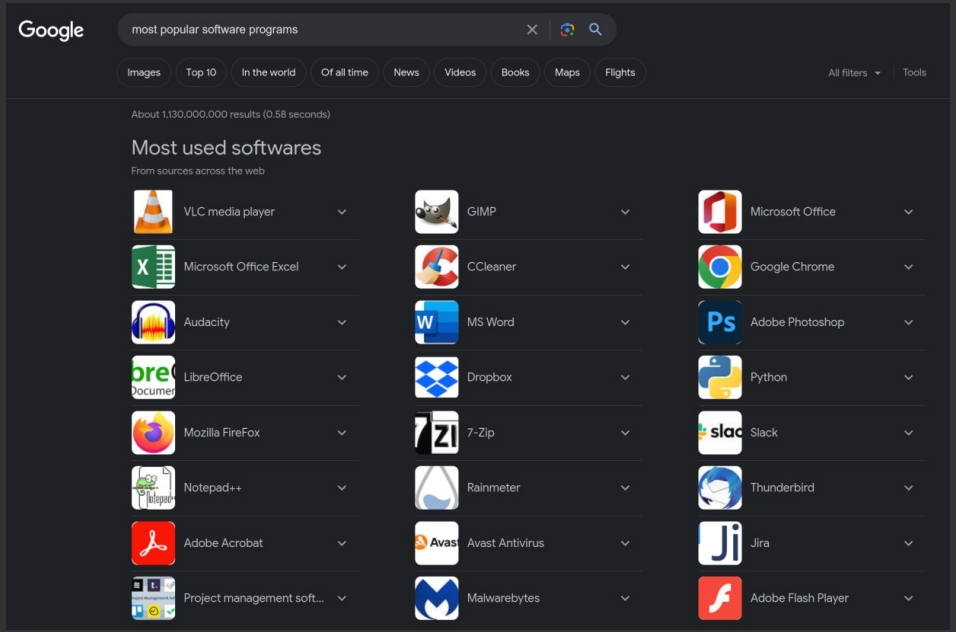
>>> Predict security attacks in FOSS

>>> Why you want it and how to do it

Name: Carlos E. Budde
Inst: University of Trento, Italy
Date: 10th November 2023

ProSVED

AssureMOSS


Google
most popular software programs
Images
Top 10
In the world
Of all time
News
Videos
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All filters
Tools
About 1,130,000,000 results (0.58 seconds)
Most used softwares
From sources across the web
VLC media player
GIMP
Microsoft Office
Microsoft Office Excel
CCleaner
