

# Analiza statica si dinamica – Web Server

## Analiza statica

Analiza statica a unui program software, se refera la analiza care se ruleaza pe un produs software fara ca acesta sa fie executat in prealabil.

Pentru realizarea analizei statice am utilizat SonarQube, un instrument automat de examinare a codului, care detecteaza erori, vulnerabilitati si “code smells”.

Cu ajutorul lui SonarQube am identificat:

- 3 bug-uri
- 47 code smells

The screenshot displays the SonarQube web interface for a project named 'WebServer'. The top navigation bar includes links for Projects, Issues, Rules, Quality Profiles, Quality Gates, and Administration. A search bar is present on the right. The main content area is divided into a left sidebar for filters and a main panel for issue details.

**Filters:**

- Type:** BUG (3), Vulnerability (0), Code Smell (47). A 'Clear' button is next to the BUG count.
- Severity:** Blocker (2), Critical (0), Major (0), Minor (1), Info (0).
- Scope:** Resolution, Status, Security Category, Creation Date, Language, Rule, Tag, Directory, File, Assignee, Author.

**Issue Details:**

- Issue 1:** src/main/java/config/ConfigFile.java. Title: "This class overrides 'equals()' and should therefore also override 'hashCode()'". Severity: Bug (Minor). Status: Open. Effort: 15min. Comment: "Why is this an issue?". Tags: cert, cwe.
- Issue 2:** src/main/java/fo/FileContentWriterImpl.java. Title: "Use try-with-resources or close this 'FileWriter' in a 'finally' clause". Severity: Bug (Blocker). Status: Open. Effort: 5min. Comment: "Why is this an issue?". Tags: cert, cwe, denial-of-service, leak.
- Issue 3:** src/main/java/main/Server.java. Title: "Add an end condition to this loop". Severity: Bug (Blocker). Status: Open. Effort: 15min. Comment: "Why is this an issue?". Tags: cert.

At the bottom, a yellow warning box states: "Embedded database should be used for evaluation purposes only. The embedded database will not scale, it will not support upgrading to newer versions of SonarQube, and there is no support for migrating your data out of it into database engine." The footer indicates "SonarQube™ technology is powered by SonarSource SA".

sonarqube

ProjectsIssuesRulesQuality ProfilesQuality GatesAdministration

Search for projects...

A

WebServer

master

November 27, 2021, 3:35 PMVersion 1.0-SNAPSHOT

OverviewIssuesSecurity HotspotsMeasuresCodeActivity

Project SettingsProject Information

My IssuesAll

Filters

Clear All Filters

TypeCODE SMELLClear

Bug3

Vulnerability0

Code Smell47

Ctrl + click to add to selection

Severity

Blocker0Minor21

Critical9Info4

Major13

Scope

Resolution

Status

Security Category

Creation Date

Language

Rule

Tag

Directory

File

Assignee

Author

Bulk Change

1 / 47 issues5h 9min effort

src/main/java/config/ConfigFile.java

Rename this constant name to match the regular expression `^[A-Z][A-Z0-9]_[A-Z0-9]+`'s. Why is this an issue?

Code SmellCriticalOpenNot assigned2min effortComment

last monthL5convention

Reorder the modifiers to comply with the Java Language Specification. Why is this an issue?

Code SmellMinorOpenNot assigned2min effortComment

last monthL5convention

Rename this constant name to match the regular expression `^[A-Z][A-Z0-9]_[A-Z0-9]+`'s. Why is this an issue?

Code SmellCriticalOpenNot assigned2min effortComment

last monthL6convention

Reorder the modifiers to comply with the Java Language Specification. Why is this an issue?

Code SmellMinorOpenNot assigned2min effortComment

last monthL6convention

Reorder the modifiers to comply with the Java Language Specification. Why is this an issue?

Code SmellMinorOpenNot assigned2min effortComment

28 days agoL7convention

Rename this constant name to match the regular expression `^[A-Z][A-Z0-9]_[A-Z0-9]+`'s. Why is this an issue?

Code SmellCriticalOpenNot assigned2min effortComment

27 days agoL8convention

Reorder the modifiers to comply with the Java Language Specification. Why is this an issue?

Code SmellMinorOpenNot assigned2min effortComment

27 days agoL8convention

src/main/java/config/ConfigFileWriter.java

Make this final field static too. Why is this an issue?

Code SmellMinorOpenNot assigned2min effortComment

5 days agoL11convention

src/main/java/config/ServerState.java

Rename this constant name to match the regular expression `^[A-Z][A-Z0-9]_[A-Z0-9]+`'s. Why is this an issue?

Code SmellCriticalOpenNot assigned2min effortComment

28 days agoL4convention

Rename this constant name to match the regular expression `^[A-Z][A-Z0-9]_[A-Z0-9]+`'s. Why is this an issue?

Code SmellCriticalOpenNot assigned2min effortComment

28 days agoL5convention

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Author

Bulk Change

1 / 47 issues5h 9min effort

src/main/java/request/HeaderParser.java

The return type of this method should be an interface such as `"Map"` rather than the implementation `"HashMap"`. Why is this an issue?

Code SmellMinorOpenNot assigned10min effortComment

28 days agoL8bad-practice

The type of `"headersList"` should be an interface such as `"List"` rather than the implementation `"ArrayList"`. Why is this an issue?

