

A photograph of a man in a kitchen. He is wearing a blue denim shirt and has a small hoop earring. He is holding a large bunch of spaghetti in his hands and is in the middle of eating it. The background shows a kitchen counter with a sink and some dishes.

Open sourcing a library

How hard can that be?

Johan Hutting

July 25th, 2024 @ FrontEnd guild ING



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 in Mercury, previously Blanco-3MO
- *Backend Guild* organising committee
- Java User Group Noord co-organiser
- *Global tech speakers community* core member
- Mentor others
 - Organising events
 - Supporting on Stack Enterprise/MatterMost
 - Challenging others by pushing for improvements
- 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!

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

STRENGTH	26	ATTACK Damage	4-21
DEXTERITY	42	WAKE OF FIRE	
VITALITY	145	ATTACK Rating	265
ENERGY	30	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%)

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

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

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 OF 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
-
- 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>

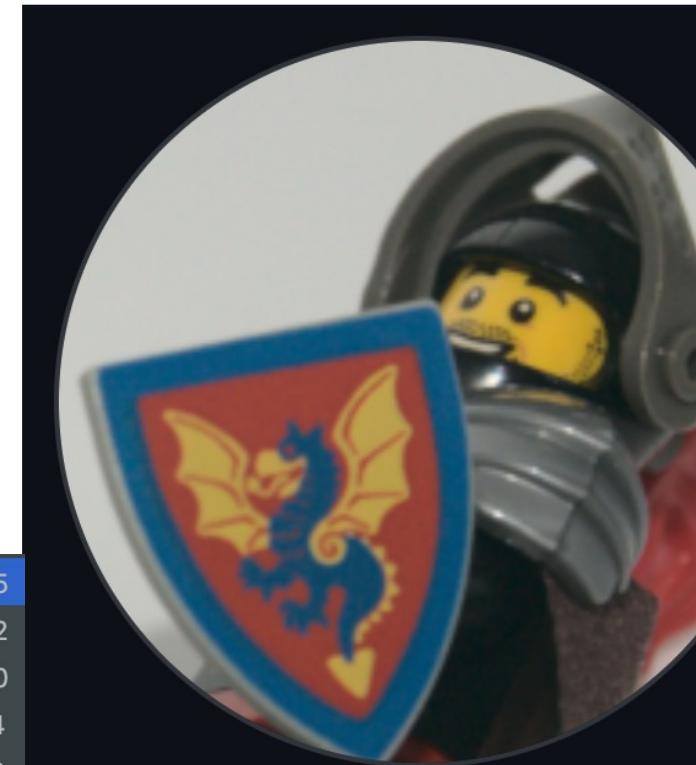
<https://github.com/Paladijn/d2rsavegameparser-examples>