Google Chrome
Audacity
MS Word
Adobe Photoshop
LibreOffice
Dropbox
Python
Mozilla FireFox
7-Zip
Slack
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Rainmeter
Thunderbird
Adobe Acrobat
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Project management soft...
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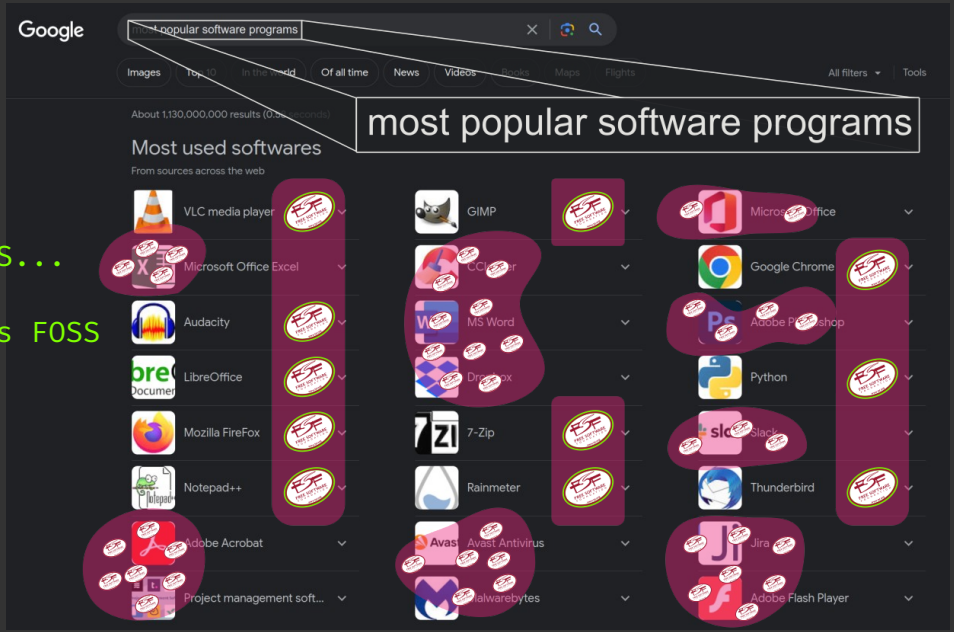
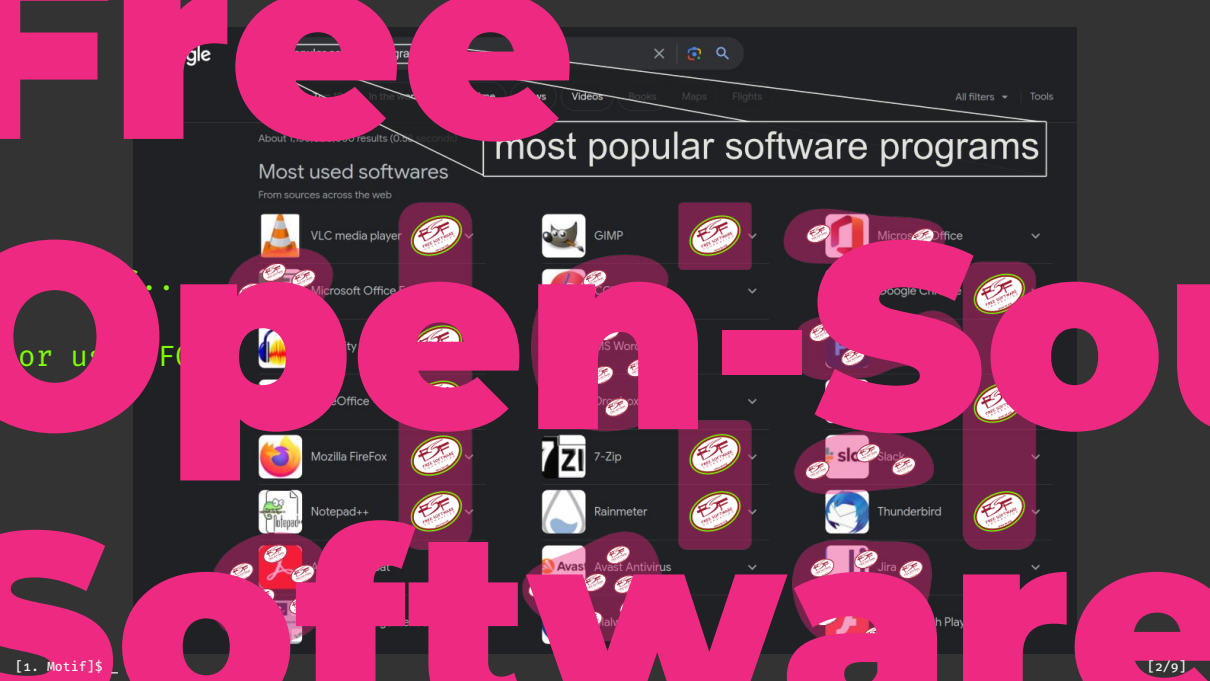


is FOSS...

or uses FOSS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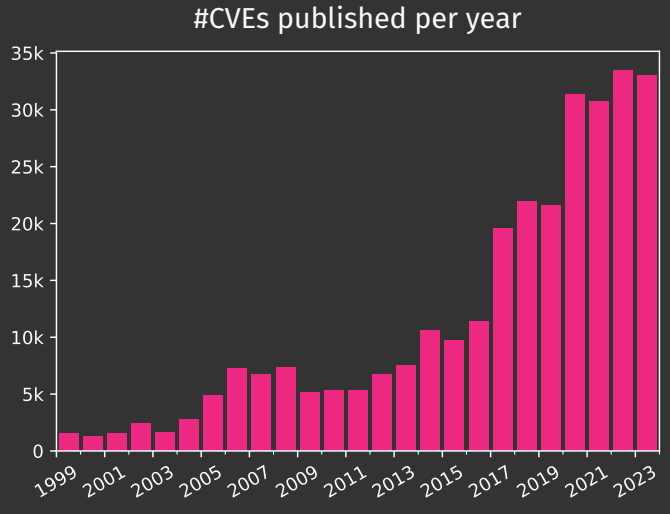
[1. Motif]$ _
[2/9]

