen items on the counter.

# Open sourcing a library

How hard can that be?

Johan Hutting

October 16<sup>th</sup>, 2024 @ Frontend guild



do your thing



## #WhoAmI

Whenever someone asks what do you do...

**“I develop things and talk about them”**

What I actually do:

- Full-stack Engineer at ING (business) Products
- Part-time Developer advocate on engineering culture
- *Backend Guild* organising committee
- Java User Group Noord co-organiser
- *Global tech speakers community* core member
- Mentor others
- And occasionally I speak for a larger audience (*Devoxx, Voxxed Trieste, JCON, We are Developers Berlin*)

# The journey to open sourcing a library

- “My” Library
- Maintenance / support
- Publishing
- Takeaways

## Benefits of open sourcing your code

You can show off your developer, design and architectural skills.

Receive broader feedback.

Collaboration with other developers.

Inspire others and use it for examples.

**There are downsides as well: the recent xz malware is a clear example.**

## Motivation

Once in a while I pick an achievable challenge  
to extend my skills and knowledge.

Plus, open-source poses a challenge: how can you give back to the community?

**Do not use open-source libraries to extend your resume but commit yourself!**

# Open source @ ING

## Open sourced web components



### Lion

open-issues 131 open PRs 41 TODOs unknown

[Website](#) · [Fundamentals](#) · [Guides](#) · [Components](#) · [Blog](#)

Lion is a set of highly performant, accessible and flexible Web Components.!

They provide an unopinionated, white-label layer that can be extended to your own layer of components.

- **High Performance:** Focused on great performance in all relevant browsers with a minimal number of dependencies.
- **Accessibility:** Aimed at compliance with the WCAG 2.2 AA standard to create components that are accessible for everybody.
- **Flexibility:** Provides solutions through Web Components and JavaScript classes which can be used and extended to fit all needs.
- **Modern Code:** Lion is distributed as pure es modules.
- **Exposes functions/classes and Web Components:** Ships a functionality in its most appropriate

## Visualized orchestration framework



### Baker

CI passing Maven Central v4.1.0 codecov 79%

Baker is a library that provides a simple and intuitive way to orchestrate microservice-based process flows.

You declare your orchestration logic as a recipe using the Java, Kotlin, or Scala DSL. A recipe consists of interactions (system calls), ingredients (data), and events .

Bakers ability to visualize recipes provides a powerful communication tool that helps product owners, architects, and engineers to have a common understanding of the business process. This feature allows you to easily share your recipe with others, enabling collaboration and feedback.

# The library (a façade to parse save games of a classic)



10:49 AM

# Diablo II: resurrected



# Challenge: calculating item bonuses

The image shows a character named Fjöerich, a Level 82 Paladin, in a dark, atmospheric setting. The character is standing near a campfire, surrounded by barrels and debris.

**CHARACTER**

**Fjöerich**  
LEVEL 82 PALADIN  
825,894,858 GF 883,294,891

**STRENGTH** 162  
**DEXTERITY** 165  
**VITALITY** 257

**BONUS:** +265%  
**DIFFICULTY PENALTY:** -40% 249 / 443  
**MAX:** +35%

**Fire Resistance** 95% **Lightning Resistance** 81%  
**Cold Resistance** 76% **Poison Resistance** 75%

**Fjöerich (21.7%)**  
LVL: 82 GOLD: 103K [9864K] MF: 242  
STR: 162 FIRE%: 95 FRW: 20  
DEX: 165 LG+H%: 81 FCR: 30 (48)  
VIT: 257 COLD%: 76 FBR: 0 LIFE: 1025 / 1025  
ENE: 35 PH%: 76 FHR: 66 (86)  
EL (2), TIR, NEF (2), BH (4), IH (5), TAL (4), RAL (8), OR+ (10), THUL (21), AMN (22), SOL (16), SHAEL (7), DOL (13), HEL (3), IO (3), LEM  
ANCIENT'S PLEDGE, BLACK, EDGE, HOLY THUNDER,  
HONOR, INSIGHT+, KING'S GRACE, LEAF, LORE,  
MALICE, MYTH, NADIR, PATTERN, PEACE,  
LAS+ UPDATED: 17:49

**INVENTORY**

Inventory grid showing various items including a sword, helmet, armor, gloves, ring, belt, book, scroll, key, and coins. Total gold count: 103195.