Code SmellMinorOpenNot assigned10min effortComment

28 days agoL8bad-practice

src/main/java/request/HeaderParserImpl.java

Reduce the total number of break and continue statements in this loop to use at most one. Why is this an issue?

Code SmellMinorOpenNot assigned20min effortComment

28 days agoL16brain-overload

src/main/java/request/PostRequestHandler.java

The type of `"requestHeaders"` should be an interface such as `"Map"` rather than the implementation `"HashMap"`. Why is this an issue?

Code SmellMinorOpenNot assigned10min effortComment

5 days agoL9bad-practice

src/main/java/request/RequestStartLine.java

Make method a static final constant or non-public and provide accessors if needed. Why is this an issue?

Code SmellMinorOpenNot assigned10min effortComment

last monthL5cwe

Make target a static final constant or non-public and provide accessors if needed. Why is this an issue?

Code SmellMinorOpenNot assigned10min effortComment

last monthL6cwe

Make version a static final constant or non-public and provide accessors if needed. Why is this an issue?

Code SmellMinorOpenNot assigned10min effortComment

last monthL7cwe

src/main/java/resource\_manager/ContentTypeProviderImpl.java

Merge the previous cases into this one using comma-separated label. Why is this an issue?

Code SmellInfoOpenNot assigned5min effortComment

28 days agoL11java14

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My IssuesAll

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Assignee

Author

Bulk Change

1 / 47 issues5h 9min effort

Merge the previous cases into this one using comma-separated label. Why is this an issue?

Code SmellInfoOpenNot assigned5min effortComment

28 days agoL14java14

Merge the previous cases into this one using comma-separated label. Why is this an issue?

Code SmellInfoOpenNot assigned5min effortComment

28 days agoL18java14

Define a constant instead of duplicating this literal "; charset=utf-8" 3 times. Why is this an issue?

Code SmellCriticalOpenNot assigned8min effortComment

28 days agoL19design

Merge the previous cases into this one using comma-separated label. Why is this an issue?

Code SmellInfoOpenNot assigned5min effortComment

28 days agoL21java14

src/main/java/resource\_manager/ResourcePathManagerImpl.java

Refactor your code to get this URI from a customizable parameter. Why is this an issue?

Code SmellMinorOpenNot assigned20min effortComment

28 days agoL19android, cert

Remove this hard-coded path-delimiter. Why is this an issue?

Code SmellMinorOpenNot assigned20min effortComment

28 days agoL30android, cert

src/main/java/response/HeaderBuilder.java

The type of "headers" should be an interface such as "Map" rather than the implementation "HashMap". Why is this an issue?

Code SmellMinorOpenNot assigned10min effortComment

28 days agoL6bad-practice

src/main/java/response/ResponseByteArrayProvider.java

The type of "headers" should be an interface such as "Map" rather than the implementation "HashMap". Why is this an issue?

Code SmellMinorOpenNot assigned10min effortComment

5 days agoL8bad-practice

src/main/java/response/ResponseStatusLine.java

Remove this unused import 'org.apache.commons.httpclient.HttpStatus'. Why is this an issue?

Code SmellMinorOpenNot assigned2min effortComment

last monthL3unused

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Resolution

Status

Security Category

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Language

Rule

Tag

Directory

File

Assignee

Author

Bulk Change

1 / 47 issues5h 9min effort

src/main/java/response/ResponseStatusLine.java

Remove this unused import 'org.apache.commons.httpclient.HttpStatus'. Why is this an issue?

Code SmellMinorOpenNot assigned2min effortComment

last monthL3unused

Make version a static final constant or non-public and provide accessors if needed. Why is this an issue?

Code SmellMinorOpenNot assigned10min effortComment

last monthL7cwe

Make statusCode a static final constant or non-public and provide accessors if needed. Why is this an issue?

Code SmellMinorOpenNot assigned10min effortComment

last monthL8cwe

src/test/java/config/ConfigFileTest.java

Use assertEquals instead. Why is this an issue?

Code SmellMajorOpenNot assigned2min effortComment

5 days agoL62junit, tests

Use assertEquals instead. Why is this an issue?

Code SmellMajorOpenNot assigned2min effortComment

5 days agoL69junit, tests

Use assertNotEquals instead. Why is this an issue?

Code SmellMajorOpenNot assigned2min effortComment

5 days agoL77junit, tests

Use assertNotEquals instead. Why is this an issue?

Code SmellMajorOpenNot assigned2min effortComment

5 days agoL85junit, tests

Use assertNotEquals instead. Why is this an issue?

Code SmellMajorOpenNot assigned2min effortComment

5 days agoL93junit, tests

Use assertNotEquals instead. Why is this an issue?

Code SmellMajorOpenNot assigned2min effortComment

5 days agoL101junit, tests

Use assertNotEquals instead. Why is this an issue?

