

IT Tage, 13.12.2022

Raus aus der Wartungshölle ... zumindest ein bißchen

Sandra Parsick

@SandraParsick
@sparsick@mastodon.social
mail@sandra-parsick.de

Wer bin ich?

- Sandra Parsick
- Freiberuflicher Softwareentwickler und Consultant im Java-Umfeld
- Schwerpunkte:
 - Java Enterprise Anwendungen
 - Agile Methoden
 - Software Craftmanship
 - Automatisierung von Entwicklungsprozessen
- Trainings
- Workshops

✉️ mail@sandra-parsick.de

🐦 @SandraParsick

Ⓜ️ @sparsick@mastodon.social

RSS https://www.sandra-parsick.de

🎧 https://ready-for-review.dev





Wieso haben wir
das so gemacht?

Welche
Abhängigkeiten
haben wir im
Einsatz?

Wie können wir
am besten up to
date bleiben?

Entspricht die
Implementierung
noch den
Architekturbildern?

Welche
Softwarelizenzen
haben wir im
Einsatz?

Sind wir von
Sicherheitslücken
betroffen?

Onboarding neuer
Devs

Wie bekommen
wir die
Anwendung lokal
zum Laufen?

Willkommen in der Wartungshölle











Automation is Queen :)

Spring Pet Clinic

[HOME](#)[FIND OWNERS](#)[VETERINARIANS](#)[ERROR](#)

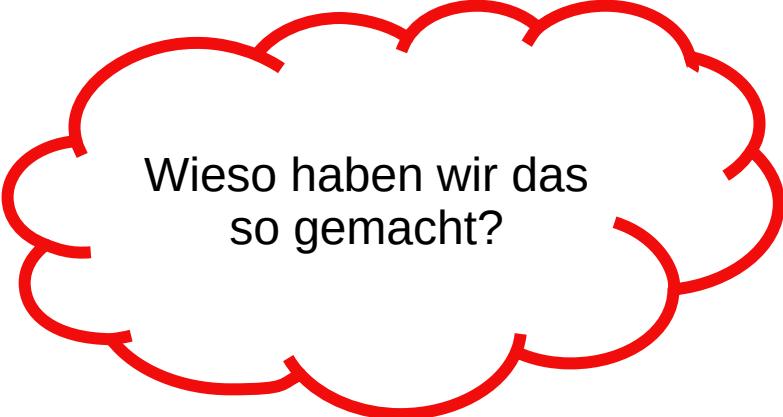
Owners

Name	Address	City	Telephone	Pets
Jeff Black	1450 Oak Blvd.	Monona	6085555387	Lucky
Jean Coleman	105 N. Lake St.	Monona	6085552654	Max Samantha
Betty Davis	638 Cardinal Ave.	Sun Prairie	6085551749	Basil
Harold Davis	563 Friendly St.	Windsor	6085553198	Iggy
Maria Escobito	345 Maple St.	Madison	6085557683	Mulligan
Carlos Estaban	2335 Independence La.	Waunakee	6085555487	Lucky Sly
George Franklin	110 W. Liberty St.	Madison	6085551023	Leo
Peter McTavish	2387 S. Fair Way	Madison	6085552765	George
Eduardo Rodriguez	2693 Commerce St.	McFarland	6085558763	Jewel Rosy
David Schroeder	2749 Blackhawk Trail	Madison	6085559435	Freddy

Spring Pet Clinic

- Technologiestack:

- Java 8
- Spring Boot 2.2.0
- JUnit 4
- Maven



Wieso haben wir das
so gemacht?

Architektur dokumentieren

1. Einführung und Ziele

- 1.1 Aufgabenstellung
- 1.2 Qualitätsziele
- 1.3 Stakeholder

2. Randbedingungen

- 2.1 Technische Randbedingungen
- 2.2 Organisatorische Randbedingungen
- 2.3 Konventionen

3. Kontextabgrenzung

- 3.1 Fachlicher Kontext
- 3.2 Technischer- oder Verteilungskontext

4. Lösungsstrategie

5. Bausteinsicht

- 5.1 Ebene 1
- 5.2 Ebene 2

6. Laufzeitsicht

- 6.1 Laufzeitszenario 1
- 6.2 Laufzeitszenario 2

7. Verteilungssicht

- 7.1 Infrastruktur Ebene 1
- 7.2 Infrastruktur Ebene 2

8. Querschnittliche Konzepte

- 8.1 Fachliche Struktur und Modelle
- 8.2 Architektur- und Entwurfsmuster
- 8.3 Unter-der-Haube
- 8.4 User Experience

9. Entwurfsentscheidungen

- 9.1 Entwurfsentscheidung 1
- 9.2 Entwurfsentscheidung 2

10. Qualitätsanforderungen

- 10.1 Qualitätsbaum
- 10.2 Qualitätsszenarien

11. Risiken und technische Schulden

12. Glossar



Was ist wenn nix da ist?

Source Code ist immer da.

archifacts

Architecture as-is



Entscheidungen dokumentieren

ADR (architecture decision records)

<https://adr.github.io/>

[short title of solved problem and solution]

- Status: [proposed | rejected | accepted | deprecated | ... | superseded by [ADR-0005](0005-example.adoc)] <!-- optional -->
- Decision makers: [list everyone involved in the decision] <!-- optional -->
- Date: [YYYY-MM-DD when the decision was last updated] <!-- optional -->

Technical Story: [description | ticket/issue URL] <!-- optional -->

Context and Problem Description

Decision driver <!-- optional -->

- [driver 1, e.g., a force, facing concern, ...]
- [driver 2, e.g., a force, facing concern, ...]
- ... <!-- numbers of drivers can vary -->

Considered Options

- [option 1]
- [option 2]
- [option 3]
- ... <!-- numbers of options can vary -->

Decision

Chosen option: "[option 1]", because [justification. e.g., only option, which meets k.o. criterion decision driver | which resolves force force | ... | comes out best (see below)].

Positive Consequences

- [e.g., improvement of quality attribute satisfaction, follow-up decisions required, ...]
- ...

Negative Consequences

- [e.g., compromising quality attribute, follow-up decisions required, ...]
- ...

Pros and Cons of the Options

[option 1]

[example | description | pointer to more information | ...] <!-- optional -->

- **Good:** because [argument a]
- **Good:** because [argument b]
- **Bad:** because [argument c]
- ... <!-- numbers of pros and cons can vary -->

Links <!-- optional -->

- [Link type] [Link to ADR] <!-- example: Refined by [ADR-0005](0005-example.adoc) -->
- ... <!-- numbers of links can vary -->

```
▼ maintenance-demo [spring-petclinic] ~/dev/workspace/maintenance-demo
  > .idea
  ▼ src
    ▼ main
      ▼ asciidoc
        ▼ technical-decisions
          ▲ 001_ApplicationFramework.adoc
          ▲ decisions.adoc
        ▼ TEMPLATE
          ▲ ADR_TEMPLATE.adoc
  > java
```

Viele ADR Templates im Netz

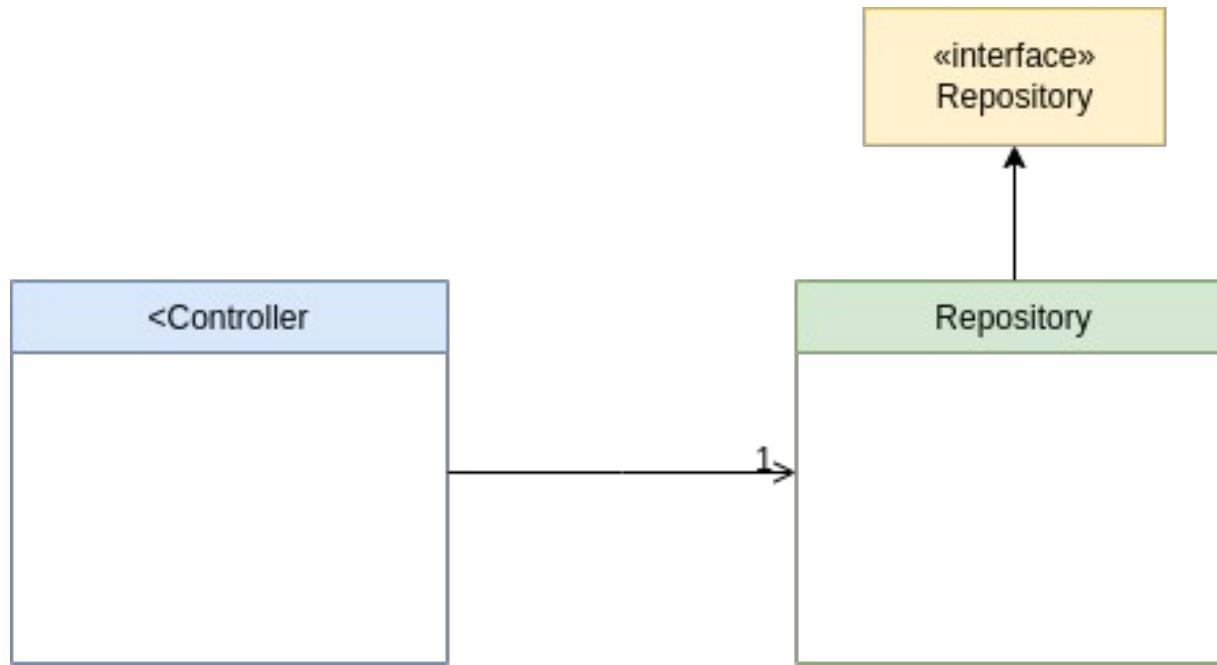
- ADR template by Michael Nygard (simple and popular)
- ADR template by Jeff Tyree and Art Akerman (more sophisticated)
- ADR template for Alexandrian pattern (simple with context specifics)
- ADR template for business case (more MBA-oriented, with costs, SWOT, and more opinions)
- ADR template MADR (more Markdown)
- ADR template using Planguage (more quality assurance oriented)



```
<plugin>
  <groupId>org.asciidoctor</groupId>
  <artifactId>asciidoctor-maven-plugin</artifactId>
</plugin>
```



Entspricht die
Implementierung
noch den
Architekturbildern?