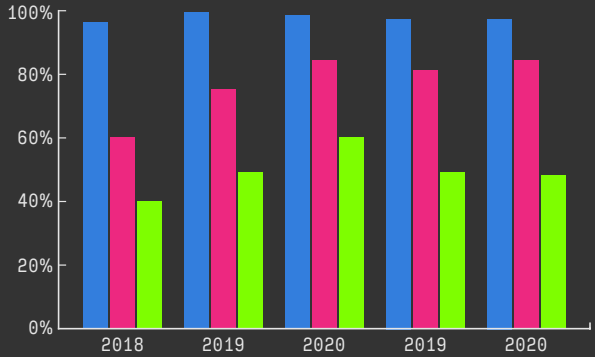


NVD

MITRE

Source: https://cve.mitre.org/data/downloads/allitems.csv.Z

Open-source software and vulnerabilities



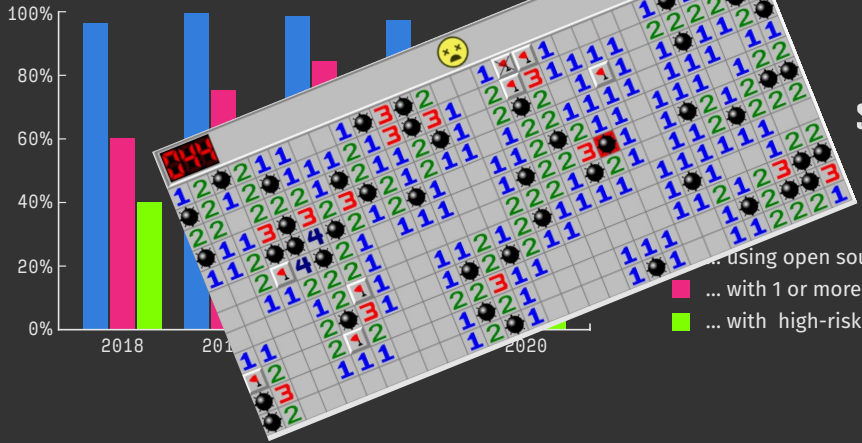
SYNOPSYS®

Codebases ...

- ... using open source software
- ... with 1 or more vulnerabilities
- ... with high-risk vulnerabilities

Source: https://www.synopsys.com/software-integrity/engage/ossra/rep-ossra-2023-pdf

Open-source software and vulnerabilities



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>>> Vulnerabilities in dependency tree

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⋮
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[INFO] Building Redisson 3.19.0
[INFO] --------------------------------[ jar ]---------------------------------
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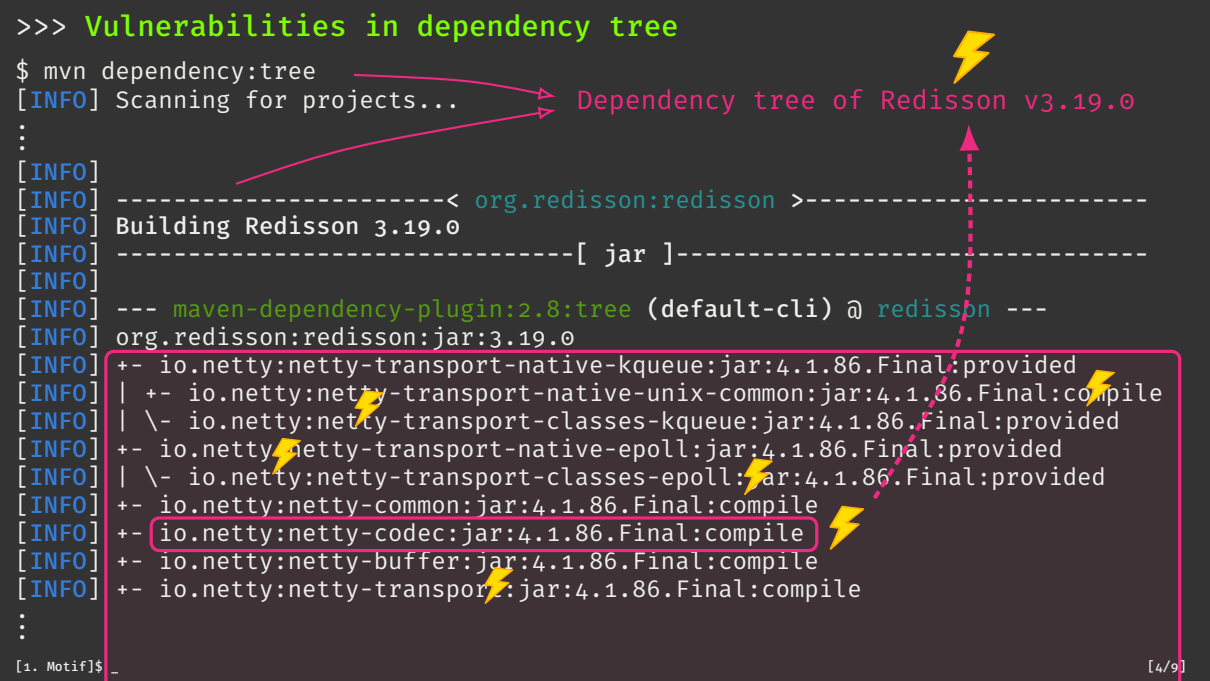
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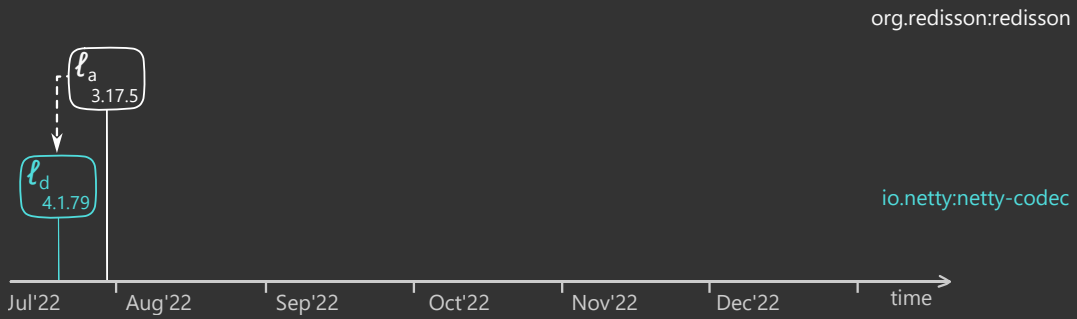
>>> Software's vulnerable lifecycle