Code SmellMajorOpenNot assigned2min effortComment

5 days agoL109junit, tests

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Overview Issues Security Hotspots Measures Code Activity Project Settings Project Information

My Issues All

**Filters** Clear All Filters

Type CODE SMELL Clear

Bug 3  
Vulnerability 0  
Code Smell 47

Ctrl + click to add to selection

Severity

Blocker 0 Minor 21  
Critical 9 Info 4  
Major 13

Scope  
Resolution  
Status  
Security Category  
Creation Date  
Language  
Rule  
Tag  
Directory  
File  
Assignee  
Author

Bulk Change 1 / 47 issues 5h 9min effort

**src/test/java/main/ServerTest.java**

☐ **Use assertEquals instead.** Why is this an issue? 5 days ago L93 comment tests

☐ **Use assertEquals instead.** Why is this an issue? 5 days ago L101 comment tests

☐ **Use assertEquals instead.** Why is this an issue? 5 days ago L109 comment tests

**src/test/java/request/PostRequestHandlerImplTest.java**

☐ **Remove this use of "Thread.sleep()".** Why is this an issue? 5 days ago L30 comment tests

**src/test/java/request/RequestStartLineParserTest.java**

☐ **Use assertEquals instead.** Why is this an issue? 5 days ago L96 comment tests

**src/test/java/resource\_manager/ResourceAbsolutePathProviderImplTest.java**

☐ **Replace these 6 tests with a single Parameterized one.** Why is this an issue? last month L19 comment tests

**src/test/java/response/ResponseStatusLineBuilderImplTest.java**

☐ **Replace these 5 tests with a single Parameterized one.** Why is this an issue? last month L18 comment tests

47 of 47 shown

Pentru aceasta etapa am rezolvat majoritatea problemelor identificate de SonarQube, urmand ca pana la prezentarea proiectului sa incerc rezolvarea bug-urilor si code smell-urilor ramase (cele care se pot vedea in urmatoarea captura de ecran).

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Overview Issues Security Hotspots Measures Code Activity Project Settings Project Information

My Issues All

**Filters**

Type

Bug 1  
Vulnerability 0  
Code Smell 4

Severity

Blocker 1 Minor 1  
Critical 1 Info 0  
Major 2

Scope  
Resolution  
Status  
Security Category  
Creation Date  
Language

Bulk Change 1 / 5 issues 1h 12min effort

**src/main/java/main/Server.java**

☐ **Add an end condition to this loop.** Why is this an issue? 6 days ago L57 comment cert

☐ **Refactor this method to reduce its Cognitive Complexity from 17 to the 15 allowed.** Why is this an issue? 6 days ago L63 comment brain-overload

**src/main/java/request/HeaderParserImpl.java**

☐ **Reduce the total number of break and continue statements in this loop to use at most one.** Why is this an issue? 29 days ago L17 comment brain-overload

**src/test/java/main/ServerTest.java**

☐ **Remove this use of "Thread.sleep()".** Why is this an issue? 6 days ago L30 comment tests

**src/test/java/response/ResponseStatusLineBuilderImplTest.java**

☐ **Replace these 5 tests with a single Parameterized one.** Why is this an issue? last month L18 comment tests

5 of 5 shown

## Analiza dinamica

Analiza dinamică este metoda de analiză a unei aplicații chiar în momentul execuției acesteia.

Analiza dinamică analizează o aplicație din punctul de vedere al:

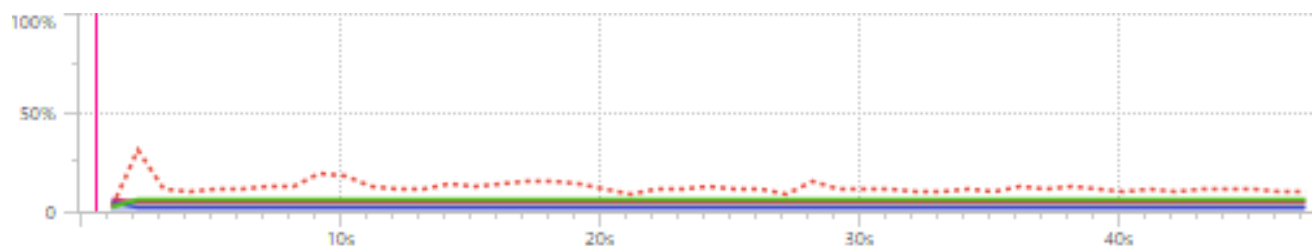
- resurselor consumate: timpul de execuție a unei subrutine sau a unui modul software, cantitatea de memorie utilizată, numărul de interogări efectuate (ex: spre o bază de date) și alte resurse;
- erorilor de programare: memory leaks, "race conditions", dereferențierea unui null pointer, împărțirea la zero, etc;

Pentru realizarea analizei dinamice am utilizat YourKit Java Profiler, un tool care functioneaza pe toate tipurile de aplicatii si servere Java, pe mai multe platforme, atat local, cat si remote.

**Urmatoarele date au fost extrase in timpul executiei web server-ului creat:**

**CPU profiling** - datele pot fi vizualizate ca arbori de apeluri sau liste de “hot spots”

Chart – CPU - time



Flame Graph - este o modalitate eficienta de a vizualiza performanta aplicatiei, care permite gasirea rapida a “bottleneck-urilor”