MANA: 249 / 443

# Challenge: personalization

**CHARACTER**

**LONGESTPOSSIBLE**

LEVEL 27 ASSASSIN

3,035,896 ⓁF 3,203,826

**STRENGTH** 26

**DEXTERITY** 42

**VITALITY** 145

**ENERGY** 30

**ATTACK Damage** 4-21

**WAKE OF FIRE**

**ATTACK Rating** 265

**Defense** 77

**Stamina** 304 / 304

**Life** 549 / 549

**Mana** 148 / 148

**Fire Resistance** 75% **Lightning Resistance** 34%

**Cold Resistance** 51% **Poison Resistance** 75%

**LONGESTPOSSIBLE** (73.8%) **STAT POINTS REMAINING**

LVL: 27 GOLD: 60K [7604K] MF: 33

S+R: 26 FIRE%: 75 FRW: 25

DEX: 42 LG+H%: 34 FCR: 25 [27]

VIT: 145 COLD%: 51 FBR: 0 LIFE: 549 / 549

ENE: 30 POIS%: 76 FHR: 26 [27]

EL, TIR (4), NEF (3), E+H (2), I+H (3), RAL (5), OR+ (6), THUL (16), AMN (10), SOL (10), SHAEL (4), DOL (8), HEL (3), LEM

HONOR, KING'S GRACE, LEAF, LORE, MALICE, MYTH,  
NADIR, PEACE, RADIANCE, RHYME, SHELL,  
STRENGTH, TREACHERY, ZEPHYR

LAS+ UPDATED: 17:58

**INVENTORY**

**STEALTH**  
**LONGESTPOSSIBLE's LEATHER ARMOR 'TALETH'**

DEFENSE: 14  
DURABILITY: 24 ⓁF 24  
REQUIRED STRENGTH: 15  
REQUIRED LEVEL: 17  
+25% FASTER RUN/WALK  
+25% FASTER CAST RATE  
+25% FASTER HIT RECOVERY  
+6 TO DEXTERITY  
REGENERATE MANA 15%  
+15 MAXIMUM STAMINA  
POISON RESIST +30%  
MAGIC DAMAGE REDUCED BY 3  
MANA: 148 / 148  
SOCKETED (2)

SHIFT + LEFT CLICK TO UNEQUIP

## Library challenges

- Which elements to open source?
- There are many open-source licenses as well
- Figuring out where to release and how to do so
- There are many variables in the game that have impact, but fortunately the game is mod-friendly.
- Java reads bytes in big endian, while the game uses little endian.
- Figuring out what a bit value means took a lot of reading and tinkering

```
i.g.p.d.parser.ItemParser - Skipping 8 extra bits on A Jade Figurine for specific quest items such as a Jade Figurine as they  
end on a boundary and result in parse errors when not skipping a byte.  
i.g.p.d.parser.ItemParser - If something breaks, it's caused by not skipping 2-3 bits below this line on item Scroll of Inifuss.  
i.g.p.d.parser.ItemParser - If something breaks, it's caused by not skipping 2-3 bits below this line on item Mephisto's Soulstone.
```

# Anonymous?

Managing open-source support can be challenging!  
And gamers can be overly attached/opinionated.

So, I released it under a nickname people already knew:

<https://github.com/Paladijn/d2rsavegameparser>

<https://github.com/Paladijn/d2rsavegameparser-examples>

• [maven-release-plugin] prepare release d2rsavegameparser-1.0.0	↳ Johan	24/12/2023, 17:25
• adjusted to https - mental note: don't use old articles for reference.	Paladijn	24/12/2023, 17:22
• Revert "[maven-release-plugin] prepare release d2rsavegameparser-1.0.0"	Paladijn	24/12/2023, 17:20
• [maven-release-plugin] prepare release d2rsavegameparser-1.0.0	Paladijn	24/12/2023, 17:14
• Adjusting scm config	Paladijn	24/12/2023, 17:13
• Revert "[maven-release-plugin] prepare release d2rsavegameparser-1.0.0"	Paladijn	24/12/2023, 17:12
• [maven-release-plugin] prepare release d2rsavegameparser-1.0.0	Paladijn	24/12/2023, 17:06