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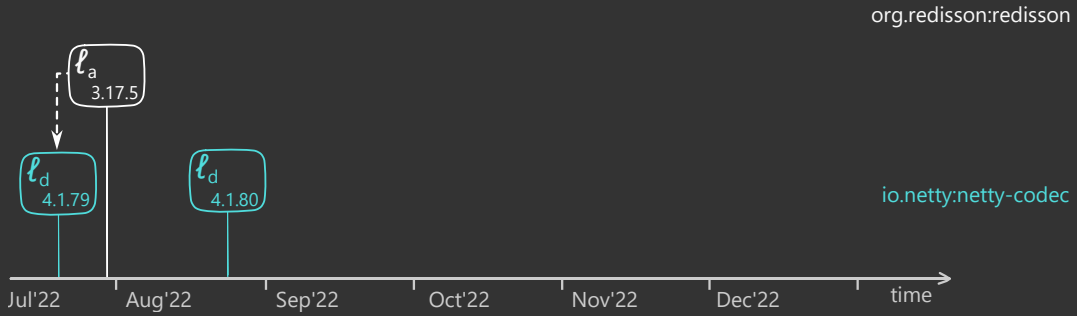

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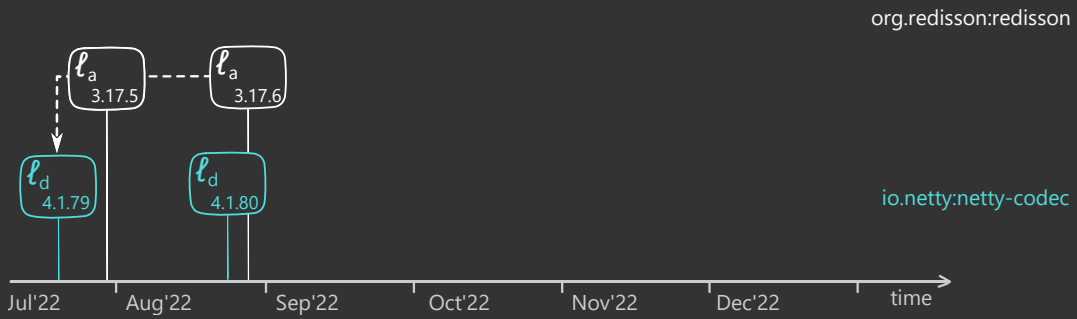

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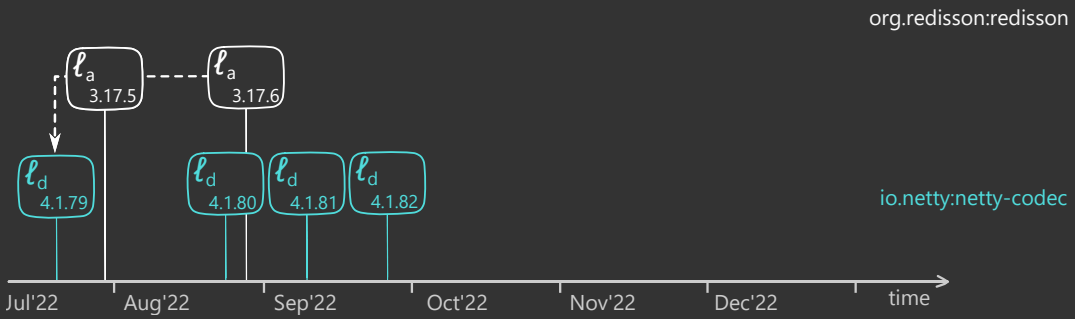