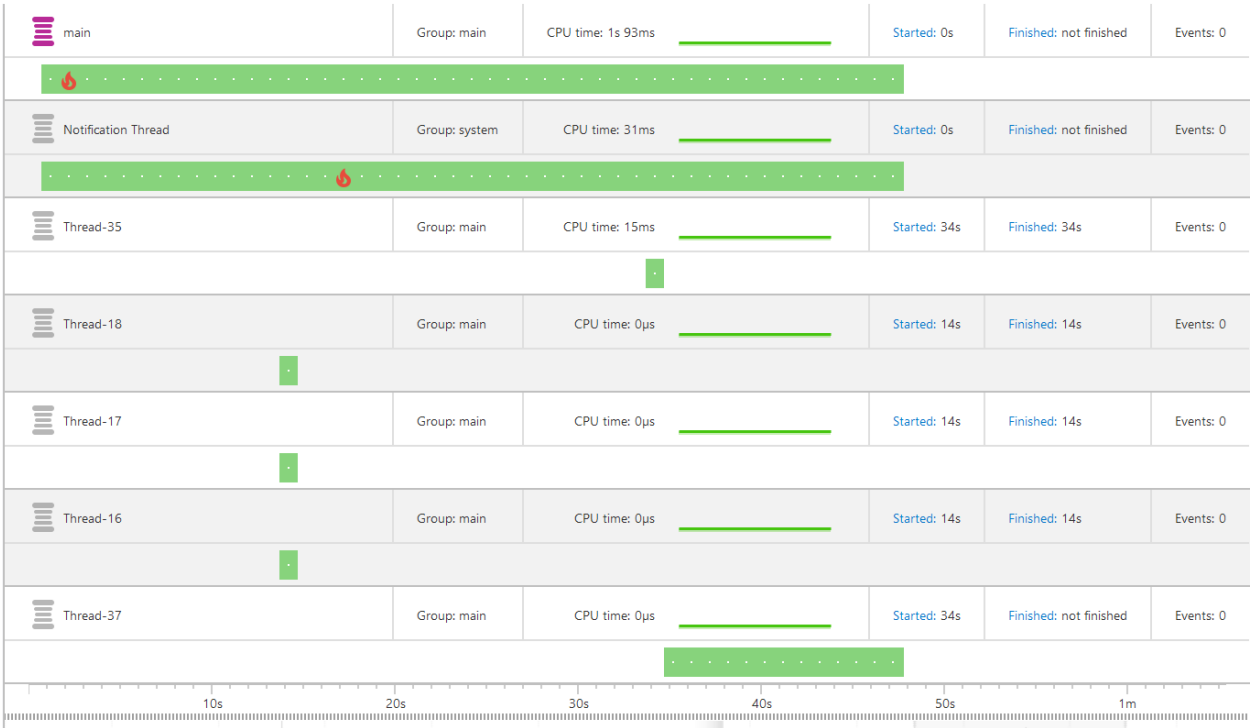
## Call Tree – All Threads Merged

Call Tree		Time (ms)
<All threads>		359 100 %
main.Main.main(String[])		312 87 %
com.intellij.rt.execution.application.AppMainV2\$1.run()		31 9 %
AppMainV2.java:49 java.io.BufferedReader.readLine()		31 9 %
BufferedReader.java:392 java.io.BufferedReader.readLine(boolean)		31 9 %
BufferedReader.java:326 java.io.BufferedReader.fill()		31 9 %
BufferedReader.java:161 java.io.InputStreamReader.read(char[], int, int)		31 9 %
InputStreamReader.java:181 <...> sun.nio.cs.StreamDecoder.read(char[], int, int)		31 9 %
java.lang.Thread.run()		15 4 %
Thread.java:832 main.Server\$\$Lambda\$82.0x00000008001523a0.run()		15 4 %
main.Server.lambda\$startServer\$0(Socket)		15 4 %
Server.java:54 main.Server.handleConnection(Socket)		15 4 %
Server.java:129 main.Server.writeResponseAndCloseConnection(Socket, BufferedOutputStre		15 4 %
Server.java:140 <...> java.net.Socket.close()		15 4 %



## Call Tree – By Thread

Call Tree		Time (ms)
main Group: 'main' Native ID: 16712		312 100 %
main.Main.main(String[])		312 100 %
Main.java:15 io.JsonParserImpl.<init>(FileContentReader)		218 70 %
JsonParserImpl.java:12 <...> com.google.gson.Gson.<init>()		203 65 %
JsonParserImpl.java:12 <...> java.lang.ClassLoader.loadClass(String)		15 5 %
Main.java:15 config.ConfigFileReader.readConfigFile()		31 10 %
ConfigFileReader.java:16 io.JsonParserImpl.parseFile(String, Class)		31 10 %
JsonParserImpl.java:23 io.FileContentReaderImpl.readFileContent(String)		31 10 %
FileContentReaderImpl.java:11 <...> java.nio.file.Files.readAllBytes(Path)		31 10 %
Main.java:13 <...> java.util.logging.Logger.getLogger(String)		31 10 %
Main.java:15 <...> java.lang.ClassLoader.loadClass(String)		15 5 %
Main.java:15 main.Server.<init>(ConfigFile)		15 5 %
Server.java:40 <...> java.lang.ClassLoader.loadClass(String)		15 5 %
Monitor Ctrl-Break Group: 'main' Native ID: 36232		31 100 %
<...> com.intellij.rt.execution.application.AppMainV2\$1.run()		31 100 %
Thread-0 Group: 'main' Native ID: 45432		15 100 %
java.lang.Thread.run()		15 100 %
Thread.java:832 main.Server\$\$Lambda\$82.0x00000008001523a0.run()		15 100 %
main.Server.lambda\$startServer\$0(Socket)		15 100 %
Server.java:54 main.Server.handleConnection(Socket)		15 100 %
Server.java:129 main.Server.writeResponseAndCloseConnection(Socket, BufferedOutputStre		15 100 %