[maven-release-plugin] prepare release d2rsavegameparser-1.0.0

47df55b1 Johan <johan@johans-mac-mini.kpn> on 24/12/2023 at 17:25

↳ d2rsavegameparser-1.0.0



Paladijn

Paladijn

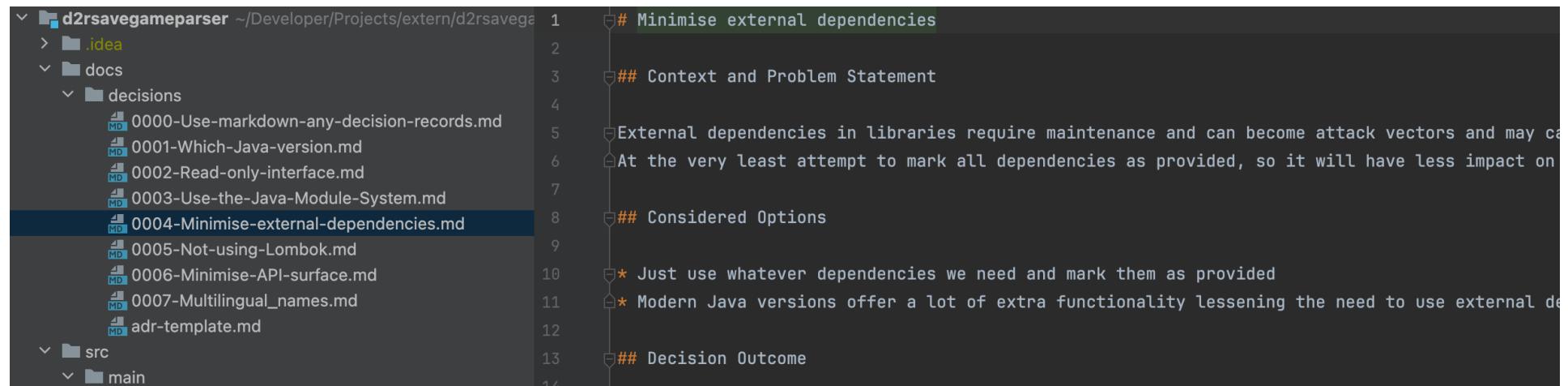
Follow

Secondary account for Diablo and stream related software

# Maintenance: documentation

You want to go beyond “just read the code”.

- Exercise your tech writing with JavaDoc
- Add example code/implementation
- Document decisions with **MADR**: Markdown Any Decision Records



The screenshot shows a terminal window with a file tree on the left and a preview of a MADR document on the right. The file tree shows a directory structure for a project named 'd2rsavegameparser' located at '~/Developer/Projects/extern/d2rsavega'. The 'docs' directory contains a 'decisions' folder with several Markdown files (0001-0007 and adr-template.md). The terminal preview shows the content of '0004-Minimise-external-dependencies.md'. The document starts with a section titled '# Minimise external dependencies' and discusses the context and problem statement, considered options, and decision outcome.

```
1 # Minimise external dependencies
2
3 ## Context and Problem Statement
4
5 External dependencies in libraries require maintenance and can become attack vectors and may ca
6 At the very least attempt to mark all dependencies as provided, so it will have less impact on
7
8 ## Considered Options
9
10 * Just use whatever dependencies we need and mark them as provided
11 * Modern Java versions offer a lot of extra functionality lessening the need to use external de
12
13 ## Decision Outcome
14
```

## Maintenance: upgrades made easy

For dependencies I've used:

```
mvn versions:display-dependency-updates
```

Along with

```
mvn versions:update-properties
```

For larger-scale migrations and corrections OpenRewrite is a wonderful tool.

Specific use-cases:

- Migrate Java 17 to 21
- Correct package name
- Add license header
- Remove unused imports
- Migrate to AssertJ

## Maintenance: Community building

Communities come in two types: those that use your library and those that use the apps built with it.

Developers are looking for an easy-to-use library that fits their needs.

Application users aren't interested in clear, well documented code but look for functionality instead.

