



# A Prime on Software Debloating

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## Projects' Overview

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# Agenda

- Motivations
- Approaches
- Our projects
  - DepClean
  - JDBL

# Why debloating software?

- For security
- For performance
- For maintenance

# How to debloat software?

- Using static analysis
- Using dynamic analysis
- Using a hybrid approach

# DepClean

<https://github.com/castor-software/depclean>

castor-software / depclean Public


<> Code Issues 11 Pull requests 1 Actions Projects Wiki Security Insights Settings

master 3 branches 5 tags Go to file Add file Code

cesarsotvalero Rename header 662d116 on 1 Feb 323 commits

.github	Completed addition of gradle build to CI	8 months ago
.img	Improve README.md (#72)	12 months ago
art	Rename header	2 months ago
depclean-core	Divided the DCA test into two sections i.e. one for the jar and one fo...	7 months ago
depclean-gradle-plugin	Fix call to JarUtils from Gradle project	4 months ago
depclean-maven-plugin	Add integration tests	4 months ago
.gitattributes	ref: licence	2 years ago
.gitignore	Implemented createResultJson and createClassUsageCsv parameters	8 months ago
CITATION.cff	Enhance CITATION.cff	6 months ago
LICENSE.md	Update LICENSE.md	2 years ago
README.md	Updated readme (#87)	11 months ago
checkstyle.xml	Allow continuous upper case letters as variable names	12 months ago
codecov.yml	Change codecov comments on PRs	11 months ago
pom.xml	Replace Travis by GitHub actions	12 months ago

README.md



## DepClean

build passed quality gate passed maintainability A reliability A security E

maven-central v2.0.1 license MIT vulnerabilities 3 bugs 0 code smells 26

lines of code 2.5K duplicated lines 0% technical debt 4h codecov 23%

### About

DepClean automatically detects and removes unused dependencies in Maven projects

java bytecode analysis dependencies bloatware lifecycle

Readme MIT License Cite this repository 103 stars 10 watching 20 forks

### Releases

5

Version 2.0.0 Latest on 9 Mar 2021

+ 4 releases

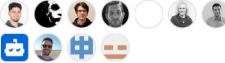
### Packages

No packages published

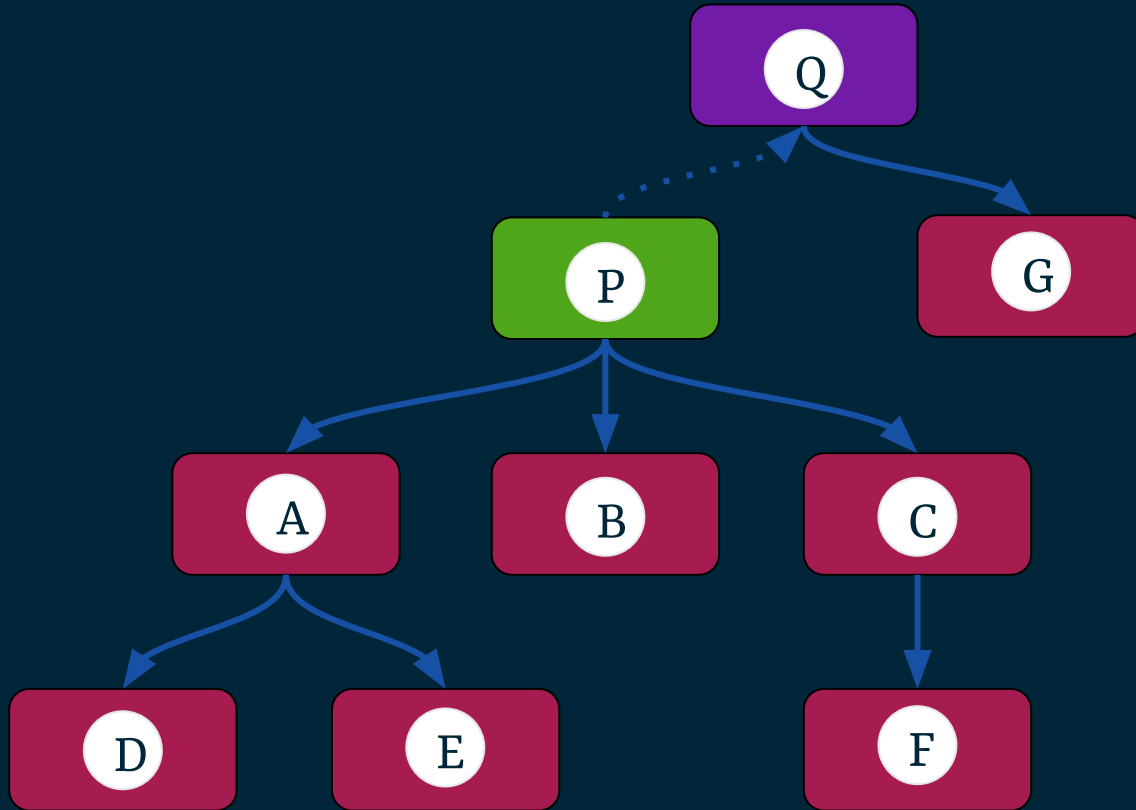
[Publish your first package](#)