Live and Finished Threads

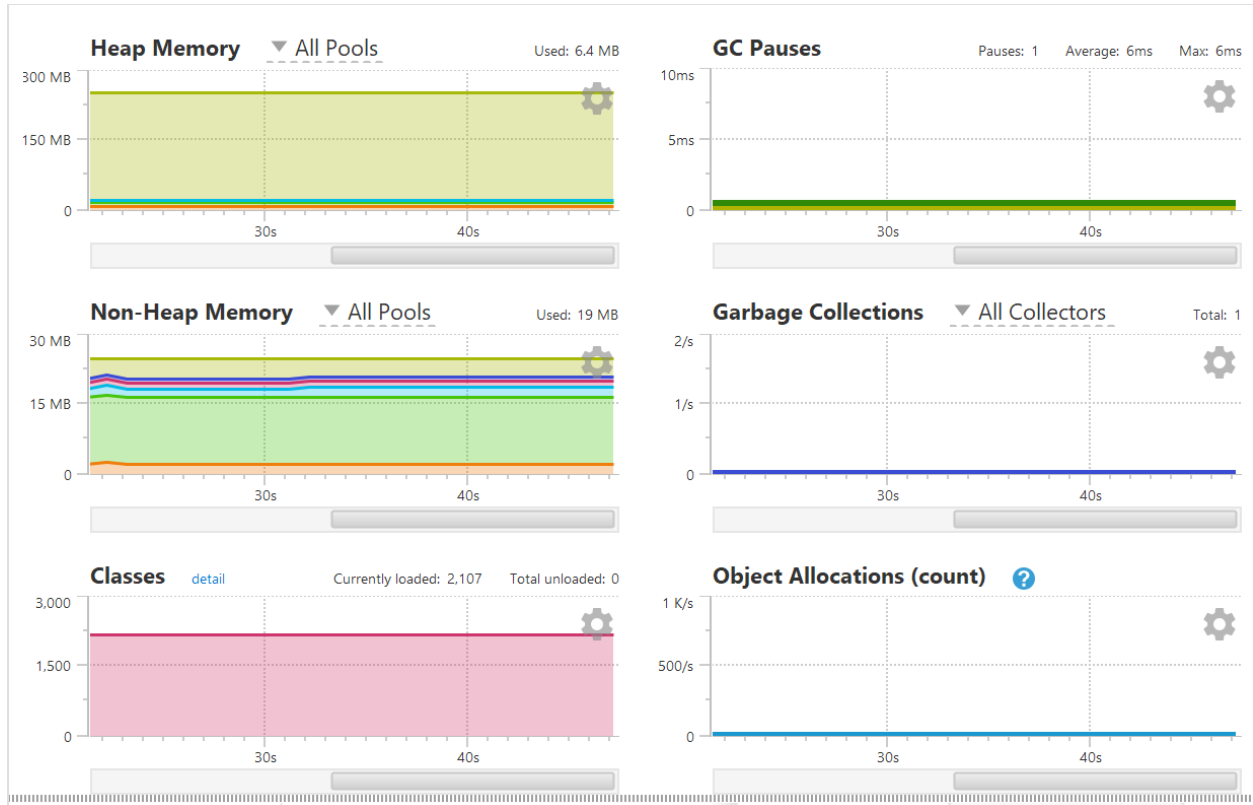


Method List

 	Method	Time (ms)	Own Time (ms)
➔	main.Main.main(String[]) Main.java	312 87 %	0
➔	io.JsonParserImpl.<init>(FileContentReader) JsonParserImpl.java	218 61 %	0
⇒	java.lang.ClassLoader.loadClass(String) ClassLoader.java	218 61 %	218
⇒	com.google.gson.Gson.<init>() Gson.java	203 57 %	203
⇒	com.intellij.rt.execution.application.AppMainV2\$1.run() AppMainV2.java	31 9 %	31
➔	config.ConfigFileReader.readConfigFile() ConfigFileReader.java	31 9 %	0
➔	io.FileContentReaderImpl.readFileContent(String) FileContentReaderImpl.java	31 9 %	0
➔	io.JsonParserImpl.parseFile(String, Class) JsonParserImpl.java	31 9 %	0
⇒	java.nio.file.Files.readAllBytes(Path) Files.java	31 9 %	31
⇒	java.util.logging.Logger.getLogger(String) Logger.java	31 9 %	31
⇒	java.lang.Thread.run() Thread.java	15 4 %	0
⇒	java.net.Socket.close() Socket.java	15 4 %	15
➔	main.Server.<init>(ConfigFile) Server.java	15 4 %	0
➔	main.Server.handleConnection(Socket) Server.java	15 4 %	0
➔	main.Server.lambda\$startServer\$0(Socket) Server.java	15 4 %	0
➔	main.Server.writeResponseAndCloseConnection(Socket, BufferedOutputStream, HashMap, int, String)	15 4 %	0
➔	main.Server\$\$Lambda\$82.0x00000008001523a0.run()	15 4 %	0

## Memory profiling

### Memory Charts



### Exceptions Thrown and Caught Inside Filtered Methods

Group by: ☒ Exception Class ☒ Show exceptions thrown and caught inside filtered methods