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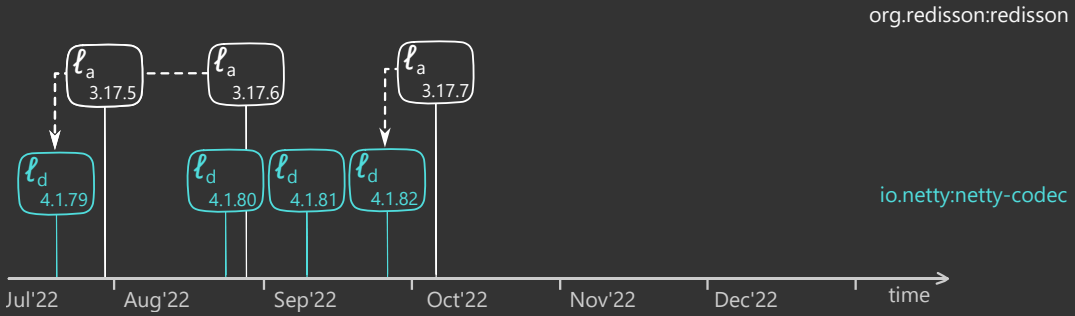

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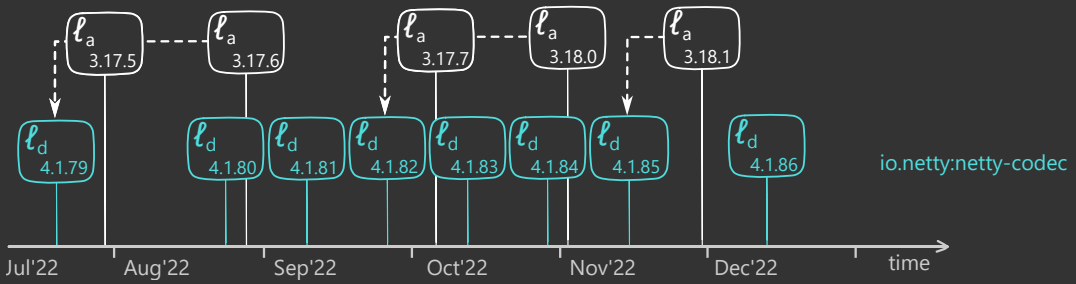

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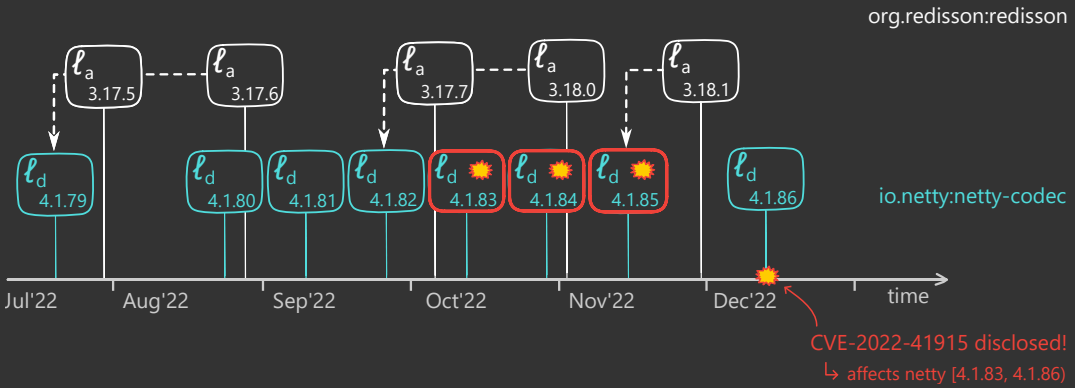

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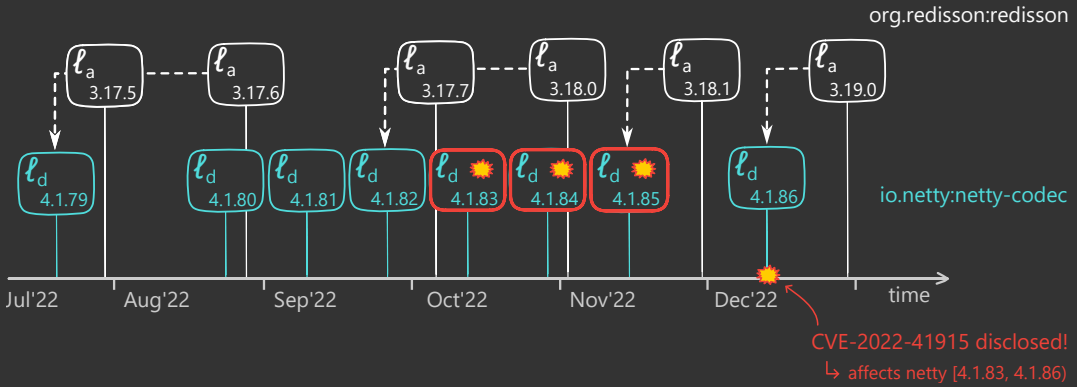