### Contributors

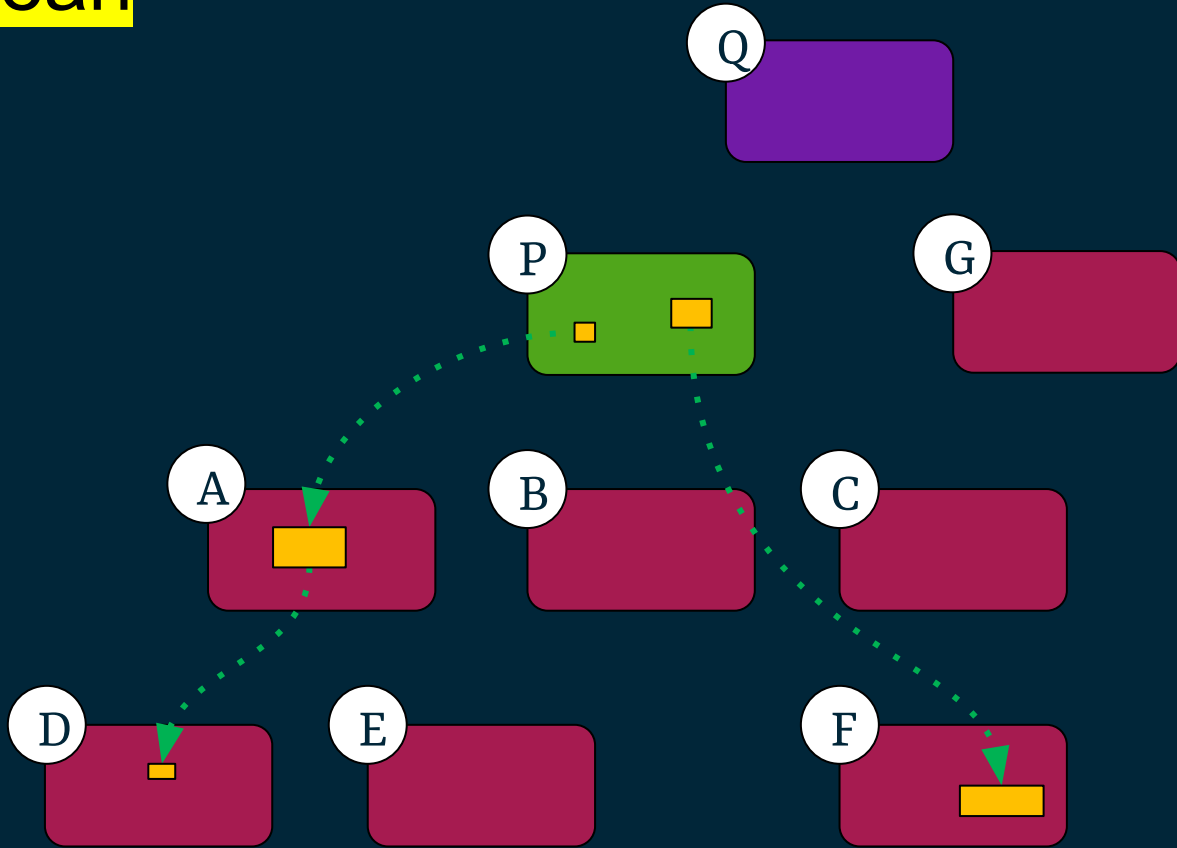
11



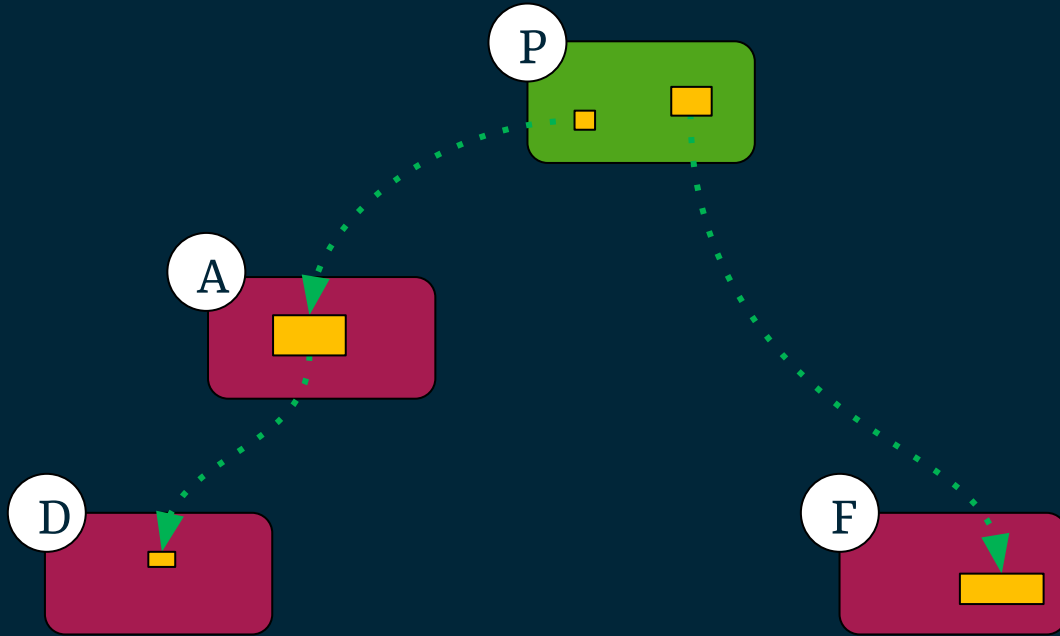
# DepClean



# DepClean



# DepClean





# JDBL

<https://github.com/castor-software/jdbl>

castor-software / jdbl Public


< Code Issues 3 Pull requests 10 Actions Projects Wiki Security Insights Settings

master 12 branches 1 tag Go to file Add file Code

cesarsotvalero Merge pull request #31 from castor-software/dependabot/mav... ✓ 2fe3395 on 2 Feb 218 commits

.github	Remove windows os from the pipeline	12 months ago
jdbl-agent	Fix Travis build	12 months ago
jdbl-app	Fix Travis build	12 months ago
jdbl-core	Fix Travis build	12 months ago
jdbl-maven-plugin	build(deps): bump commons-io from 2.6 to 2.7 in /jdbl-maven-plugin	11 months ago
.githgnore	Show debloated jars	2 years ago
Opdd.yml	feat: add PDD	2 years ago
LICENSE	Update LICENSE	2 years ago
README.md	Update README.md	4 months ago
logo.svg	doc: add gh contrib templates	2 years ago
pom.xml	Update to Java 11	12 months ago
wasp.svg	Update README.md	2 years ago

README.md



**JDBL**

build passing maven-central v1.0.0 quality gate passed maintainability A  
reliability E security E vulnerabilities 6 bugs 4 code smells 151  
lines of code 4.9k duplicated lines 0.5% technical debt 3d codecov 12%

### What is JDBL?

JDBL is a Java DeBLoat tool. With JDBL, developers can automatically specialize Java libraries at build-time through dynamic debloating. JDBL executes the library and removes the methods, classes, and dependencies that are not needed to provide the expected output. The result is a smaller bundled file (e.g., JAR or WAR), which is tailored to the specific needs of the client. Using JDBL is great because it saves space on disk, reduces the attack surface, and improves performance of the client application. JDBL can be used as a Maven plugin (see [usage](#)), with minimal or zero configuration effort.