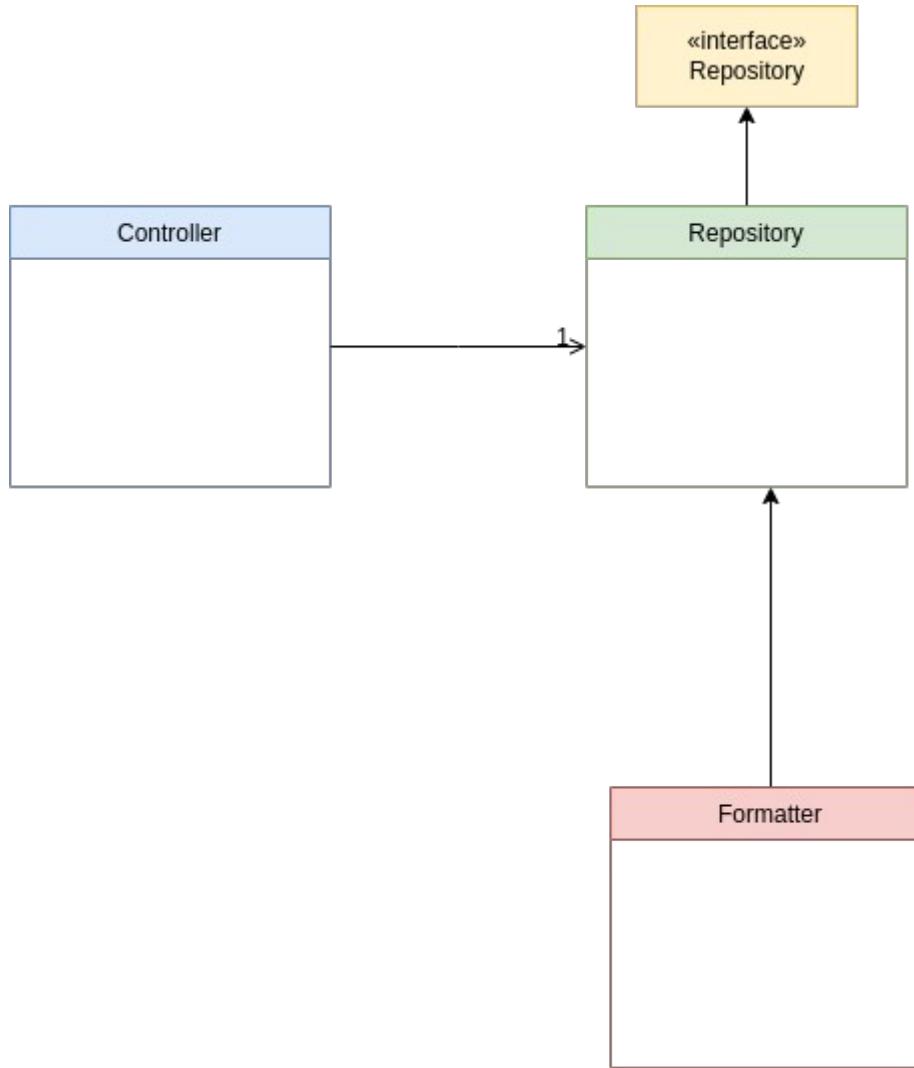


```
@AnalyzeClasses(packages =
{"org.springframework.samples.petclinic.owner", "org.springframework.samples.petclinic.vet"},
    importOptions = ImportOption.DoNotIncludeTests.class)
public class ControllerRepositoryArchTest {

    @ArchTest
    ArchRule relation = classes()
        .that().haveNameMatching(".*Controller")
        .should().accessClassesThat().haveNameMatching(".*Repository");

    @ArchTest
    ArchRule controllerAnnotation = classes()
        .that().haveNameMatching(".*Controller")
        .should().beAnnotatedWith("org.springframework.stereotype.Controller");

    @ArchTest
    ArchRule repositoryDefinition = classes()
        .that().haveNameMatching(".*Repository")
        .should().beAnnotatedWith("org.springframework.stereotype.Repository")
        .orShould().beAssignableTo("org.springframework.data.repository.Repository");
}
```





```
@AnalyzeClasses(importOptions = ImportOption.DoNotIncludeTests.class)
public class ControllerRepositoryFreezeArchTest {

    @ArchTest
    ArchRule relation = FreezingArchRule.freeze(classes()
        .that().haveNameMatching(".*Repository")
        .should().onlyBeAccessed().byClassesThat().haveNameMatching(".*Controller"));
}
```



```
// archunit.properties

freeze.store.default.allowStoreCreation = true
archRule.failOnEmptyShould = false
```



Welche
Softwarelizenzen
haben wir im
Einsatz?



Welche
Abhängigkeiten
haben wir im
Einsatz?

„Schnelle Küche“

-

mit Maven Boardmitteln

```
mvn dependency:analyze-report
```

Abhängigkeitsanalyse

Verwendete und deklarierte Abhängigkeiten

GroupId	ArtifactId	Version	Scope	Classifier	Type	Optional
javax.cache	cache-api	1.1.1	compile	jar	false	
com.tngtech.archunit	archunit	1.0.1	test	jar	false	

Verwendete aber undeklärte Abhängigkeiten

Unverwendete aber deklarierte Abhängigkeiten

GroupId	ArtifactId	Vers	GroupId	ArtifactId	Version	Scope	Classifier	Type	Optional
org.springframework	spring-test	5.2.0	org.springframework.boot	spring-boot-starter-actuator	2.2.0.RELEASE	compile		jar	false
org.springframework	spring-core	5.2.0	org.springframework.boot	spring-boot-starter-cache	2.2.0.RELEASE	compile		jar	false
org.springframework.boot	spring-boot	2.2.0	org.springframework.boot	spring-boot-starter-data-jpa	2.2.0.RELEASE	compile		jar	false
org.springframework	spring-webmvc	5.2.0	org.springframework.boot	spring-boot-starter-web	2.2.0.RELEASE	compile		jar	false
org.springframework.data	spring-data-commons	2.2.0	org.springframework.boot	spring-boot-starter-thymeleaf	2.2.0.RELEASE	compile		jar	false
org.springframework	spring-context	5.2.0	org.springframework.boot	spring-boot-starter-test	2.2.0.RELEASE	test		jar	false
org.springframework.boot	spring-boot-test-autoconfigure	2.2.0	org.hsqldb	hsqldb	2.5.0	runtime		jar	false
org.springframework	spring-web	5.2.0	mysql	mysql-connector-java	8.0.18	runtime		jar	false
jakarta.validation	jakarta.validation-api	2.0.1	org.ehcache	ehcache	3.8.1	compile		jar	false
org.hamcrest	hamcrest	2.1	org.webjars	webjars-locator-core	0.41	compile		jar	false
org.assertj	assertj-core	3.13.	org.webjars	jquery	2.2.4	compile		jar	false
org.springframework.boot	spring-boot-autoconfigure	2.2.0	org.webjars	jquery-ui	1.11.4	compile		jar	false
org.springframework.data	spring-data-jpa	2.2.0	org.webjars	bootstrap	3.3.6	compile		jar	false
junit	junit	4.12	org.springframework.boot	spring-boot-devtools	2.2.0.RELEASE	compile		jar	false
org.springframework.boot	spring-boot-test	2.2.0	com.tngtech.archunit	archunit-junit5	1.0.1	test		jar	false
org.mockito	mockito-core	3.1.0							
jakarta.persistence	jakarta.persistence-api	2.2.3							
org.springframework	spring-beans	5.2.0							
com.tngtech.archunit	archunit-junit5-api	1.0.1							
jakarta.xml.bind	jakarta.xml.bind-api	2.3.2							
org.springframework	spring-tx	5.2.0							
org.springframework	spring-orm	5.2.0							

```
mvn license:license-list
```



[INFO] Available licenses :

- * agpl_v3 : GNU Affero General Public License (AGPL) version 3.0
- * apache_v2 : Apache License version 2.0
- * bsd_2 : BSD 2-Clause License
- * bsd_3 : BSD 3-Clause License
- * cddl_v1 : COMMON DEVELOPMENT AND DISTRIBUTION LICENSE (CDDL) Version 1.0
- * epl_only_v1 : Eclipse Public License - v 1.0
- * epl_only_v2 : Eclipse Public License - v 2.0
- * epl_v1 : Eclipse Public + Distribution License - v 1.0
- * epl_v2 : Eclipse Public License - v 2.0 with Secondary License
- * eupl_v1_1 : European Union Public License v1.1
- * fdl_v1_3 : GNU Free Documentation License (FDL) version 1.3
- * gpl_v1 : GNU General Public License (GPL) version 1.0
- * gpl_v2 : GNU General Public License (GPL) version 2.0
- * gpl_v3 : GNU General Public License (GPL) version 3.0
- * lgpl_v2_1 : GNU General Lesser Public License (LGPL) version 2.1
- * lgpl_v3 : GNU General Lesser Public License (LGPL) version 3.0
- * mit : MIT-License

[INFO]

[INFO] BUILD SUCCESS

[INFO]

[INFO] Total time: 6.328 s

[INFO] Finished at: 2022-12-12T19:42:48+01:00

[INFO]

```
mvn license:third-party-report
```

Overview

This report summarizes all third-party dependencies of the project.

# of total dependencies	121
# of dependencies with license declared in their pom	121
# of dependencies with no license in their pom, but filled in the third-party missing file	0
# of dependencies with no license at all	0

Third-parties list

Status	GroupId:ArtifactId:Version	Scope	Classifier	Type	License(s)
antlr:antlr:2.7.7		compile	jar	BSD License	
ch.qos.logback:logback-classic:1.2.3		compile	jar	Eclipse Public License - v 1.0 GNU Lesser General Public License	
ch.qos.logback:logback-core:1.2.3		compile	jar	Eclipse Public License - v 1.0 GNU Lesser General Public License	
com.fasterxml:classmate:1.5.0		compile		bundle The Apache Software License, Version 2.0	
com.fasterxml.jackson.core:jackson-annotations:2.10.0		compile		bundle The Apache Software License, Version 2.0	
com.fasterxml.jackson.core:jackson-core:2.10.0		compile		bundle The Apache Software License, Version 2.0	
com.fasterxml.jackson.core:jackson-databind:2.10.0		compile		bundle The Apache Software License, Version 2.0	
com.fasterxml.jackson.datatype:jackson-datatype-jdk8:2.10.0		compile		bundle The Apache Software License, Version 2.0	
com.fasterxml.jackson.datatype:jackson-datatype-jsr310:2.10.0		compile		bundle The Apache Software License, Version 2.0	
com.fasterxml.jackson.module:jackson-module-parameter-names:2.10.0		compile		bundle The Apache Software License, Version 2.0	
com.jayway.jsonpath:json-path:2.4.0		test		jar The Apache Software License, Version 2.0	
com.sun.istack:istack-commons-runtime:3.0.8		compile		jar Eclipse Distribution License - v 1.0	
com.sun.xml.fastinfoset:FastInfoset:1.2.16		compile		jar Apache License, Version 2.0 Eclipse Distribution License - v 1.0	
com.tngtech.archunit:archunit:1.0.1		test		jar BSD	
com.tngtech.archunit:archunit-junit5:1.0.1		test		jar The Apache Software License, Version 2.0	
com.tngtech.archunit:archunit-junit5-api:1.0.1		test		jar The Apache Software License, Version 2.0	
com.tngtech.archunit:archunit-junit5-engine:1.0.1		test		jar The Apache Software License, Version 2.0	
com.tngtech.archunit:archunit-junit5-engine-api:1.0.1		test		jar The Apache Software License, Version 2.0	
com.vaadin.external.google:android-json:0.0.20131108.vaadin1		test		jar Apache License 2.0	
com.zaxxer:HikariCP:3.4.1		compile		bundle The Apache Software License, Version 2.0	

Neuer Silvet Bullet?