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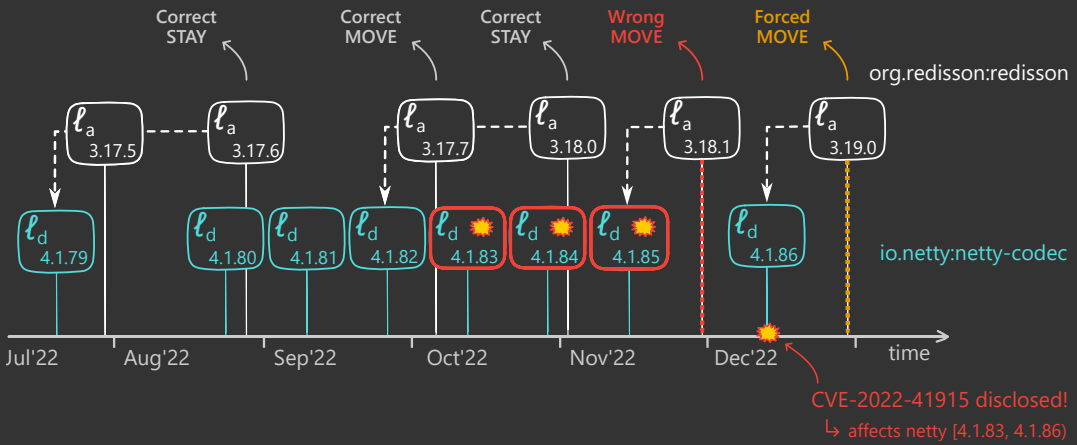

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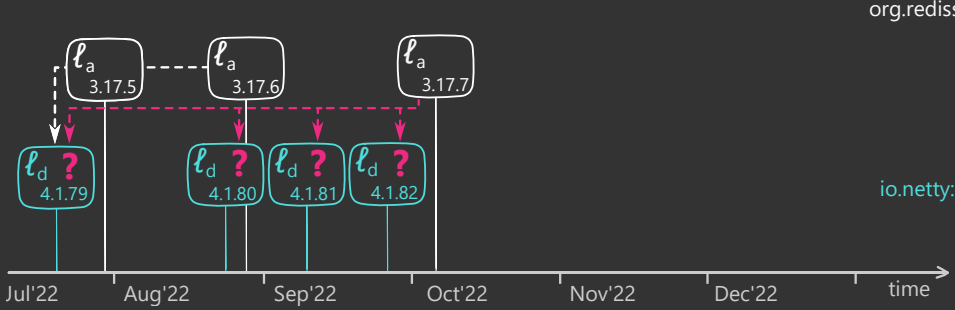
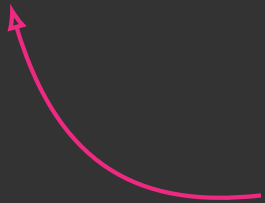
Is there a **best time** to update?



>>> Idea: fit CVE *disclosure time*



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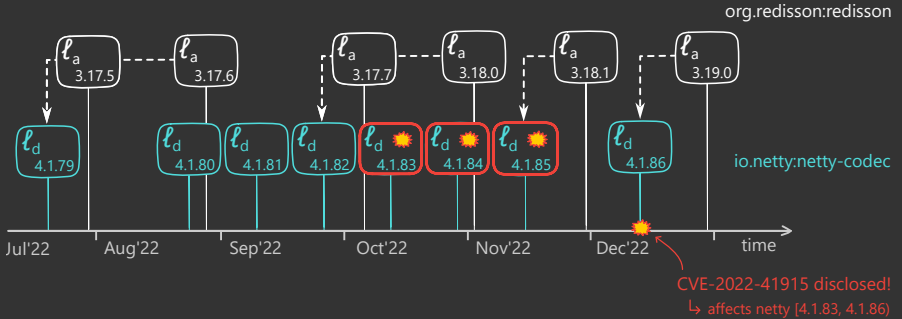