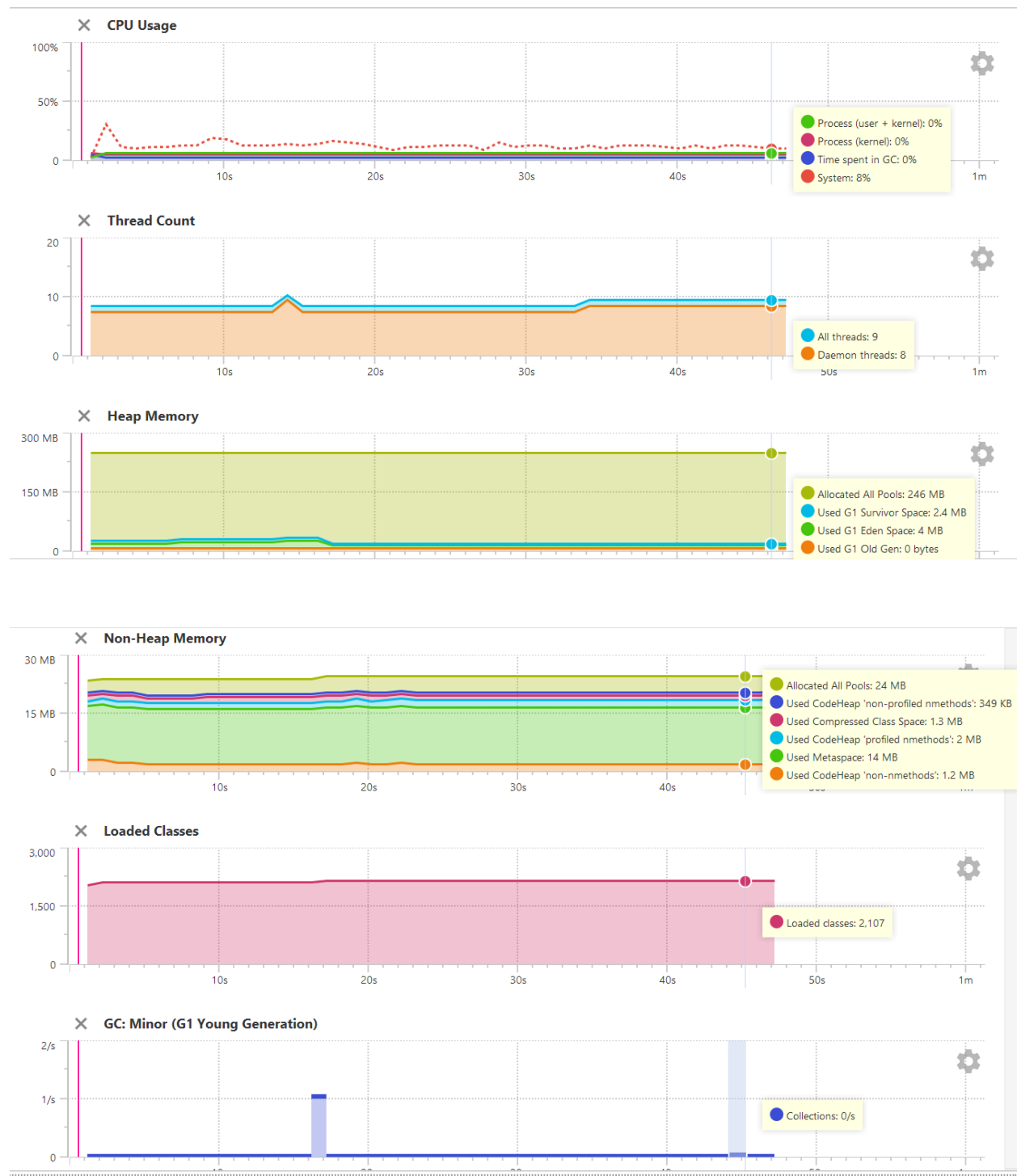
Name	Count
java.lang.NoSuchFieldException	2 100 %
main Group: 'main' Native ID: 16712	1 50 %
Notification Thread Group: 'system' Native ID: 6960	1 50 %