-

SBOM



High-Level Object Model

Metadata	Supplier	Authors	Component
	Manufacturer	Tools	
Components	Application	Framework	Operating System
	Library	Container	Device
Services	Provider	Data	
	Endpoints	Trust Boundary	
Dependencies	Components	Services	
Compositions	Completeness of:		
	Components	Services	Dependencies
Vulnerabilities	Details	Source	Exploitability
	Advisories	Risk Ratings	
Extensions	Properties	Per Organization	Per Team
	Formal Taxonomy	Per Industry	...

License Compliance



```
<?xml version="1.0" encoding="UTF-8"?>
<bom xmlns="http://cyclonedx.org/schema/bom/1.4"
      serialNumber="urn:uuid:3e671687-395b-41f5-a30f-a58921a69b79"
      version="1">
  <components>
    <component type="library">
      <group>org.acme</group>
      <name>card-verifier</name>
      <version>1.0.2</version>
      <licenses>
        <!-- This component has an SPDX license expression -->
        <expression>EPL-2.0 OR GPL-2.0 WITH Classpath-exception-2.0</expression>
      </licenses>
    </component>
    <component type="library">
      <group>com.example</group>
      <name>util</name>
      <version>2.0.0</version>
      <licenses>
        <license>
          <!-- This component has a license name
          with optional text -->
          <name>Example, Inc. Commercial License</name>
          <text content-type="text/plain">
encoding="base64">VGhlIHRleHQgZm9yIHRoZSBFeGFtcGxlLCBJbmMuIEvbW1lcNpYWwgTGljZW5zZSBnb2VzIGhlc
mU=</text>
        </license>
      </licenses>
    </component>
  </components>
</bom>
```

Dependency Graph



```
<?xml version="1.0" encoding="UTF-8"?>
<bom xmlns="http://cyclonedx.org/schema/bom/1.4"
      serialNumber="urn:uuid:3e671687-395b-41f5-a30f-a58921a69b79"
      version="1">
  <metadata>
    <!-- The component for which this BOM describes -->
    <component type="application" bom-ref="acme-app">
      <name>Acme Application</name>
      <version>9.1.1</version>
    </component>
  </metadata>
  <components>
    <component type="framework" bom-ref="pkg:maven/org.acme/web-framework@1.0.0">
      <group>org.acme</group>
      <name>web-framework</name>
      <version>1.0.0</version>
      <purl>pkg:maven/org.acme/web-framework@1.0.0</purl>
    </component>
    <component type="library" bom-ref="pkg:maven/org.acme/persistence@3.1.0">
      <group>org.acme</group>
      <name>persistence</name>
      <version>3.1.0</version>
      <purl>pkg:maven/org.acme/persistence@3.1.0</purl>
    </component>
    <component type="library" bom-ref="pkg:maven/org.acme/common-util@3.0.0">
      <group>org.acme</group>
      <name>common-util</name>
      <version>3.0.0</version>
      <purl>pkg:maven/org.acme/common-util@3.0.0</purl>
    </component>
  </components>
  <dependencies>
```

Dependency Graph

```
~/components>
<dependencies>
    <!-- Direct dependencies of the main application -->
    <dependency ref="acme-app">
        <dependency ref="pkg:maven/org.acme/web-framework@1.0.0"/>
        <dependency ref="pkg:maven/org.acme/persistence@3.1.0"/>
    </dependency>
    <!-- All other dependency relationships -->
    <dependency ref="pkg:maven/org.acme/web-framework@1.0.0">
        <dependency ref="pkg:maven/org.acme/common-util@3.0.0"/>
    </dependency>
    <dependency ref="pkg:maven/org.acme/persistence@3.1.0">
        <dependency ref="pkg:maven/org.acme/common-util@3.0.0"/>
    </dependency>
    <dependency ref="pkg:maven/org.acme/common-util@3.0.0"/>
</dependencies>
</bom>
```

Tool Center

Open source tools that support CycloneDX

All tools 165

Open Source 118

Proprietary 49

Build Integration 65

Analysis 58

Author 2

Github Action 14

Transform 9

Library 10

Signing / Notary 7

Distribute 5

opensource build-integration

Audits

Sonatype

Audits an NPM package.json file to identify known vulnerabilities

Forks 50 Stars 189

opensource distribute

BOM Repository Server

CycloneDX

A lightweight repository server used to publish, manage, and distribute CycloneDX SBOMs

Forks 8 Stars 48

opensource analysis

Checkov

Checkov

Prevent cloud misconfigurations during build-time for Terraform, Cloudformation, Kubernetes, Serverless framework and other infrastructure-as-code-languages with Checkov by Bridgecrew. Can output to CycloneDX.

Forks 768 Stars 5k

opensource build-integration

Chelsea

Sonatype

Dependency vulnerability auditor for Ruby

Forks 9 Stars 10

opensource signing-notary

CodeNotary CAS

CodeNotary

CAS is an open source attestation service for the community. Notarize and authorize files, directories, git repos and Build SBOMs of containers. CAS natively supports CycloneDX SBOMs.

Forks 23 Stars 168

opensource signing-notary github-action

Codenotary CAS Authenticate Docker Image and SBOM

Codenotary

A GitHub Action which authenticates notarized Docker images and SBOMs.

Forks 0 Stars 0

opensource signing-notary github-action

Codenotary CAS Notarize Docker Image and SBOM

Codenotary

A GitHub Action which notarizes and creates an SBOM for Docker images.

Forks 1 Stars 1

opensource signing-notary

Codenotary vcn

Codenotary

Protects an organization's software development pipeline from supply chain attacks. Codenotary natively supports CycloneDX SBOMs.

Forks 23 Stars 168

opensource signing-notary

Cosign

Sigstore

Container Signing, Verification and Storage in an OCI registry, including CycloneDX SBOMs

Forks 336 Stars 2.8k

```
mvn cyclonedx:makeAggregateBom
```

```
[INFO] Scanning for projects...
[INFO]
[INFO] -----< org.springframework.samples:spring-petclinic >-----
[INFO] Building petclinic 2.2.0.BUILD-SNAPSHOT
[INFO]                               [ jar ]
[INFO]
[INFO] --- cyclonedx-maven-plugin:2.7.3:makeAggregateBom (default-cli) @ spring-petclinic ---
[INFO] CycloneDX: Parameters
[INFO] -----
[INFO] schemaVersion      : 1.4
[INFO] includeBomSerialNumber : true
[INFO] includeCompileScope   : true
[INFO] includeProvidedScope  : true
[INFO] includeRuntimeScope   : true
[INFO] includeTestScope      : false
[INFO] includeSystemScope    : true
[INFO] includeLicenseText    : false
[INFO] outputReactorProjects : true
[INFO] outputFormat          : all
[INFO] outputName            : bom
[INFO] -----
[INFO] CycloneDX: Creating BOM
[INFO] CycloneDX: Writing BOM (XML): /home/sparsick/dev/workspace/maintenance-demo/target
/bom.xml
[INFO] CycloneDX: Validating BOM (XML): /home/sparsick/dev/workspace/maintenance-demo/target
/bom.xml
[INFO] CycloneDX: Writing BOM (JSON): /home/sparsick/dev/workspace/maintenance-demo/target
/bom.json
[INFO] CycloneDX: Validating BOM (JSON): /home/sparsick/dev/workspace/maintenance-demo/target
/bom.json
[WARNING] Unknown keyword additionalItems - you should define your own Meta Schema. If the
keyword is irrelevant for validation, just use a NonValidationKeyword
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 3.349 s
[INFO] Finished at: 2022-12-12T19:54:08+01:00
[INFO] -----
```



Wie können wir
am besten up to
date bleiben?



Dependabot

Automated dependency updates built into GitHub

593 followers United States of America

<https://github.com/features/security>

support@github.com

Verified

Overview

Repositories 23

Projects

Packages

People 11

Pinned

[dependabot-core](#) Public

Dependabot's update PR creation logic. Feedback: <https://github.com/orgs/community/discussions/categories/code-security>

Ruby 3.1k 739

Repositories

Find a repository...

Type ▾

Language ▾

Sort ▾

[dependabot-core](#) Public

Dependabot's update PR creation logic. Feedback: <https://github.com/orgs/community/discussions/categories/code-security>



Ruby

3,060

739

692 (6 issues need help)

88

Updated 5 hours ago

[dependabot-actions-workflow](#) Public

Example workflow for updating Dependabot pull requests



Ruby

21

16

0

2

Updated 9 hours ago

[dependabot-script](#) Public

A simple script that demonstrates how to use Dependabot Core



Ruby

420

MIT

234

54

10

Updated 3 days ago

cli

Public

A tool for testing and debugging Dependabot update jobs.



Go

22

MIT

2

3

2

Updated 6 days ago



MEND
Renovate



Supported Platforms

Renovate works on these platforms:

- GitHub (.com and Enterprise Server)
- GitLab (.com and CE/EE)
- Bitbucket Cloud
- Bitbucket Server
- Azure DevOps
- AWS CodeCommit
- Gitea

Label issues and pull requests for new contributors

[Dismiss](#)

Now, GitHub will help potential first-time contributors [discover issues](#) labeled with [good first issue](#)

[Go to Labels](#)[Filters ▾](#) Q is:pr is:open[Labels 7](#)[Milestones 0](#)[New pull request](#) 13 Open ✓ 149 Closed

Author ▾

Label ▾

Projects ▾

Milestones ▾

Reviews ▾

Assignee ▾

Sort ▾

Update dependency org.apache.maven.plugins:maven-project-info-reports-plugin to v3.4.1 ✓

#310 opened 25 days ago by renovate bot



1 task

Update dependency org.apache.maven.plugins:maven-jxr-plugin to v3.3.0 ✓

#309 opened 26 days ago by renovate bot



1 task

Update dependency org.apache.maven.plugins:maven-javadoc-plugin to v3.4.1 ✓

#308 opened 26 days ago by renovate bot



1 task

1

Update dependency org.eclipse.platform:org.eclipse.osgi to v3.18.200 ✓

#292 opened on May 31 by renovate bot



1 task

1

Update dependency org.codehaus.plexus:plexus-component-metadata to v2.1.1 ✓

#291 opened on May 31 by renovate bot



1 task

1

Update dependency org.codehaus.plexus:plexus-component-annotations to v2.1.1 ✓

#290 opened on May 31 by renovate bot



1 task

1

Update dependency org.apache.maven.plugins:maven-plugin-plugin to v3.7.0 ✓

#284 opened on Dec 16, 2021 by renovate bot



1 task

1

Update dependency org.apache.maven.plugin-tools:maven-plugin-annotations to v3.7.0 ✓

#265 opened on Apr 26, 2021 by renovate bot



1 task

1

Update dependency org.apache.maven.plugins:maven-project-info-reports-plugin to v3.4.1 #310

[Edit](#)[Code](#) ▾[Gitpod](#)[Open](#)renovate wants to merge 1 commit into `master` from `renovate/org.apache.maven.plugins-maven-project-info-reports-plugin-3.x`[Conversation 0](#)[-o Commits 1](#)[Checks 8](#)[Files changed 1](#)[+1 -1](#)

renovate (bot) commented 25 days ago

[Contributor](#)

...