• [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

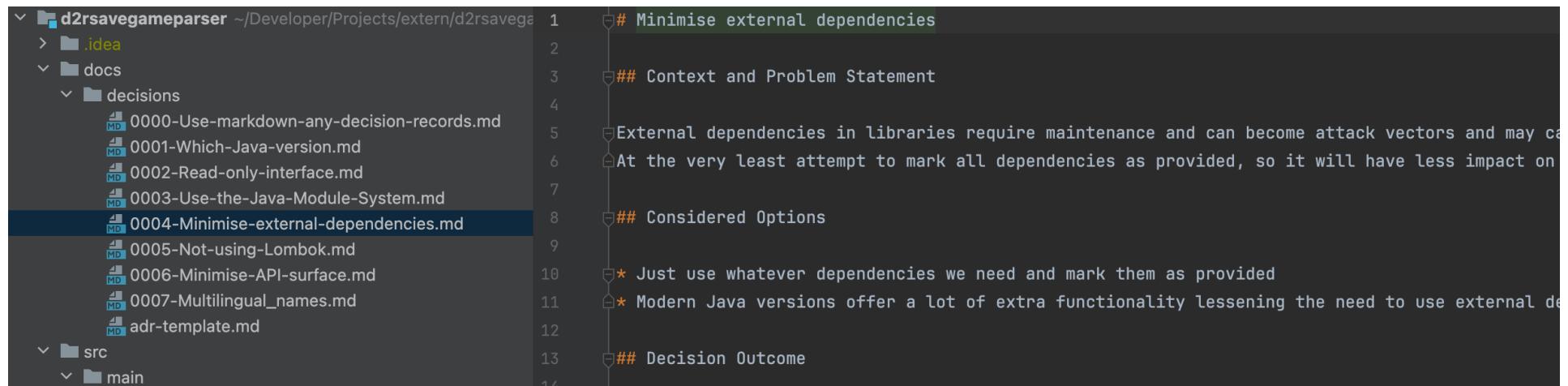
Follow

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 two panes. The left pane displays a file tree for a project named 'd2rsavegameparser' located at '~/Developer/Projects/extern/d2rsavega'. The tree includes a '.idea' folder, a 'docs' folder containing a 'decisions' subfolder with several Markdown files (0001-0007 and adr-template.md), and a 'src/main' folder. The right pane shows the content of the file '0004-Minimise-external-dependencies.md'. The document is structured with sections like '# Minimise external dependencies', '## Context and Problem Statement', '## Considered Options', and '## Decision Outcome'. It discusses the risks of external dependencies and suggests using modern Java features instead.

```
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

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

DIABLO

Demon

ENTERING CHAOS SANCTUARY

QUEST Log



LIFE: 1690 / 1879



NEW SKILL



MANA: 289 / 294



1:43:30 12

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 original, was a challenge ;)

For a clear explanation on the complexities check out the following talk on YouTube: *The Secret Life of Maven Central* by Jamie Coleman

The old OSSRH portal has been discontinued as of March 12th, 2024.
Many guides and plugins still refer to this, so ignore them!

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/cen
[INFO]
[INFO] Going to upload /Users/johan/Projects/github/d2rsavegameparser/target/checkout/target/central-publish
[INFO]
[ERROR] Unable to upload bund Resolved in plugin 0.5.0
[INFO] java.lang.RuntimeException: Invalid request. Status: 500 Response body:
[INFO]      at org.sonatype.central.publisher.client.httpClient.UploadPublisherEndpoint.call (UploadPublisher

[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
```

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 Deployment Info

Deployment	Status	Actions
Release 1.3.0	PENDING	Drop Publish
Created 2 seconds ago		
io.github.paladijn.d2rsaveg ameparser:1.2.0	PUBLISHED	

Deployment ID: e37c3659-e92f-4b2c-97c5-0968500fa4a3
Created: 2 seconds ago

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

Drop Publish

Deployment ID	e37c3659-e92f-4b2c-97c5-0968500fa4a3
Created	2 minutes ago

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.

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.

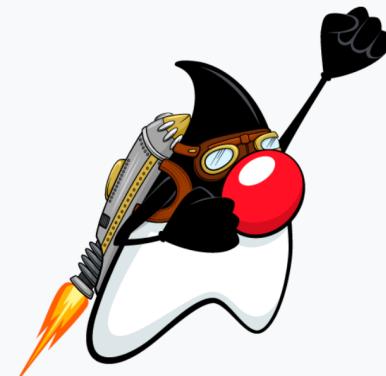
Honourable mention: JReleaser

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 surprised or curious expression. He is wearing a dark textured jacket 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

 SlideShare.net/ING

 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 available at
<https://www.youtube.com/@weareINGtech>