Lvl: 61

414K

(0)

MF: 30

115

96

254

30

90

0

42

75

45

75

15

Alternate html by streamer  
Twitch.tv/Goatunnheim

LVL 🌶: 46 Gold 🛒: 1K + [229K Stash]  
Str 💪: 55 Fire 🔥: 32% FRW ⚔: 25  
Dex ✂: 41 Lgth ⚡: 4% FCR 🧑: 55 / 63  
Vit 💀: 180 Cold 💧: 42% FHR: 25 (30)  
Ene 💩: 45 Psn 🍃: 25% MF: 19

Tir, Nef x2, Tal, Ral x2, Thul, Sol, Shael x2

Full rejuvs: 0

Small rejuvs: 26

Terror 🕸: 0

Hate 🕸: 0

Dest 🕸: 0

Last updated: 16:35

[Game] Diablo says: Not even death can save you from  
me...

1:43:30 12

DIABLO

Demon

ENTERING CHAOS SANCTUARY

NEW SKILL



MANA: 289 / 294



Done building your library – how do you share it?



## Publishing options: JitPack.io



- Free for open source
- Easy to upload
- Requires users to config another repo
- Unclear on security/abuse



**GitHub Packages is  
free for public  
repositories**

We love open source

your experience on our websites and to display personalized

## Publishing options: GitHub packages

- Free for open source
- Easy to integrate in release build
- Requires users to config another repo  
*and* set up a GitHub token for access
- Unclear how well they scan the repository

## Publishing options: Maven central

- Free for open source
- No extra user configuration required
- Apparently difficult to set up

The screenshot shows a YouTube video player. At the top left is the channel logo for 'Josh Long' with a blue checkmark and the handle '@starbuxman'. The video title 'The Secret' is partially visible above the play button. The main content area contains a tweet from Josh Long. The tweet reads:  
I think getting .jars into maven central via maven and gradle is utterly broken. It should be infinitely easier, akin to Dockerhub. I have an account, I'm signed in, I can publish. No need for staging, all this nonsense around what's in my pom.xml, a handful of different maven plugins, etc.  
./mvnw maven:doTheThing  
And it should be lightning quick. It's literally kilobytes. The idea that it takes more than a second is ridiculous

At the bottom left of the video player, the timestamp '2:51 AM · Sep 26, 2024' and the view count '14.8K Views' are displayed.

the following talk on YouTube: *The Secret*

12<sup>th</sup>, 2024.  
n!

## Publishing: Sonatype central

This is the same old Maven central, but the interface has been modernized.

You can log in with

- Your own account
- Google SSO
- Your GitHub account (which I used)

The requirements to publish remain identical,  
but plugins are being updated/maturing.

## Sonatype central requirements

- You need to own the domain
- Along with the jar you'll need to supply
  - The pom file
  - Javadoc (although... 1% coverage is probably fine)
  - Sources
- MD5 and SHA-1 checksums for all four files
- You'll need to sign the four files with PGP  
<https://central.sonatype.org/publish/requirements/gpg/> has a solid guide!
- License and developer information need to be specified
- If you're uploading manually a zip with a specific layout is required
- Once your jar is published... it will remain published

## The process

“Easiest” would be to use the maven-release along with the sonatype publishing plugin.  
This works great, until I start to upload...

```
[INFO] Generate checksums for dir: io/github/paladijn/d2rsavegameparser/1.3.0
[INFO] [INFO] Going to create /Users/johan/Projects/github/d2rsavegameparser/target/checkout/target/central-
[INFO]
[INFO] Created bundle successfully /Users/johan/Projects/github/d2rsavegameparser/target/checkout/target/central-
[INFO]
[INFO] Going to upload /Users/johan/Projects/github/d2rsavegameparser/target/checkout/target/central-publish
[INFO]
[ERROR] Unable to upload bundle
[INFO] java.lang.RuntimeException: Invalid request. Status: 500 Response body:
[INFO]      at org.sonatype.central.publisher.client.httpClient.UploadPublisherEndpoint.call (UploadPublisher
[INFO]

[DEBUG] http-outgoing-0 << "{\"error\":{\"message\":\"Internal Server Error\"}}"
[DEBUG] http-outgoing-0 << HTTP/1.1 500 Internal Server Error
[DEBUG] http-outgoing-0 << Date: Sat, 11 May 2024 10:39:45 GMT
```

**Resolved in plugin 0.5.0**

# Using the web portal

The tag is already committed and pushed;  
The bundle properly created (this can also be done manually);  
So we can use the web portal instead as described on:  
<https://central.sonatype.org/publish/publish-portal-upload/#maven>

## Publishing Settings

[Namespace](#) [Deployments](#)