This PR contains the following updates:

Package	Change	Age	Adoption	Passing	Confidence
org.apache.maven.plugins:maven-project-info-reports-plugin	<code>3.1.1 -> 3.4.1</code>	124d	32%	96%	high

Configuration

Schedule: Branch creation - At any time (no schedule defined), Automerger - At any time (no schedule defined).

Automerger: Disabled by config. Please merge this manually once you are satisfied.

Rebasing: Whenever PR becomes conflicted, or you tick the rebase/retry checkbox.

Ignore: Close this PR and you won't be reminded about this update again.

If you want to rebase/retry this PR, check this box

This PR has been generated by Mend Renovate. View repository job log [here](#).

-o Update dependency `org.apache.maven.plugins:maven-project-info-reports...` ...

[Verified](#)

13bcd79

[Unsubscribe](#)

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Reviewers



Suggestions

[Request](#)

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Assignees



No one—assign yourself

Labels



None yet

Projects



None yet

Milestone



No milestone

Development



Successfully merging this pull request may close these issues.

None yet

Notifications

[Customize](#)[Unsubscribe](#)

Dependency Dashboard #278

[Edit](#)[New issue](#)[Gitpod](#)[Open](#)[29 tasks](#)

renovate (bot) opened this issue on Sep 14, 2021 · 0 comments



renovate (bot) commented on Sep 14, 2021 · edited

[Contributor](#)

...

This issue lists Renovate updates and detected dependencies. Read the [Dependency Dashboard](#) docs to learn more.

Rate-Limited

These updates are currently rate-limited. Click on a checkbox below to force their creation now.

- Update dependency org.apache.maven.plugins:maven-site-plugin to v3.12.1
- Update dependency org.apache.maven.wagon:wagon-ftp to v3.5.2
- Update dependency org.apache.maven.wagon:wagon-ssh to v3.5.2
- Update dependency org.apache.rat:apache-rat-plugin to v0.15
- Update dependency org.assertj:assertj-core to v3.23.1
- Update dependency org.twdata.maven:mojo-executor to v2.4.0
- Update maven.version to v3.8.6 (org.apache.maven:maven-core , org.apache.maven:maven-artifact , org.apache.maven:maven-plugin-api , org.apache.maven:maven-model , org.apache.maven:maven-settings , org.apache.maven:maven-compat)
- Update release-drafter/release-drafter action to v5.21.1
- Update actions/cache action to v3
- Update actions/checkout action to v3
- Update actions/setup-java action to v3
- Update codecov/codecov-action action to v3
- Update dependency biz.aQute.bnd:biz.aQute.bndlib to v6
- Update dependency org.apache.maven.plugins:maven-gpg-plugin to v3
- Update dependency org.mockito:mockito-inline to v4
- Update tycho.version to v3 (major) (org.eclipse.tycho:sisu-equinox-launching , org.eclipse.tycho:tycho-core)
- Create all rate-limited PRs at once 🔑

Assignees

No one—assign yourself



Labels

None yet



Projects

None yet



Milestone

No milestone



Development

[Create a branch](#) for this issue or link a pull request.

Notifications

[Customize](#) [Unsubscribe](#)

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0 participants

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Self Hosting

- Fertige GitHub Action und GitLab Runner
- Docker Image
- Mend Renovate On-Premises
- Mend Remediate (Kommerziell)



```
# Renovate Global Config
$ cat ./renovate/config.js
module.exports = {
  repositories: ["sparsick/maintenance-demo"],
  dryRun : "true",
  prCommitsPerRunLimit : "5"
};

# Renovate Per Repository Config
$ cat renovate.json
{
  "extends": [
    "config:base"
  ]
}
```

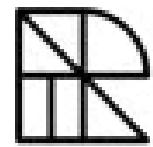


```
$ docker run --rm -v "$PWD/.renovate/config.js:/usr/src/app/config.js" -e RENOVATE_TOKEN=apitoken renovate/renovate

INFO: Repository started (repository=sparsick/maintenance-demo)
      "renovateVersion": "34.55.0"
INFO: Dependency extraction complete (repository=sparsick/maintenance-demo, baseBranch=master)
      "stats": {
        "managers": {
          "docker-compose": {"fileCount": 1, "depCount": 1},
          "maven": {"fileCount": 1, "depCount": 16}
        },
        "total": {"fileCount": 2, "depCount": 17}
      }
INFO: DRY-RUN: Would commit files to branch renovate/org.asciidoc-asciidocj-diagram-1.x (repository=sparsick/maintenance-demo,
branch=renovate/org.asciidoc-asciidocj-diagram-1.x)
...
INFO: DRY-RUN: Would ensure Dependency Dashboard (repository=sparsick/maintenance-demo)
      "title": "Dependency Dashboard"
INFO: DRY-RUN: Would save repository cache. (repository=sparsick/maintenance-demo)
INFO: Repository finished (repository=sparsick/maintenance-demo)
      "cloned": true,
      "durationMs": 52013
```

Was ist bei Updates, wo ich viel Code anpassen
muss/will?

Java 8 → Java 11
JUnit4 → JUnit5



Rewrite

Large-Scale Automated Source Code Refactoring



```
<plugin>
    <groupId>org.openrewrite.maven</groupId>
    <artifactId>rewrite-maven-plugin</artifactId>
    <version>4.38.0</version>
    <configuration>
        <activeRecipes>
            <recipe>org.openrewrite.java.migrate.Java8toJava11</recipe>
        </activeRecipes>
    </configuration>
    <dependencies>
        <dependency>
            <groupId>org.openrewrite.recipe</groupId>
            <artifactId>rewrite-migrate-java</artifactId>
            <version>1.13.0</version>
        </dependency>
    </dependencies>
</plugin>
```

```
$ mvn rewrite:discover

[INFO] Scanning for projects...
[INFO]
[INFO] -----< org.springframework.samples:spring-petclinic >-----
[INFO] Building petclinic 2.2.0.BUILD-SNAPSHOT
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- rewrite-maven-plugin:4.38.0:discover (default-cli) @ spring-petclinic ---
[INFO] Available Recipes:
....
[INFO]           org.openrewrite.java.cleanup.AddSerialVersionUIDToSerializable
[INFO]           org.openrewrite.java.cleanup.AtomicPrimitiveEqualsUsesGet
[INFO]           org.openrewrite.java.format.EmptyNewlineAtEndOfFile
[INFO]           org.openrewrite.java.format.NormalizeTabsOrSpaces
[INFO]           org.openrewrite.java.migrate.AddSuppressionForIllegalReflectionWarningsPlugin
[INFO]           org.openrewrite.java.migrate.Java8toJava11
[INFO]           org.openrewrite.java.migrate.UseJavaUtilBase64
[INFO]           org.openrewrite.java.migrate.apache.commons.codec.ApacheBase64ToJavaBase64
[INFO]           org.openrewrite.java.migrate.guava.NoGuavaCreateTempDir
...
[INFO] Available Styles:
[INFO]   org.openrewrite.java.IntelliJ
[INFO]   com.netflix.eureka.Style
[INFO]   org.openrewrite.java.GoogleJavaFormat
[INFO]   org.openrewrite.java.SpringFormat
[INFO]   com.netflix.genie.Style
[INFO]
[INFO] Active Styles:
[INFO]
[INFO] Active Recipes:
[INFO]           org.openrewrite.java.migrate.Java8toJava11
[INFO]
[INFO] Found 416 available recipes and 5 available styles.
[INFO] Configured with 1 active recipes and 0 active styles.
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 4.780 s
[INFO] Finished at: 2022-12-13T10:47:34+01:00
[INFO] -----
```

Beispiel: Java 8 nach Java 11

```
<plugin>
    <groupId>org.openrewrite.maven</groupId>
    <artifactId>rewrite-maven-plugin</artifactId>
    <version>4.38.0</version>
    <configuration>
        <activeRecipes>
            <recipe>org.openrewrite.java.migrate.Java8toJava11</recipe>
        </activeRecipes>
    </configuration>
    <dependencies>
        <dependency>
            <groupId>org.openrewrite.recipe</groupId>
            <artifactId>rewrite-migrate-java</artifactId>
            <version>1.13.0</version>
        </dependency>
    </dependencies>
</plugin>
```

```
$ mvn rewrite:run
[INFO] --- rewrite-maven-plugin:4.38.0:run (default-cli) @ spring-petclinic ---
[INFO] Using active recipe(s) [org.openrewrite.java.migrate.Java8toJava11]
[INFO] Using active styles(s) []
[INFO] Validating active recipes...
[INFO] Project [petclinic] Resolving Poms...
[INFO] Project [petclinic] Parsing Source Files
[INFO] Running recipe(s)...
[WARNING] Changes have been made to pom.xml by:
[WARNING]     org.openrewrite.java.migrate.Java8toJava11
[WARNING]         org.openrewrite.java.migrate.javax.AddJaxbDependencies
[WARNING]             org.openrewrite.java.migrate.javax.AddJaxbRuntime: {runtime=sun}
[WARNING]         org.openrewrite.java.migrate.AddJDeprScanPlugin: {release=}
[WARNING]         org.openrewrite.java.migrate.wro4j.UpgradeWro4jMavenPluginVersion
[WARNING]             org.openrewrite.maven.UpgradePluginVersion: {groupId=ro.isdc.wro4j,
artifactId=wro4j-maven-plugin, newVersion=1.10.1}
[WARNING]         org.openrewrite.java.migrate.jacoco.UpgradeJaCoCoMavenPluginVersion
[WARNING]             org.openrewrite.maven.UpgradePluginVersion: {groupId=org.jacoco,
artifactId=jacoco-maven-plugin, newVersion=0.8.8}
[WARNING]         org.openrewrite.java.migrate.JavaVersion11
[WARNING]             org.openrewrite.maven.ChangePropertyValue: {key=java.version, newValue=11,
addIfMissing=false}
[WARNING] Please review and commit the results.
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time:  34.463 s
[INFO] Finished at: 2022-12-13T11:07:24+01:00
[INFO] -----
```



```
$ git diff
diff --git a/pom.xml b/pom.xml
index 75e36f9..ff909b4 100644
--- a/pom.xml
+++ b/pom.xml
@@ -17,7 +17,7 @@
 <properties>

     <!-- Generic properties -->
-    <java.version>1.8</java.version>
+    <java.version>11</java.version>

@@ -25,13 +25,13 @@
-    <wro4j.version>1.8.0</wro4j.version>
+    <wro4j.version>1.10.1</wro4j.version>

-    <jacoco.version>0.8.2</jacoco.version>
+    <jacoco.version>0.8.8</jacoco.version>

@@ -91,6 +91,24 @@
     <groupId>org.webjars</groupId>
     <artifactId>webjars-locator-core</artifactId>
     </dependency>
+    <dependency>
+        <groupId>com.sun.xml.bind</groupId>
+        <artifactId>jaxb-impl</artifactId>
+        <version>2.3.2</version>
+        <scope>provided</scope>
+    </dependency>
+    <dependency>
+        <groupId>com.sun.xml.bind</groupId>
+        <artifactId>jaxb-impl</artifactId>
+        <version>2.3.2</version>
+        <scope>provided</scope>
+    </dependency>
+    <dependency>
+        <groupId>com.sun.xml.bind</groupId>
+        <artifactId>jaxb-impl</artifactId>
+        <version>2.3.2</version>
+        <scope>provided</scope>
+    </dependency>
     <dependency>
         <groupId>org.webjars</groupId>
         <artifactId>jquery</artifactId>
@@ -230,89 +248,97 @@
```