09:42 PM

Hard crash during a run

```
Dll-character
at org.jboss.resteasy.core.ExceptionHandler.handleException(ExceptionHandler.java:344)
at org.jboss.resteasy.core.SynchronousDispatcher.writeException(SynchronousDispatcher.java:205)
at org.jboss.resteasy.core.SynchronousDispatcher.invoke(SynchronousDispatcher.java:452)
at org.jboss.resteasy.core.SynchronousDispatcher.lambda$invoke$4(SynchronousDispatcher.java:240)
at org.jboss.resteasy.core.SynchronousDispatcher.lambda$preprocess$0(SynchronousDispatcher.java:154)
at org.jboss.resteasy.core.interception.jaxrs.PreMatchContainerRequestContext.filter(PreMatchContainerRequestContext.java:321)
at org.jboss.resteasy.core.SynchronousDispatcher.preprocess(SynchronousDispatcher.java:157)
at org.jboss.resteasy.core.SynchronousDispatcher.invoke(SynchronousDispatcher.java:229)
at io.quarkus.resteasy.runtime.standalone.RequestDispatcher.service(RequestDispatcher.java:82)
at io.quarkus.resteasy.runtime.standalone.VertxRequestHandler.dispatch(VertxRequestHandler.java:147)
at io.quarkus.resteasy.runtime.standalone.VertxRequestHandler$1.run(VertxRequestHandler.java:93)
at io.quarkus.vertx.core.runtime.VertxCoreRecorder$14.runWith(VertxCoreRecorder.java:582)
at org.jboss.threads.EnhancedQueueExecutor$Task.run(EnhancedQueueExecutor.java:2513)
at org.jboss.threads.EnhancedQueueExecutor$ThreadBody.run(EnhancedQueueExecutor.java:1538)
at org.jboss.threads.DelegatingRunnable.run(DelegatingRunnable.java:29)
at org.jboss.threads.ThreadLocalResettingRunnable.run(ThreadLocalResettingRunnable.java:29)
at io.netty.util.concurrent.FastThreadLocalRunnable.run(FastThreadLocalRunnable.java:30)
at java.base/java.lang.Thread.run(Thread.java:1583)
Caused by: java.lang.IndexOutOfBoundsException: Index 2047 out of bounds for length 670
at java.base/jdk.internal.util.Preconditions.outOfBounds(Preconditions.java:100)
at java.base/jdk.internal.util.Preconditions.outOfBoundsCheckIndex(Preconditions.java:106)
at java.base/jdk.internal.util.Preconditions.checkIndex(Preconditions.java:302)
at java.base/java.util.Objects.checkIndex(Objects.java:385)
at java.base/java.util.ArrayList.get(ArrayList.java:427)
at com.github.paladijn.d2rsavegameparser.txt.TXTProperties.getMagicPrefix(TXTProperties.java:239)
at com.github.paladijn.d2rsavegameparser.parser.ItemParser.parseMagical(ItemParser.java:658)
at com.github.paladijn.d2rsavegameparser.parser.ItemParser.parseExtendedPart1(ItemParser.java:265)
at com.github.paladijn.d2rsavegameparser.parser.ItemParser.parseItem(ItemParser.java:183)
at com.github.paladijn.d2rsavegameparser.parser.ItemParser.parseItems(ItemParser.java:110)
```

[Game] Game difficulty scale set to 8. Diablo's

Internal Server Error

Error

Error id 60f0e3f6-9f4c-4f79-9b3f-

3f12fdcd80-2

: 255 / 273



MANA: 102 / 376

Diablo II: Resurrected
NG+

Normal (Assassin)

Hell (Sorceress)

Ubers (Paladin)