About

JDBL automatically removes unnecessary code from Java applications through dynamic analysis

[www.cesarsotvalero.net/blog/diversit...](http://www.cesarsotvalero.net/blog/diversit...)

maven-plugin bytecode-manipulation debloating

Readme MIT License 10 stars 7 watching 3 forks

Releases

1 tags

[Create a new release](#)

Packages

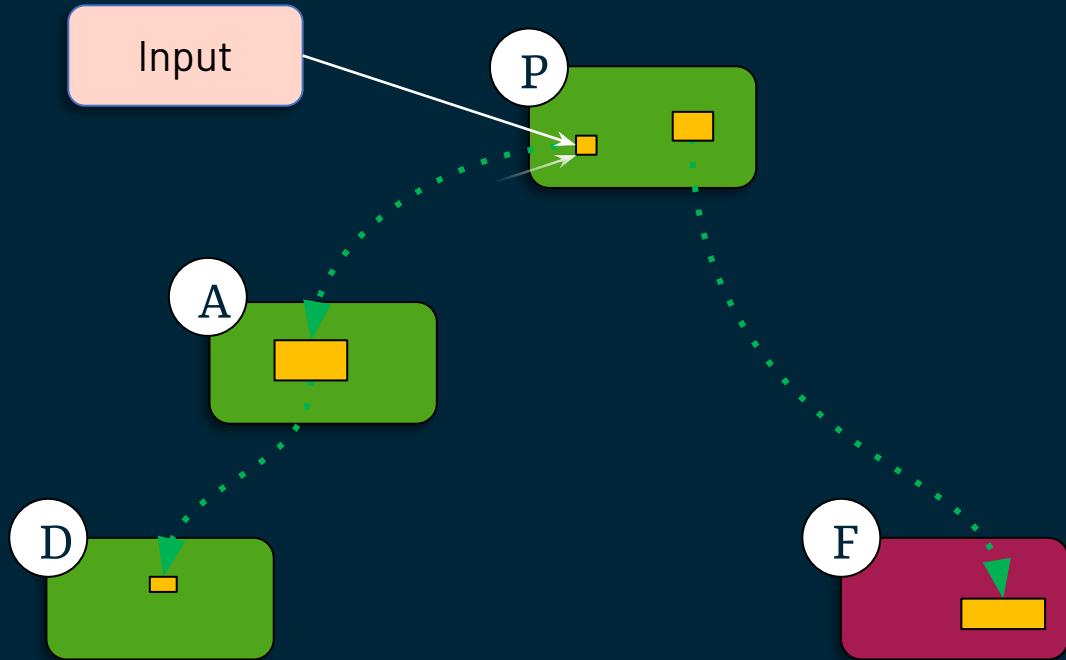
No packages published  
[Publish your first package](#)

Contributors 3

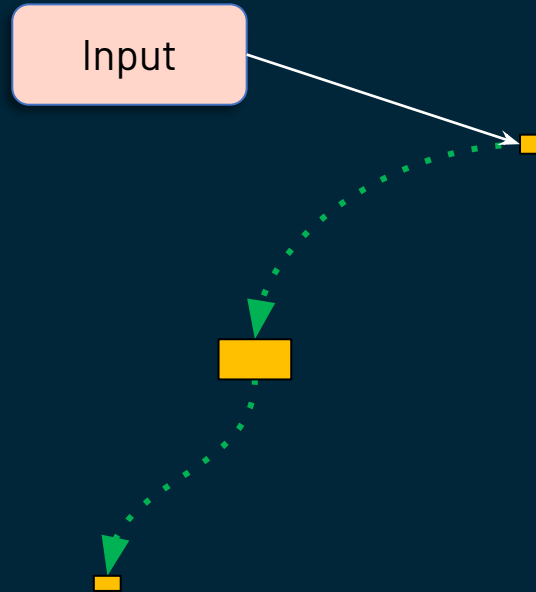
- cesarsotvalero César Soto Valero
- tdurieux Thomas Durieux
- dependabot[bot]

Environments 1

# JDBL



# JDBL



JDBL

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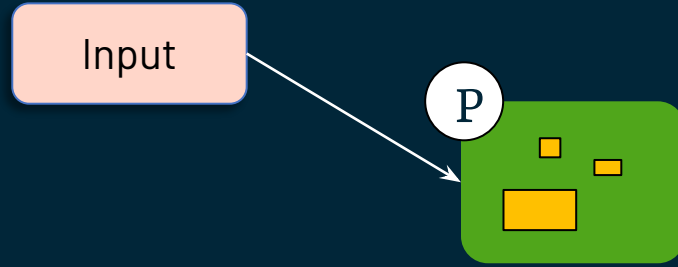
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JDBL



# JDBL



# Impact

- With DepClean:
  - 30 projects debloated, 21 pull requests accepted
  - First experiment that shows that the usage status of dependencies is mostly constant over time
- With JDBL:
  - 211 Java libraries debloated
  - First experiment that assesses the utility of debloated libraries with respect to client applications that reuse them



# Time for Discussion!

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