Beispiel: Java 11 nach Java 17



```
$ mvn rewrite:discover | grep Java17
[INFO]          org.openrewrite.java.migrate.UpgradeJava17
```



```
$ mvn rewrite:run

[INFO] ---- rewrite-maven-plugin:4.38.0:run (default-cli) @ spring-petclinic ---
[INFO] Using active recipe(s) [org.openrewrite.java.migrate.UpgradeJava17]
[INFO] Using active styles(s) []
[INFO] Validating active recipes...
[INFO] Project [petclinic] Resolving Poms...
[INFO] Project [petclinic] Parsing Source Files
[INFO] Running recipe(s)...
[WARNING] Changes have been made to pom.xml by:
[WARNING]   org.openrewrite.java.migrate.UpgradeJava17
[WARNING]     org.openrewrite.java.migrate.Java8toJava11
[WARNING]       org.openrewrite.java.migrate.javax.AddJaxbDependencies
[WARNING]         org.openrewrite.java.migrate.javax.AddJaxbRuntime: {runtime=sun}
[WARNING]       org.openrewrite.java.migrate.wro4j.UpgradeWro4jMavenPluginVersion
[WARNING]         org.openrewrite.maven.UpgradePluginVersion: {groupId=ro.isdc.wro4j, artifactId=wro4j-maven-plugin,
newVersion=1.10.1}
[WARNING]       org.openrewrite.java.migrate.JavaVersion11
[WARNING]         org.openrewrite.maven.ChangePropertyValue: {key=java.version, newValue=11, addIfMissing=false}
[WARNING]     org.openrewrite.java.migrate.JavaVersion17
[WARNING]       org.openrewrite.maven.ChangePropertyValue: {key=java.version, newValue=17, addIfMissing=false}
[WARNING] Changes have been made to src/test/java/org/springframework/samples/petclinic/owner/OwnerControllerTests.java by:
[WARNING]   org.openrewrite.java.migrate.UpgradeJava17
[WARNING]     org.openrewrite.java.migrate.Java8toJava11
[WARNING]       org.openrewrite.java.migrate.util.JavaUtilAPIs
[WARNING]         org.openrewrite.java.migrate.util.MigrateCollectionsSingletonList
[WARNING]         org.openrewrite.java.migrate.util.MigrateCollectionsSingletonSet
[WARNING] Please review and commit the results.
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time:  32.266 s
[INFO] Finished at: 2022-12-13T11:46:21+01:00
[INFO] -----
```

```
$ git diff

diff --git a/pom.xml b/pom.xml
index cd0f967..c7921ac 100644
--- a/pom.xml
+++ b/pom.xml
@@ -17,7 +17,7 @@
-   <java.version>11</java.version>
+   <java.version>17</java.version>

@@ -25,7 +25,7 @@
-   <wro4j.version>1.8.0</wro4j.version>
+   <wro4j.version>1.10.1</wro4j.version>
@@ -97,6 +97,24 @@
+   <dependency>
+     <groupId>com.sun.xml.bind</groupId>
+     <artifactId>jaxb-impl</artifactId>
+     <version>2.3.2</version>
+     <scope>provided</scope>
+   </dependency>
+   <dependency>
+     <groupId>com.sun.xml.bind</groupId>
+     <artifactId>jaxb-impl</artifactId>
+     <version>2.3.2</version>
+     <scope>provided</scope>
+   </dependency>
+   <dependency>
+     <groupId>com.sun.xml.bind</groupId>
+     <artifactId>jaxb-impl</artifactId>
+     <version>2.3.2</version>
+     <scope>provided</scope>
+   </dependency>
+   <dependency>
```

diff --git a/src/test/java/org/springframework/samples/petclinic/owner/OwnerControllerTests.java b/src/test/java/org/springframework/samples/petclinic/owner/OwnerControllerTests.java

```
index 5084f42..4855b19 100644
--- a/src/test/java/org/springframework/samples/petclinic/owner/OwnerControllerTests.java
+++ b/src/test/java/org/springframework/samples/petclinic/owner/OwnerControllerTests.java
@@ -17,8 +17,8 @@
 package org.springframework.samples.petclinic.owner;

 import java.time.LocalDate;
-import java.util.Collections;
 import java.util.List;
+import java.util.Set;

@@ -84,11 +84,11 @@ public class OwnerControllerTests {
-    george.setPetsInternal(Collections.singleton(max));
+    george.setPetsInternal(Set.of(max));

-    given(this.visits.findByPetId(max.getId())).willReturn(Collections.singletonList(visit));
+    given(this.visits.findByPetId(max.getId())).willReturn(List.of(visit));
```



```
$ sdk use java 17-open
$ mvn clean verify

...
[INFO] Running org.springframework.samples.petclinic.service.ClinicServiceTests
[ERROR] Tests run: 1, Failures: 0, Errors: 1, Skipped: 0, Time elapsed: 0 s <<< FAILURE! - in
org.springframework.samples.petclinic.service.ClinicServiceTests
[ERROR] initializationError  Time elapsed: 0 s  <<< ERROR!
org.springframework.beans.factory.BeanDefinitionStoreException: Failed to read candidate component class: file [/home/sparsick
/dev/workspace/maintenance-demo/target/test-classes/org/springframework/samples/petclinic/service/ClinicServiceTests.class]; nested
exception is org.springframework.core.NestedIOException: ASM ClassReader failed to parse class file - probably due to a new Java
class file version that isn't supported yet: file [/home/sparsick/dev/workspace/maintenance-demo/target/test-classes
/org/springframework/samples/petclinic/service/ClinicServiceTests.class]; nested exception is java.lang.IllegalArgumentException:
Unsupported class file major version 61
Caused by: org.springframework.core.NestedIOException: ASM ClassReader failed to parse class file - probably due to a new Java class
file version that isn't supported yet: file [/home/sparsick/dev/workspace/maintenance-demo/target/test-classes/org/springframework
/samples/petclinic/service/ClinicServiceTests.class]; nested exception is java.lang.IllegalArgumentException: Unsupported class file
major version 61
Caused by: java.lang.IllegalArgumentException: Unsupported class file major version 61

[INFO] Running org.springframework.samples.petclinic.PetclinicIntegrationTests
[ERROR] Tests run: 1, Failures: 0, Errors: 1, Skipped: 0, Time elapsed: 0 s <<< FAILURE! - in
org.springframework.samples.petclinic.PetclinicIntegrationTests
[ERROR] initializationError  Time elapsed: 0 s  <<< ERROR!
org.springframework.beans.factory.BeanDefinitionStoreException: Failed to read candidate component class: file [/home/sparsick
/dev/workspace/maintenance-demo/target/test-classes/org/springframework/samples/petclinic/PetclinicIntegrationTests.class]; nested
exception is org.springframework.core.NestedIOException: ASM ClassReader failed to parse class file - probably due to a new Java
class file version that isn't supported yet: file [/home/sparsick/dev/workspace/maintenance-demo/target/test-classes
/org/springframework/samples/petclinic/PetclinicIntegrationTests.class]; nested exception is java.lang.IllegalArgumentException:
Unsupported class file major version 61
Caused by: org.springframework.core.NestedIOException: ASM ClassReader failed to parse class file - probably due to a new Java class
file version that isn't supported yet: file [/home/sparsick/dev/workspace/maintenance-demo/target/test-classes/org/springframework
/samples/petclinic/PetclinicIntegrationTests.class]; nested exception is java.lang.IllegalArgumentException: Unsupported class file
major version 61
Caused by: java.lang.IllegalArgumentException: Unsupported class file major version 61

...
...
```