### Deployments

Release 1.3.0	<span>PENDING</span>
Created 2 seconds ago	
io.github.paladijn.d2rsaveg ameparser:1.2.0	<span>PUBLISHED</span>

### Deployment Info

Release 1.3.0	<span>PENDING</span>
Deployment ID	e37c3659-e92f-4b2c-97c5-0968500fa4a3
Created	2 seconds ago

Drop Publish

# Validation successful!

## Deployment Info

Release 1.3.0 VALIDATED

Drop Publish

---

**Deployment ID** e37c3659-e92f-4b2c-97c5-0968500fa4a3

**Created** 1 minute ago

---

## Component Summary

✓ 1 out of 1 Components Validated

pkg:maven/io.github.paladijn/d2rsavegameparser@1.3.0

# Grab a coffee or tea, then: success!

## Deployments

Release 1.3.0 PUBLISHING

Created 2 minutes ago

io.github.paladijn.d2rsavegameparser:1.2.0 PUBLISHED

## Deployment Info

Release 1.3.0 PUBLISHING

**Deployment ID** e37c3659-e92f-4b2c-97c5-0968500fa4a3

**Created** 2 minutes ago

Drop Publish

sonatype | maven central repository API Doc Help ↗ Browse Sign In

## Find OSS Components

As stewards of Central for nearly 20 years and inventors of both software supply chain management and Nexus Repository, Sonatype knows that the integrity of your build is critical.

d2r X

**d2r** 0.40 published 7 years ago in com.torodb.torod  
D2M is Document-to-Relational, a module that implements the algorithm that allows a hierarchical key-value document to be transformed int...

**d2rsavegameparser** 1.2.0 published 3 months ago in io.github.paladijn  
A library to parse savegame files of the 2021 Diablo II: Resurrected game.

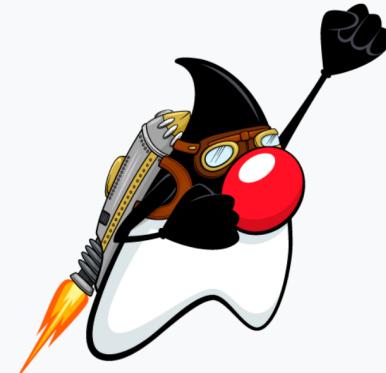
# Honourable mention: JReleaser

## JReleaser

The quick and effortless way to release your project!

[Get started](#)

[Get the code](#)



### Checksums

Calculate checksums for all input files.



### PGP Signatures

Sign all input files with PGP.



### Release to git

Tag and release to popular git services such as GitHub, GitLab, and Gitea.



### Multiple Packaging Options

Create package descriptors for Homebrew, Snapcraft, JBang, and more.



### Publish Packages

Publish packages to their respective destinations and stores.



### Make it official!

Announce the release to the four winds via Twitter, Sdkman, Zulip, and other services.



### Build it your way

Whether you prefer CLI, Maven, Gradle, or Ant, JReleaser has you covered.

## Takeaways

- It really is not as hard as it seems!
- Building a library itself has more challenges than just publishing
- Ignore older reference articles, many are outdated or simply incorrect
- The Sonatype central documentation and guide is very helpful
- Some elements are still complex (PGP for example)
- And some tooling still needs to mature
- Support, community... time will tell.

A photograph of a man with curly, reddish-brown hair and a beard, looking upwards with a thoughtful expression. He is wearing a dark grey blazer over a white shirt. The background is dark, with a bright light source visible above him, creating lens flare effects. A vertical wooden beam is on the right side.

Questions?

## Follow me

 @JohanHutting

 @johanhutting.bsky.social

 @JohanHutting@foojay.social

## Code:

<https://github.com/Paladijn/d2rsavegameparser>

<https://github.com/Paladijn/d2rsavegameparser-examples>

<https://github.com/Paladijn/D2Rcharviewer> (including native GraalVM .exe!)

 ing.com

 @ING\_News

 LinkedIn.com/company/ING

 GitHub.com/ING-bank

 Medium.com/ing-blog

 ing.it

 Facebook.com/ING

 youtube.com/@weareINGtech

 Flickr.com/INGGroup

 ing.jobs

## Watch it again?

My sheets and schedule are available on  
<https://github.com/jhutting/Talks/>

Most of my external talks are also available at  
<https://www.youtube.com/@weareINGtech>