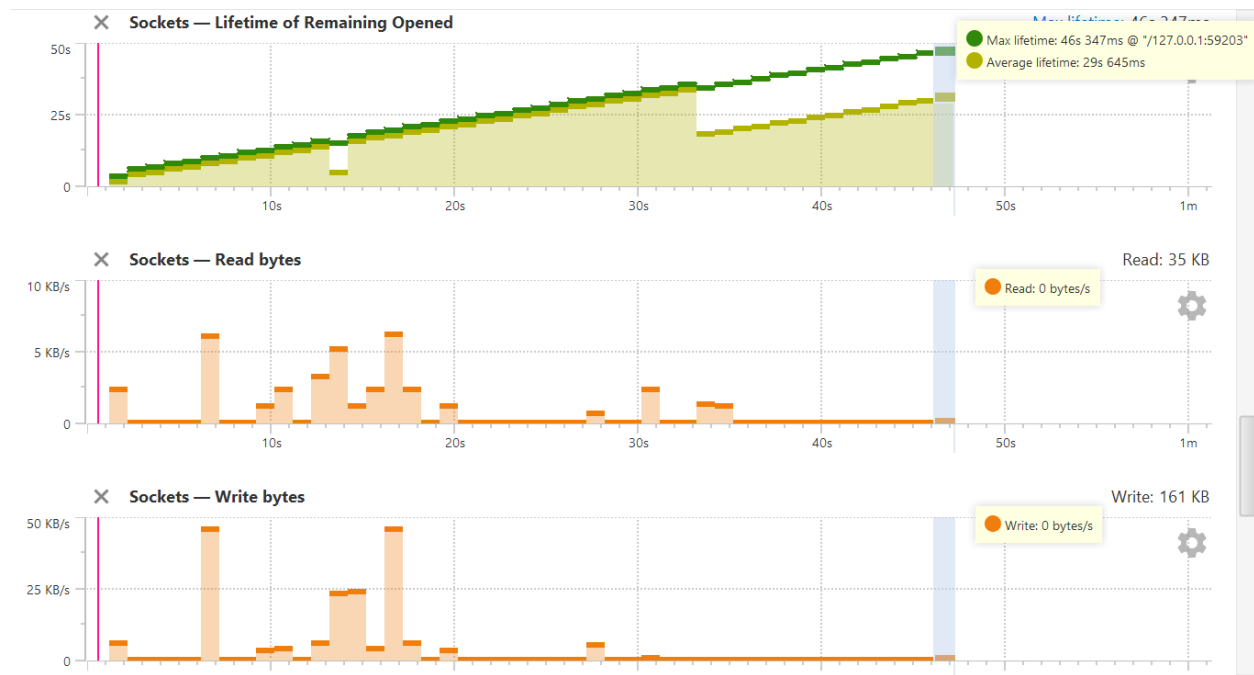
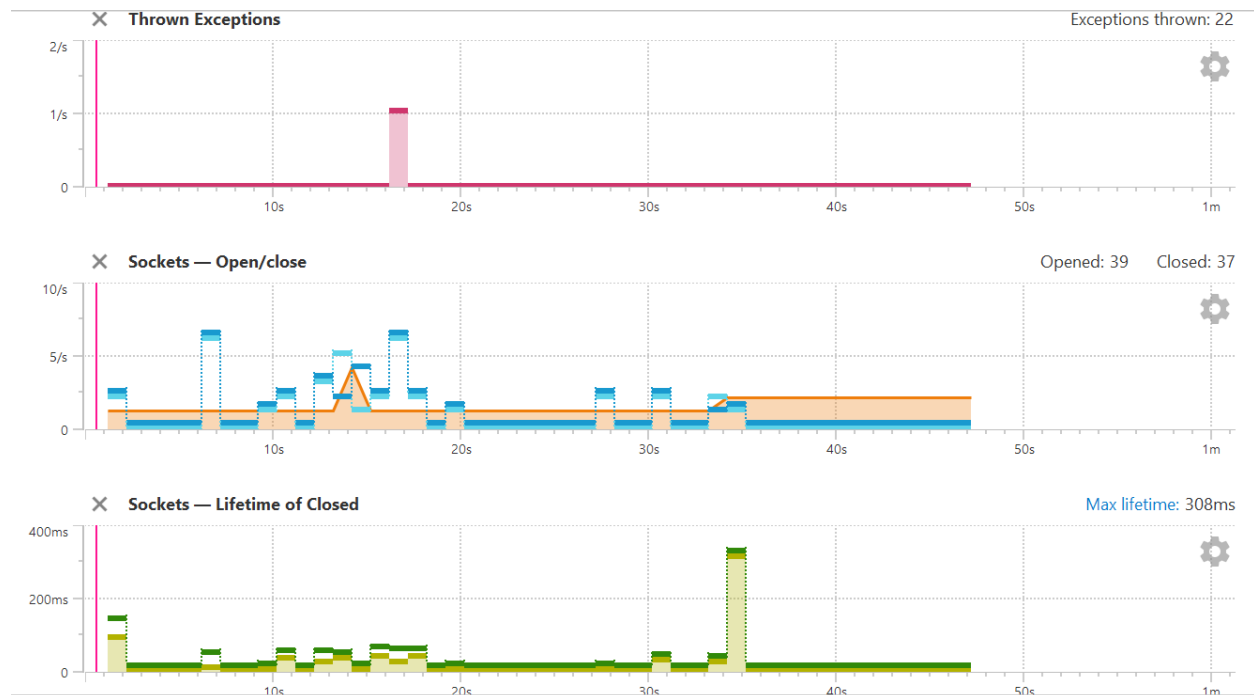
  

Reverse Call Tree	Count
java.lang.Class.getDeclaredField(String) Class.java:2569	1 100 %
com.google.gson.Gson.<init>() Gson.java:186	
io.jsonwebtoken.impl.<init>(FileContentReader) JsonParserImpl.java:12	
main.Main.main(String[]) Main.java:15	