1:41:58.28

21:42
27/01/2024

Type here to search

The cause



SNAKE'S GRAND CHARM OF INERTIA
KEEP IN INVENTORY TO GAIN BONUS
REQUIRED LEVEL: 14
+7% FASTER RUN/WALK
+26 TO MANA

CTRL + LEFT CLICK TO MOVE



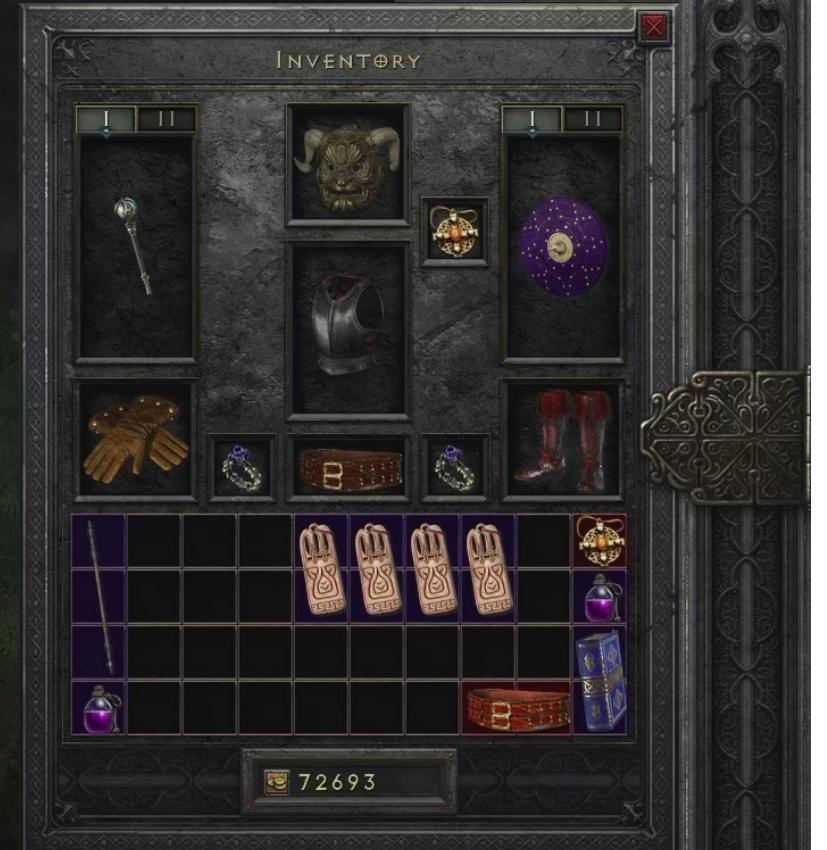
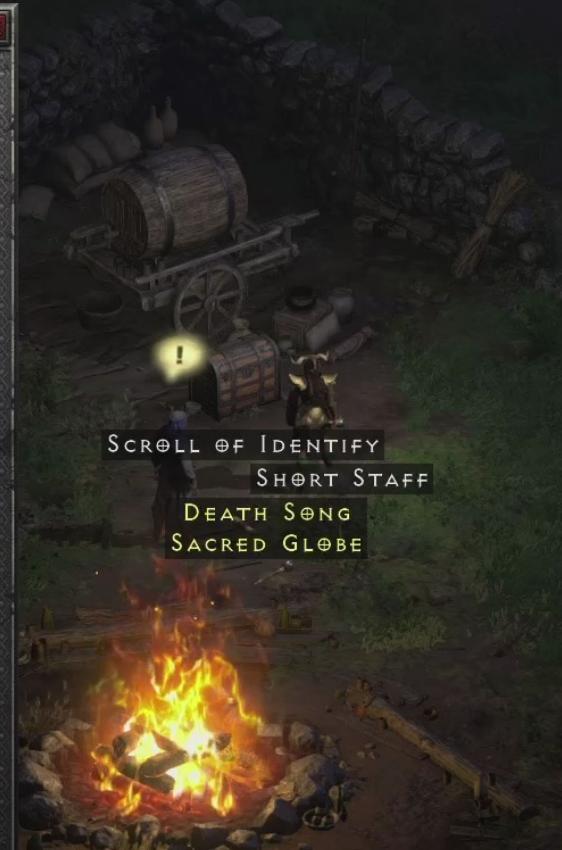
2305400

HELL (91.3%)

LVL: 11 GOLD: 62K [0] MF: 0
STR: 43 FIRE%: 46 FRW: 20
DEX: 26 LG+H%: 40 FCR: 40 [62]
VIT: 45 COLD%: 30 FBR: 0
ENE: 44 POIS%: 0 FHR: 0 [5]

LAST UPDATED: 21:34 CET

←This one is a valid item



72693

MANA: 148 / 296

Diablo II: Resurrected
NG+

Normal (Assassin)

Hell (Sorceress)

Ubers (Paladin)

1:38:44.98