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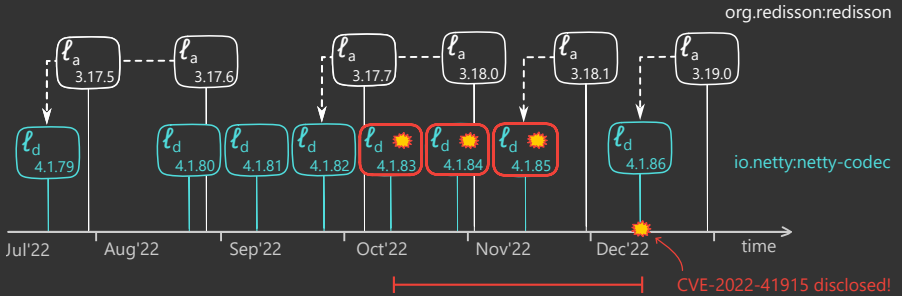

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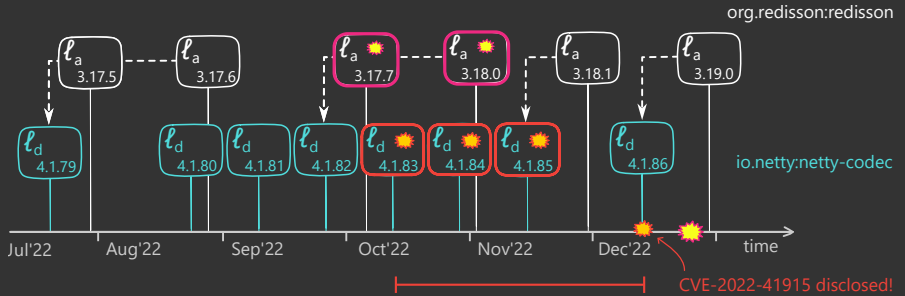

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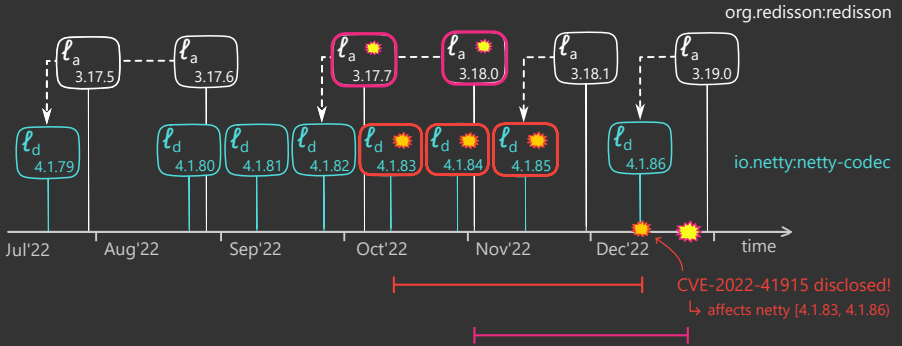

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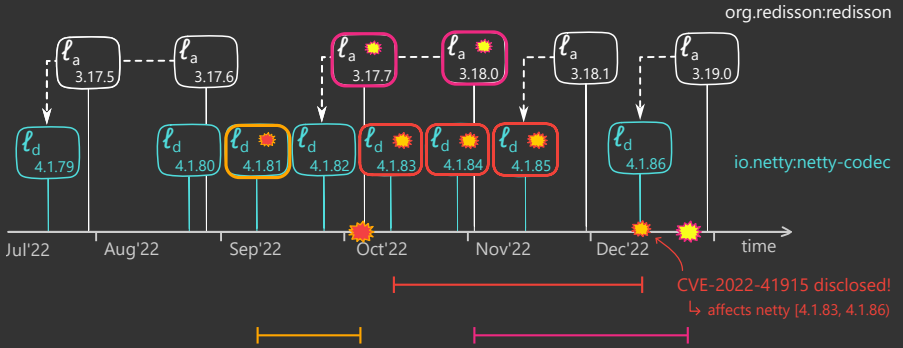

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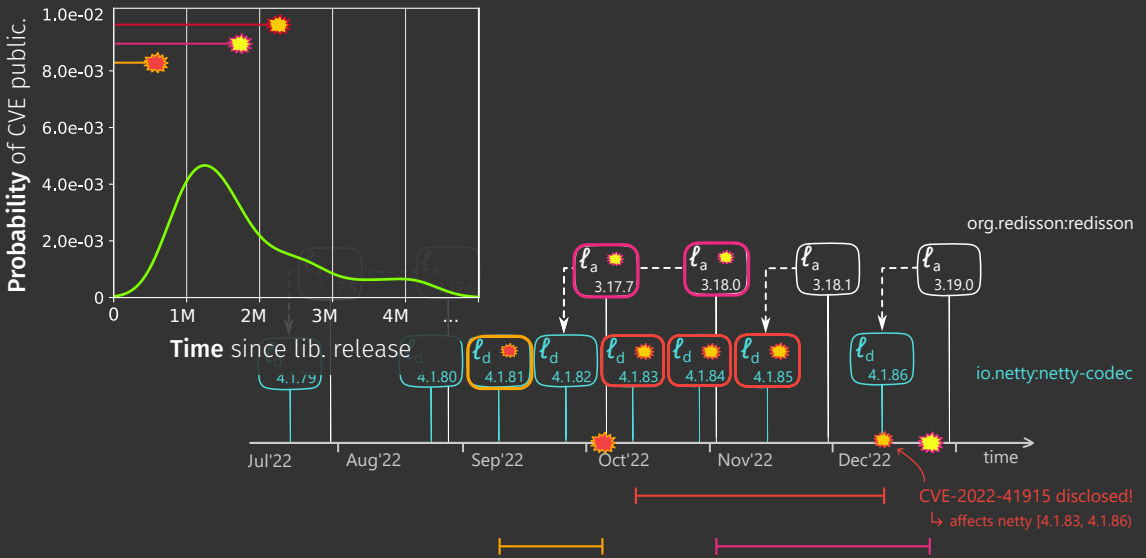