## Performance Charts





## Event Call Tree

### Call tree (probes)

= Call Tree		FR	FO	FC	SR	SW	SO	SC
⊟ <All threads>		347	44	39	39	37	39	37
⊟ com.intellij.rt.execution.application.AppMainV2\$1.run()		3	1	1	1	0	1	0
└ AppMainV2.java:49 %<.> java.io.BufferedReader.readLine()		0	0	0	1	0	0	0
└ AppMainV2.java:44 %<.> java.net.Socket.<init>(String, int)		3	1	1	0	0	1	0
⊟ java.lang.Thread.run()		18	10	10	38	37	0	37
⊟ Thread.java:832 % main.Server\$SLambda\$82.0x00000008001823a0.run()		18	10	10	38	37	0	37
⊟ % main.Server.lambda\$startServer\$0(Socket)		18	10	10	38	37	0	37
⊟ Server.java:54 % main.Server.handleConnection(Socket)		18	10	10	38	37	0	37
└ Server.java:69 %<.> java.io.BufferedReader.readLine()		0	0	0	38	0	0	0
└ Server.java:95 %<.> java.lang.ClassLoader.loadClass(String)		3	2	2	0	0	0	0
⊟ Server.java:129 % main.Server.writeResponseAndCloseConnection(Socket, BufferedOutputStream, HashMap, int, String)		14	7	7	0	35	0	35
└ Server.java:139 %<.> java.io.BufferedOutputStream.flush()		0	0	0	0	23	0	0
└ Server.java:137 %<.> java.lang.ClassLoader.loadClass(String)		1	1	1	0	0	0	0
└ Server.java:140 % java.net.Socket.close()		0	0	0	0	0	0	35
⊟ Server.java:137 % main.Server.writeResponseToSocket(BufferedOutputStream, ResponseStatusLine, HashMap, String)		13	6	6	0	12	0	0
└ Server.java:147 %<.> java.io.BufferedOutputStream.write(byte[], int, int)		0	0	0	0	12	0	0
└ Server.java:145 %<.> java.lang.ClassLoader.loadClass(String)		5	4	4	0	0	0	0
⊟ Server.java:145 % response.ResponseByteArrayProviderImpl.getResponseBytes(ResponseStatusLine, Map, String)		8	2	2	0	0	0	0
└ ResponseByteArrayProviderImpl.java:23 %<.> java.lang.ClassLoader.loadClass(String)		2	1	1	0	0	0	0
└ ResponseByteArrayProviderImpl.java:24 %<.> java.lang.ClassLoader.loadClass(String)		2	1	1	0	0	0	0
⊟ ResponseByteArrayProviderImpl.java:26 % response.ResponseStatusLineBuilderImpl.buildResponseStatusLine(ResponseStatusLine)		4	0	0	0	0	0	0
└ ResponseStatusLineBuilderImpl.java:16 %<.> java.lang.ClassLoader.loadClass(String)		4	0	0	0	0	0	0
⊟ Server.java:76 % main.Server.writeResponseAndCloseConnection(Socket, BufferedOutputStream, HashMap, int, String)		0	0	0	0	1	0	1
└ Server.java:139 %<.> java.io.BufferedOutputStream.flush()		0	0	0	0	1	0	0
└ Server.java:140 % java.net.Socket.close()		0	0	0	0	0	0	1
⊟ Server.java:102 % main.Server.writeResponseAndCloseConnection(Socket, BufferedOutputStream, HashMap, int, String)		0	0	0	0	1	0	1
└ Server.java:139 %<.> java.io.BufferedOutputStream.flush()		0	0	0	0	1	0	0
└ Server.java:140 % java.net.Socket.close()		0	0	0	0	0	0	1
⊟ Server.java:69 % request.RequestStartLineParser.parseRequestStartLine(String)		1	1	1	0	0	0	0
└ RequestStartLineParser.java:24 %<.> java.lang.ClassLoader.loadClass(String)		1	1	1	0	0	0	0
⊟ jdk.internal.vm.VMSupport.serializeAgentPropertiesToByteArray()		14	1	1	0	0	0	0
⊟ VMSupport.java:79 % jdk.internal.vm.VMSupport.serializePropertiesToByteArray(Properties)		14	1	1	0	0	0	0
└ VMSupport.java:70 % java.util.Properties.store(OutputStream, String)		14	1	1	0	0	0	0
└ Properties.java:915 % java.util.Properties.store0(BufferedWriter, String, boolean)		14	1	1	0	0	0	0
└ Properties.java:926 % java.util.Date.toString()		14	1	1	0	0	0	0
└ Date.java:1032 %<.> java.util.Date.normalize()		14	1	1	0	0	0	0
⊟ % main.Main.main(String[])		263	24	24	0	0	38	0
⊟ Main.java:15 % config.ConfigFileReader.readConfigFile()		18	2	2	0	0	0	0
└ ConfigFileReader.java:16 % io.JsonParserImpl.parseFile(String, Class)		16	1	1	0	0	0	0
└ JsonParserImpl.java:35 %<.> com.google.gson.Gson.fromJson(String, Class)		16	1	1	0	0	0	0
└ ConfigFileReader.java:16 %<.> java.lang.ClassLoader.loadClass(String)		2	1	1	0	0	0	0
⊟ Main.java:15 % io.JsonParserImpl.<init>(FileContentReader)		212	0	0	0	0	0	0
└ JsonParserImpl.java:12 %<.> com.google.gson.Gson.<clinit>()		6	0	0	0	0	0	0
└ JsonParserImpl.java:12 %<.> com.google.gson.Gson.<init>()		168	0	0	0	0	0	0
└ JsonParserImpl.java:12 %<.> java.lang.ClassLoader.loadClass(String)		38	0	0	0	0	0	0
└ Main.java:15 %<.> java.lang.ClassLoader.loadClass(String)		17	13	13	0	0	0	0
└ Main.java:13 %<.> java.util.logging.Logger.getLogger(String)		2	1	1	0	0	0	0
⊟ Main.java:15 % main.Server.<init>(ConfigFile)		14	8	8	0	0	0	0
└ Server.java:40 %<.> java.lang.ClassLoader.loadClass(String)		5	3	3	0	0	0	0
└ Server.java:43 %<.> java.lang.ClassLoader.loadClass(String)		3	2	2	0	0	0	0
└ Server.java:39 %<.> java.lang.ClassLoader.loadClass(String)		2	1	1	0	0	0	0
└ Server.java:41 %<.> java.lang.ClassLoader.loadClass(String)		2	1	1	0	0	0	0