Beispiel: JUnit4 nach JUnit5



```
<plugin>
  <groupId>org.openrewrite.maven</groupId>
  <artifactId>rewrite-maven-plugin</artifactId>
  <version>4.38.0</version>
  <configuration>
    <activeRecipes>
      <recipe>org.openrewrite.java.spring.boot2.SpringBoot2JUnit4to5Migration</recipe>
    </activeRecipes>
  </configuration>
  <dependencies>
    <dependency>
      <groupId>org.openrewrite.recipe</groupId>
      <artifactId>rewrite-spring</artifactId>
      <version>4.29.0</version>
    </dependency>
  </dependencies>
</plugin>
```

```
$ mvn rewrite:run
[INFO] Using active recipe(s) [org.openrewrite.java.spring.boot2.SpringBoot2JUnit4to5Migration]
[INFO] Using active styles(s) []
[INFO] Validating active recipes...
[INFO] Project [petclinic] Resolving Poms...
[INFO] Project [petclinic] Parsing Source Files
[INFO] Running recipe(s)...
[WARNING] Changes have been made to pom.xml by:
[WARNING]     org.openrewrite.java.spring.boot2.SpringBoot2JUnit4to5Migration
[WARNING]     org.openrewrite.java.testing.junit5.JUnit4to5Migration
[WARNING]     org.openrewrite.maven.ExcludeDependency: {groupId=junit, artifactId=junit}
[WARNING]     org.openrewrite.maven.ExcludeDependency: {groupId=org.junit.vintage, artifactId=junit-vintage-engine}
[WARNING] Changes have been made to src/test/java/org/springframework/samples/petclinic/owner/OwnerControllerTests.java by:
[WARNING]     org.openrewrite.java.spring.boot2.SpringBoot2JUnit4to5Migration
[WARNING]     org.openrewrite.java.testing.junit5.UpdateBeforeAfterAnnotations
[WARNING]     org.openrewrite.java.testing.junit5.UpdateTestAnnotation
[WARNING]     org.openrewrite.java.spring.boot2.UnnecessarySpringRunWith
[WARNING]     org.openrewrite.java.testing.junit5.RunnerToExtension: {runners=
[org.springframework.test.context.junit4.SpringRunner, org.springframework.test.context.junit4.SpringJUnit4ClassRunner],
extension=org.springframework.test.context.junit.jupiter.SpringExtension}
[WARNING]     org.openrewrite.java.spring.boot2.UnnecessarySpringExtension
[WARNING] Changes have been made to src/test/java/org/springframework/samples/petclinic/owner/VisitControllerTests.java by:
[WARNING]     org.openrewrite.java.spring.boot2.SpringBoot2JUnit4to5Migration
[WARNING]     org.openrewrite.java.testing.junit5.JUnit4to5Migration
[WARNING]     org.openrewrite.java.testing.junit5.UpdateBeforeAfterAnnotations
[WARNING]     org.openrewrite.java.testing.junit5.UpdateTestAnnotation
[WARNING]     org.openrewrite.java.spring.boot2.UnnecessarySpringRunWith
[WARNING]     org.openrewrite.java.testing.junit5.RunnerToExtension: {runners=
[org.springframework.test.context.junit4.SpringRunner, org.springframework.test.context.junit4.SpringJUnit4ClassRunner],
extension=org.springframework.test.context.junit.jupiter.SpringExtension}
[WARNING]     org.openrewrite.java.spring.boot2.UnnecessarySpringExtension
```

```
[INFO] --- org.springframework:spring-framework-test-context:junit4:jupiter.SpringExtension@
[WARNING]          org.openrewrite.java.spring.boot2.UnnecessarySpringExtension
[WARNING] Changes have been made to src/test/java/org/springframework/samples/petclinic/vet/VetControllerTests.java by:
[WARNING]          org.openrewrite.java.spring.boot2.SpringBoot2JUnit4to5Migration
[WARNING]          org.openrewrite.java.testing.junit5.JUnit4to5Migration
[WARNING]          org.openrewrite.java.testing.junit5.UpdateBeforeAfterAnnotations
[WARNING]          org.openrewrite.java.testing.junit5.UpdateTestAnnotation
[WARNING]          org.openrewrite.java.spring.boot2.UnnecessarySpringRunWith
[WARNING]          org.openrewrite.java.testing.junit5.RunnerToExtension: {runners=
[org.springframework.test.context.junit4.SpringRunner, org.springframework.test.context.junit4.SpringJUnit4ClassRunner],
extension=org.springframework.test.context.junit.jupiter.SpringExtension}
[WARNING]          org.openrewrite.java.spring.boot2.UnnecessarySpringExtension
[WARNING] Changes have been made to src/test/java/org/springframework/samples/petclinic/vet/VetTests.java by:
[WARNING]          org.openrewrite.java.spring.boot2.SpringBoot2JUnit4to5Migration
[WARNING]          org.openrewrite.java.testing.junit5.JUnit4to5Migration
[WARNING]          org.openrewrite.java.testing.junit5.JUnit4to5Migration
[WARNING]          org.openrewrite.java.testing.junit5.UpdateTestAnnotation
[WARNING] Changes have been made to src/test/java/org/springframework/samples/petclinic/service/ClinicServiceTests.java by:
[WARNING]          org.openrewrite.java.spring.boot2.SpringBoot2JUnit4to5Migration
[WARNING]          org.openrewrite.java.testing.junit5.JUnit4to5Migration
[WARNING]          org.openrewrite.java.testing.junit5.UpdateTestAnnotation
[WARNING]          org.openrewrite.java.spring.boot2.UnnecessarySpringRunWith
[WARNING]          org.openrewrite.java.testing.junit5.RunnerToExtension: {runners=
[org.springframework.test.context.junit4.SpringRunner, org.springframework.test.context.junit4.SpringJUnit4ClassRunner],
extension=org.springframework.test.context.junit.jupiter.SpringExtension}
[WARNING]          org.openrewrite.java.spring.boot2.UnnecessarySpringExtension
[WARNING] Please review and commit the results.
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time:  36.321 s
[INFO] Finished at: 2022-12-13T12:17:55+01:00
[INFO] -----
```

```
$ git diff

diff --git a/pom.xml b/pom.xml
index cd0f967..c8db6dc 100644
--- a/pom.xml
+++ b/pom.xml
@@ -62,6 +62,16 @@
        <groupId>org.springframework.boot</groupId>
        <artifactId>spring-boot-starter-test</artifactId>
        <scope>test</scope>
+       <exclusions>
+           <exclusion>
+               <groupId>junit</groupId>
+               <artifactId>junit</artifactId>
+           </exclusion>
+           <exclusion>
+               <groupId>org.junit.vintage</groupId>
+               <artifactId>junit-vintage-engine</artifactId>
+           </exclusion>
+       </exclusions>
    </dependency>

diff --git a/src/test/java/org/springframework/samples/petclinic/PetclinicIntegrationTests.java b/src/test/java/org/springframework
/samples/petclinic/PetclinicIntegrationTests.java
index 669dbdd..1db15a8 100644
--- a/src/test/java/org/springframework/samples/petclinic/PetclinicIntegrationTests.java
+++ b/src/test/java/org/springframework/samples/petclinic/PetclinicIntegrationTests.java
@@ -16,15 +16,12 @@
package org.springframework.samples.petclinic;

-import org.junit.Test;
-import org.junit.runner.RunWith;
+import org.junit.jupiter.api.Test;

import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.boot.test.context.SpringBootTest;
import org.springframework.samples.petclinic.vet.VetRepository;
-import org.springframework.test.context.junit4.SpringRunner;

-@RunWith(SpringRunner.class)
@SpringBootTest
public class PetclinicIntegrationTests {

@@ -32,7 +29,7 @@ public class PetclinicIntegrationTests {
    private VetRepository vets;

    @Test
-   public void testfindAll() throws Exception {
+   void testfindAll() throws Exception {
        vets.findAll();
        vets.findAll(); // served from cache
    }
}
```

Wie vermeide ich, dass „alter Style“ wieder in
meinen Code reinkommt?



OVERVIEW

[Introduction](#)

[Goals](#)

[Usage](#)

[FAQ](#)

[License](#)

[Download](#)

[Releases History](#)

EXAMPLES

[Upgrading Checkstyle at Runtime](#)

[Using an Inline Checkstyle Checker Configuration](#)

[Using a Custom Checkstyle Checker Configuration](#)

[Using Custom Checkstyle Property Expansion](#)

[Definitions](#)

[Using a Suppressions Filter](#)

[Using Custom Developed Checkstyle Checks](#)

[Multimodule Configuration](#)

PROJECT DOCUMENTATION

[Project Information](#)

Apache Maven Checkstyle Plugin

The Checkstyle Plugin generates a report regarding the code style used by the developers. For more information, see the [Checkstyle website](#).

This version of the plugin uses Checkstyle 9.3 by default and requires Java 8. But you can [upgrade](#) it.

The plugin can be configured in the project's POM. Predefined rulesets available for use in this version are:

Goals Overview

The Checkstyle Plugin has three goals:

- [checkstyle:checkstyle](#) is a reporting goal that performs Checkstyle analysis and generates a report.
- [checkstyle:checkstyle-aggregate](#) is a reporting goal that performs Checkstyle analysis and generates a report for all modules.
- [checkstyle:check](#) is a goal that performs Checkstyle analysis and outputs violations or a count of violations.

Major Version Upgrade to version 3.0.0

Please note that the following parameters have been completely removed from the plugin configuration:

- `sourceDirectory`: use `sourceDirectories` instead;
- `testSourceDirectory`: use `testSourceDirectories` instead.

Usage

General instructions on how to use the Checkstyle Plugin can be found on the [usage page](#). Some

```
if(»
  .!
  !spotless
»   » )·{
...dirty();
...}....
```

Spotless: Keep your code spotless with Maven

mavencentral com.diffplug.spotless:spotless-maven-plugin javadoc yes changelog 2.28.0

[circleci](#) [passing](#) [gitter](#) [chat](#) [license](#) [apache](#)

Spotless is a general-purpose formatting plugin used by [4,000 projects on GitHub \(August 2020\)](#). It is completely à la carte, but also includes powerful "batteries-included" if you opt-in. Plugin requires a version of Maven higher or equal to 3.1.0.

To people who use your build, it looks like this:

```
user@machine repo % mvn spotless:check
[ERROR]  > The following files had format violations:
[ERROR]  src\main\java\com\diffplug\gradle\spotless\FormatExtension.java
[ERROR]      -\t\t....if·(targets.length·==·0)·{
[ERROR]      +\t\tif·(targets.length·==·0)·{
[ERROR]  Run 'mvn spotless:apply' to fix these violations.
user@machine repo % mvn spotless:apply
[INFO] BUILD SUCCESS
user@machine repo % mvn spotless:check
[INFO] BUILD SUCCESS
```

Modernizer Maven Plugin

maven-central v2.5.0

Modernizer Maven Plugin detects uses of legacy APIs which modern Java versions supersede. These modern APIs are often more performant, safer, and idiomatic than the legacy equivalents. For example, Modernizer can detect uses of `Vector` instead of `ArrayList`, `String.getBytes(String)` instead of `String.getBytes(Charset)`, and Guava `Objects.equal` instead of Java 7 `Objects.equals`. The default configuration detects over 200 legacy APIs, including third-party libraries like [Apache Commons](#), [Guava](#), and [Joda-Time](#).

Configuration

To run Modernizer, add the following to the `<plugins>` stanza in your pom.xml then invoke `mvn modernizer:modernizer`:

```
<plugin>
  <groupId>org.gaul</groupId>
  <artifactId>modernizer-maven-plugin</artifactId>
  <version>2.4.0</version>
  <configuration>
    <javaVersion>8</javaVersion>
  </configuration>
</plugin>
```

Policeman's Forbidden API Checker

Allows to parse Java byte code to find invocations of method/class/field signatures and fail build (Apache Ant, Apache Maven, or Gradle).

maven-central v3.4 build passing

Documentation

Please refer to the Github [Wiki & Documentation](#).