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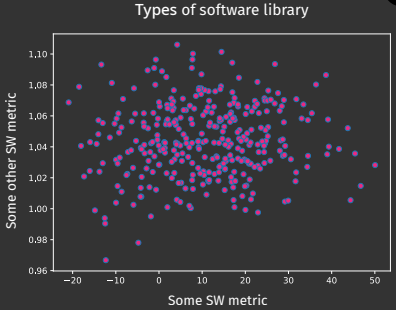

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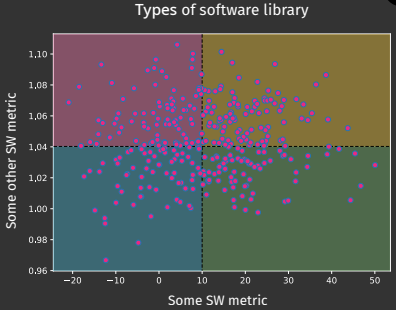

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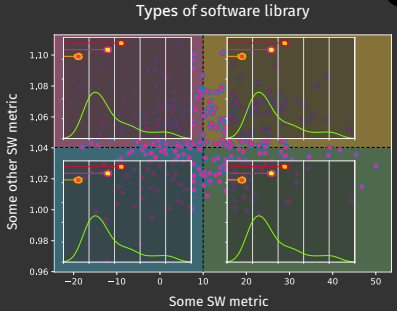
  - Partition software libraries per type

* Software features for classification that are relevant for security



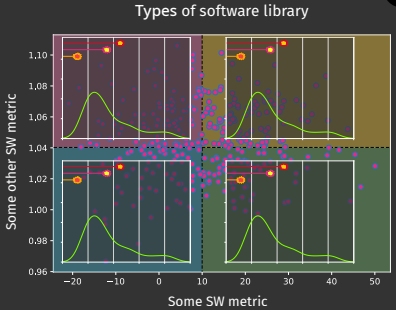
>>> But:

* Vulnerabilities are rare events ⇒ very few to fit from
  - Aggregate vulnerabilities from many libraries

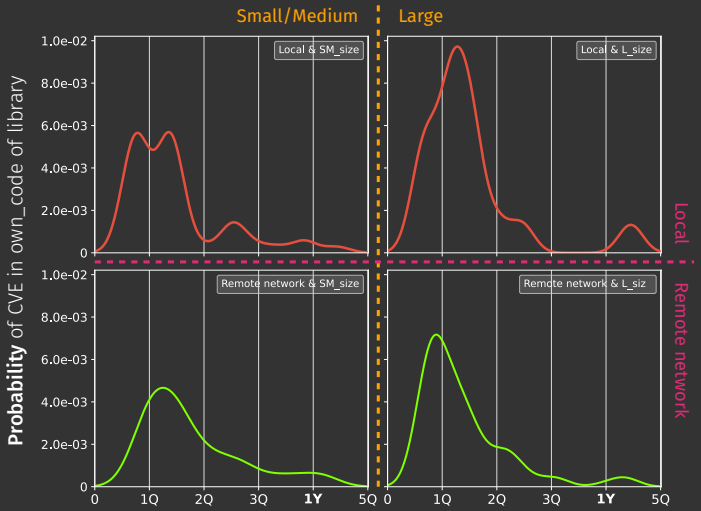
* Not every vulnerability (or *library*) is equivalent
  - Partition software libraries per type

* Software features for classification that are relevant for security

Features used to partition data, not to predict vulnerabilities



>>> Preliminary outcomes



>>> Predict security attacks in FOSS
>>> Why you want it and how to do it

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Inst: University of Trento, Italy

Ethical security survey
—
Vrije Universiteit Amsterdam

https://vuass.eu.qualtrics.com/jfe/form/SV_cFSKOHjHZnaH2Si

ProSVED

AssureMOSS

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