The checker is available as Apache Ant Task, Apache Maven Mojo, and Gradle plugin. In addition there is a command line tool (CLI):

- [Apache Ant](#)
- [Apache Maven](#)
- [Gradle](#)
- [Command Line](#)

This project uses Apache Ant (and Apache Ivy) to build. The minimum Ant version is 1.8.0 and it is recommended to not have Apache Ivy in the Ant lib folder, because the build script will download the correct version of Ivy automatically.

Was ist mit Abhängigkeiten, die nicht mehr
genutzt werden?



DepClean

Build passing

quality gate passed

maintainability A

reliability C

security A

maven-central v2.0.3

license MIT

vulnerabilities 0

bugs 1

code smells 47

lines of code 3.1k

duplicated lines 0 %

technical debt 6h

codecov 58%

What is DepClean?

DepClean automatically cleans the dependency tree of Java projects. It removes all the dependencies that are included in the project's dependency tree but are not actually necessary to build it. DepClean detects and removes all the unused dependencies declared in the `pom.xml` file of a project or imported from its parent. It can be executed as a Maven goal through the command line or integrated directly into the Maven build lifecycle (CI/CD). DepClean does not modify the original source code of the application nor its original `pom.xml`.

For a visual illustration of what DepClean can provide for your project, have a look at the companion [depclean-web](#) project.

```
$ mvn compiler:testCompile
$ mvn se.kth.castor:depclean-maven-plugin:2.0.3:depclean -DcreatePomDebloated -DcreateResultJson

[INFO] --- depclean-maven-plugin:2.0.3:depclean (default-cli) @ spring-petclinic ---

[INFO] Starting DepClean dependency analysis
-----
DEPCLEAN ANALYSIS RESULTS
-----

USED DIRECT DEPENDENCIES [7]:
...
USED INHERITED DEPENDENCIES [0]:
USED TRANSITIVE DEPENDENCIES [74]:
...
POTENTIALLY UNUSED DIRECT DEPENDENCIES [12]:
    org.ehcache:ehcache:3.8.1:compile (1 MB)
    org.webjars:bootstrap:3.3.6:compile (646 KB)
    org.webjars:jquery-ui:1.11.4:compile (251 KB)
    org.webjars:jquery:2.2.4:compile (158 KB)
    commons-cli:commons-cli:1.4:compile (52 KB)
    com.tngtech.archunit:archunit-junit5:1.0.1:test (524 bytes)
    org.springframework.boot:spring-boot-starter-data-jpa:2.2.0.RELEASE:compile (409 bytes)
    org.springframework.boot:spring-boot-starter-thymeleaf:2.2.0.RELEASE:compile (406 bytes)
    org.springframework.boot:spring-boot-starter-actuator:2.2.0.RELEASE:compile (405 bytes)
    org.springframework.boot:spring-boot-starter-cache:2.2.0.RELEASE:compile (404 bytes)
    org.springframework.boot:spring-boot-starter-web:2.2.0.RELEASE:compile (403 bytes)
    org.springframework.boot:spring-boot-starter-test:2.2.0.RELEASE:test (402 bytes)
POTENTIALLY UNUSED INHERITED DEPENDENCIES [0]:
POTENTIALLY UNUSED TRANSITIVE DEPENDENCIES [28]:
...
[INFO] Starting debloating file
[INFO] Adding 74 used transitive dependencies as direct dependencies.
[INFO] Removing 12 unused direct dependencies.
[INFO] Excluding 28 unused transitive dependencies one-by-one.
[INFO] POM debloated successfully
[INFO] pom-debloated.xml file created in: /home/sparsick/dev/workspace/maintenance-demo/pom-debloated.xml
Creating depclean-results.json, please wait...
[INFO] depclean-results.json file created in: /home/sparsick/dev/workspace/maintenance-demo/target/depclean-results.json
[INFO] Analysis done in 0min 12s
[INFO] -----
[INFO] BUILD SUCCESS[INFO] -----
[INFO] Total time: 13.590 s
[INFO] Finished at: 2022-12-13T13:22:43+01:00
[INFO] -----
```

<https://castor-software.github.io/depclean-web>

spring-petclinic 2.2.0.BUILD-SNAPSHOT

Dependencies	Direct	Transitive	Inherited
Used	19	102	0
Bloated	12	28	0

[DepClean Project](#)

spring-petclinic

2.2.0.BUILD-SNAPSHOT

Dependencies Project size

121 **109.83 MB**Used
7 direct 74 transitive
Bloated
12 direct 28 transitive

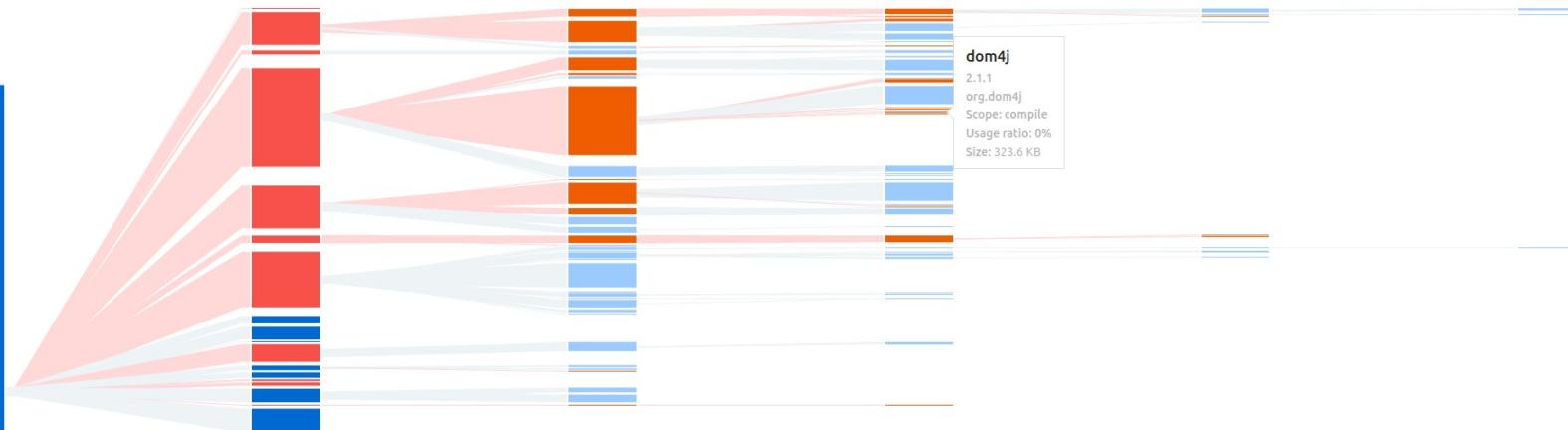
① Debloat artifacts

 None Direct All

View Filter



Dependency list



Dependencies

- direct-used
- direct-bloated
- transitive-used
- transitive-bloated
- inherited-used
- inherited-bloated



Sind wir von
Sicherheitslücken
betroffen?



OWASP DEPENDENCY-CHECK

General

- How it Works
- Reading the Report
- False Positives
- False Negatives
- Internet Access Required
- Related Work
- Project Presentation (pptx)
- Project Presentation (pdf)
- Sample Report
- How to Scan an ISO Image

File Type Analyzers

Modules

PROJECT DOCUMENTATION

- Project Information
- Project Reports

[Follow @cbt](#) 1,062 followers

 JPROFILER

 IntelliJ IDEA

About

OWASP dependency-check is an open source solution to the OWASP Top 10 2021 entry: [A Analyzer page](#)). Note that some of the analyzers are experimental and may produce more f

The problem with using known vulnerable components was covered in a paper by Jeff Willi vulnerabilities (such as those at the [National Vulnerability Database](#)).

More information about dependency-check can be found here:

- [How does dependency-check work](#)
- [How to read the report](#)

OWASP dependency-check's core analysis engine can be used as:

- Ant Task
- Command Line Tool
- Gradle Plugin
- Jenkins Plugin
- Maven Plugin - Maven 3.1 or newer required
- SBT Plugin

For help with dependency-check the following resource can be used:

- Open a [github issue](#)

Sponsor Development of dependency-check:

 Sponsor



```
<plugin>
  <groupId>org.owasp</groupId>
  <artifactId>dependency-check-maven</artifactId>
  <version>7.4.1</version>
</plugin>
```



```
$ mvn dependency-check:check
[INFO] Scanning for projects...
[INFO]
[INFO] -----< org.springframework.samples:spring-petclinic >-----
[INFO] Building petclinic 2.2.0.BUILD-SNAPSHOT
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- dependency-check-maven:7.4.1:check (default-cli) @ spring-petclinic ---
[INFO] Checking for updates
[INFO] Skipping NVD check since last check was within 4 hours.
[INFO] Skipping RetireJS update since last update was within 24 hours.
[INFO] Check for updates complete (19 ms)
[INFO]
```

Dependency-Check **is** an open source tool performing a best effort analysis of 3rd party dependencies; **false positives and false negatives** may exist **in** the analysis performed **by** the tool. Use of the tool **and** the reporting provided constitutes acceptance for use **in an AS IS condition**, **and** there are **NO** warranties, implied **or** otherwise, with regard to the analysis **or** its use. Any use of the tool **and** the reporting provided **is** at the user's risk. **In** no event shall the copyright holder **or** OWASP be held liable for any damages whatsoever arising out of **or in** connection with the use of this tool, the analysis performed, **or** the resulting report.

About ODC: <https://jeremylong.github.io/DependencyCheck/general/internals.html>

False Positives: <https://jeremylong.github.io/DependencyCheck/general/suppression.html>

❤ Sponsor: <https://github.com/sponsors/jeremylong>

```
[INFO] Analysis Started
[INFO] Finished Archive Analyzer (0 seconds)
[INFO] Finished File Name Analyzer (0 seconds)
[INFO] Finished Jar Analyzer (0 seconds)
[WARNING] No lock file exists - this will result in false negatives; please run `npm install --package-lock`
[WARNING] No lock file exists - this will result in false negatives; please run `npm install --package-lock`
[WARNING] Analyzing `/tmp/dctemp73eea6a9-5615-4323-8aec-9f09ad491c25/check15701359662306960067tmp/84/META-INF/resources/webjars
/angular__http/2.4.10/package.json` - however, the node_modules directory does not exist. Please run `npm install` prior to running dependency-check
[WARNING] Analyzing `/tmp/dctemp73eea6a9-5615-4323-8aec-9f09ad491c25/check15701359662306960067tmp/84/META-INF/resources/webjars
/angular__http/2.4.10/testing/package.json` - however, the node_modules directory does not exist. Please run `npm install` prior to running dependency-check
[INFO] Finished Node.js Package Analyzer (0 seconds)
[INFO] Finished Dependency Merging Analyzer (0 seconds)
[INFO] Finished Version Filter Analyzer (0 seconds)
[INFO] Finished Hint Analyzer (0 seconds)
[INFO] Created CPE Index (1 seconds)
[INFO] Finished CPE Analyzer (3 seconds)
[INFO] Finished False Positive Analyzer (0 seconds)
[INFO] Finished NVD CVE Analyzer (0 seconds)
[INFO] Finished RetireJS Analyzer (0 seconds)
[INFO] Finished Sonatype OSS Index Analyzer (0 seconds)
[INFO] Finished Vulnerability Suppression Analyzer (0 seconds)
[INFO] Finished Dependency Bundling Analyzer (0 seconds)
[INFO] Finished Unused Suppression Rule Analyzer (0 seconds)
[INFO] Analysis Complete (5 seconds)
[INFO] Writing report to: /home/sparsick/dev/workspace/maintenance-demo/target/dependency-check-report.html
[WARNING]
```

One or more dependencies were identified with known vulnerabilities in petclinic:

```
bootstrap-3.3.6.jar (pkg:javascript/bootstrap@3.3.6, pkg:maven/org.webjars/bootstrap@3.3.6) : CVE-2016-10735, CVE-2018-14040,
CVE-2018-14041, CVE-2018-14042, CVE-2018-20677, CVE-2019-8331
```

...

See the dependency-check report for more details.

```
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 8.930 s
[INFO] Finished at: 2022-12-13T13:54:21+01:0
[INFO] -----
```



DEPENDENCY-CHECK

Dependency-Check is an open source tool performing a best effort analysis of 3rd party dependencies; false positives and false negatives may exist in the analysis performed by the tool. Use of the tool and the reporting provided constitutes acceptance for use in an AS IS condition, and there are NO warranties, implied or otherwise, with regard to the analysis or its use. Any use of the tool and the reporting provided at the user's risk. In no event shall the copyright holder or OWASP be held liable for any damages whatsoever arising out of or in connection with the use of this tool, the analysis performed, or the resulting report.

[How to read the report](#) | [Suppressing false positives](#) | [Getting Help: github issues](#)

♡ [Sponsor](#)

Project: petclinic

org.springframework.samples:spring-petclinic:2.2.0.BUILD-SNAPSHOT

Scan Information ([show all](#)):

- dependency-check version: 7.4.1
- Report Generated On: Tue, 13 Dec 2022 13:54:20 +0100
- Dependencies Scanned: 161 (117 unique)
- Vulnerable Dependencies: 20
- Vulnerabilities Found: 106
- Vulnerabilities Suppressed: 0
- ...

Summary

Display: [Showing Vulnerable Dependencies \(click to show all\)](#)

Dependency	Vulnerability IDs	Package	Highest Severity	CVE Count	Confidence	Evidence Count
bootstrap-3.3.6.jar		pkg:javascript/bootstrap@3.3.6 pkg:maven/org.webjars/bootstrap@3.3.6	MEDIUM	6		19
dom4j-2.1.1.jar	cpe:2.3:a:dom4j:_project:dom4j:2.1.1:*****:*	pkg:maven/org.dom4j/dom4j@2.1.1	CRITICAL	1	Highest	20
hibernate-core-5.4.6.Final.jar	cpe:2.3:a:hibernate:hibernate_orm:5.4.6:*****:*	pkg:maven/org.hibernate/hibernate-core@5.4.6.Final	HIGH	2	Low	48
hibernate-validator-6.0.17.Final.jar	cpe:2.3:a:redhat:hibernate_validator:6.0.17:*****:*	pkg:maven/org.hibernate.validator/hibernate-validator@6.0.17.Final	MEDIUM	2	Highest	34
hsqldb-2.5.0.jar	cpe:2.3:a:hsqldb:hypersql_database:2.5.0:*****:*	pkg:maven/org.hsqldb/hsqldb@2.5.0	CRITICAL	1	Low	41
jackson-databind-2.10.0.jar	cpe:2.3:a:fasterxml:jackson_databind:2.10.0:*****:* cne:2.3:a:fasterxml:jackson-modules-java8:2.10.0:*****:*	pkg:maven/com.fasterxml.jackson.core/jackson-databind@2.10.0	HIGH	4	Highest	41

Und was mit Docker Images?



```
→ trivy i --ignore-unfixed -o result spring-boot-demo:latest
2022-06-23T09:55:56.244+0200    INFO    Vulnerability scanning is enabled
2022-06-23T09:55:56.245+0200    INFO    Secret scanning is enabled
2022-06-23T09:55:56.245+0200    INFO    If your scanning is slow, please try '--security-checks vuln'
to disable secret scanning
2022-06-23T09:55:56.245+0200    INFO    Please see also https://aquasecurity.github.io/trivy/v0.29.2
(docs/secret/scanning/#recommendation) for faster secret detection
2022-06-23T09:55:56.254+0200    INFO    Detected OS: debian
2022-06-23T09:55:56.255+0200    INFO    Detecting Debian vulnerabilities...
2022-06-23T09:55:56.265+0200    INFO    Number of language-specific files: 1
2022-06-23T09:55:56.265+0200    INFO    Detecting jar vulnerabilities...

spring-boot-demo:latest (debian 11.2)
=====
Total: 23 (UNKNOWN: 1, LOW: 2, MEDIUM: 6, HIGH: 6, CRITICAL: 8)
```

Java (jar)

=====

```
Total: 0 (UNKNOWN: 0, LOW: 0, MEDIUM: 0, HIGH: 0, CRITICAL: 0)
```



Wie bekommen
wir die
Anwendung lokal
zum Laufen?



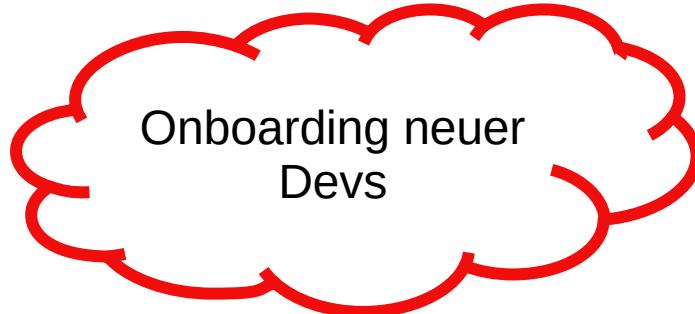
Spring Boot Maven Plugin



```
version: "3.9"
services:
  database:
    image: mongo:4.2.21
    restart: always
    ports:
      - 27017:27017
    environment:
      MONGO_INITDB_ROOT_USERNAME: root
      MONGO_INITDB_ROOT_PASSWORD: root123
    volumes:
      - ./local-env/:/dockerentrypoint-initdb.d/
```



```
<plugin>
  <groupId>org.springframework.boot</groupId>
  <artifactId>spring-boot-maven-plugin</artifactId>
  <configuration>
    <layers>
      <enabled>true</enabled>
    </layers>
    <environmentVariables>
      <MONGODB_ENABLED>true</MONGODB_ENABLED>
      <MONGODB_URI>mongodb://test:test123@localhost/test</MONGODB_URI>
    </environmentVariables>
  </configuration>
</plugin>
```



Onboarding neuer
Devs



Get started now!

Go on, paste and run the following in a terminal:

```
curl -s "https://get.sdkman.io" | bash
```

The Software Development Kit Manager

SDKMAN! is a tool for managing parallel versions of multiple **Software Development Kits** on most Unix based systems. It provides a convenient Command Line Interface (CLI) and API for installing, switching, removing and listing Candidates. Formerly known as **GVM** the **Groovy enVironment Manager**, it was inspired by the very useful [RVM](#) and [rbenv](#) tools, used at large by the Ruby community.



By Developers, for Developers

Making life easier. No more trawling download pages, extracting archives, messing with `_HOME` and `PATH` environment variables.



Multi-platform

Runs on any UNIX based platforms: macOS, Linux, Cygwin, Solaris and FreeBSD.



Java all the way down

Install Software Development Kits for the JVM such as Java, Groovy, Scala, Kotlin and Ceylon, Ant, Gradle, Grails, Maven, SBT, Spark, Spring Boot, Vert.x and many others also supported.



APIs

New Clients can easily be written by consuming our open Broker REST API. Vendors can publish and announce their own releases through a secure Vendor API.



Lightweight

Written in [bash](#) and only requires [curl](#) and [zip/unzip](#) to be present on your system. Even works with [ZSH](#) too.



Open Source

Backed by a global community of developers.
Licensed under [Apache 2.0](#).



```
$ sdk install java 17-open
$ sdk install maven 3.6.3
$ sdk install maven 3.8.3
$ sdk use java 17-open
$ sdk use maven 3.8.3
$ sdk env init
$ cat .sdkmanrc
# Enable auto-env through the sdkman_auto_env config
# Add key=value pairs of SDKs to use below
java=17-open
maven=3.8.3
```



EditorConfig

[What is EditorConfig?](#)

[Example File](#)

[File Location](#)

[File Format Details](#)

[No Plugin Necessary](#)

[Download a Plugin](#)

[Contributing](#)

[Blog](#)

[Project Page
on GitHub](#)



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What is EditorConfig?

EditorConfig helps maintain consistent coding styles for multiple developers working on the same project across various editors and IDEs. The EditorConfig project consists of a **file format** for defining coding styles and a collection of **text editor plugins** that enable editors to read the file format and adhere to defined styles. EditorConfig files are easily readable and they work nicely with version control systems.

What's an EditorConfig file look like?

(A [formal specification of EditorConfig](#) is also available.)

Example file

Below is an example .editorconfig file setting end-of-line and indentation styles for Python and JavaScript files.

```
# EditorConfig is awesome:  
https://EditorConfig.org  
  
# top-most EditorConfig file  
root = true  
  
# Unix-style newlines with a newline ending  
# every file  
[*]  
end_of_line = lf  
insert_final_newline = true
```

Fazit

Bei Greenfield Projekte

Automatisierung
(was man automatisieren kann)
von Beginn an

Bei Brownfield Projekte

Guckt was die größten Schmerzen bereiten und versucht diese weg zu automatisieren.

Fragen?

mail@sandra-parsick.de

@SandraParsick

@sparsick@mastodon.social

Referenzen

- <https://github.com/spring-projects/spring-petclinic>
- <https://spring-petclinic.github.io/>
- <https://www.arc42.de/overview/>
- <https://adr.github.io/>

Bildnachweise

- https://pxhere.com/de/photo/970825?utm_content=shareClip&utm_medium=referral&utm_source=pxhere
- https://pxhere.com/de/photo/867723?utm_content=shareClip&utm_medium=referral&utm_source=pxhere
- https://pxhere.com/de/photo/1409158?utm_content=shareClip&utm_medium=referral&utm_source=pxhere
- https://www.pexels.com/de_de/foto/hausrenovierung/