UPES

UNIVERSITY WITH A PURPOSE

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CICD Lab Experiment 4

Static Code Analysis with SonarQube

SonarQube is an open-source platform used to continuously inspect our code and checks the code quality with automatic reviews.

It is one of the leading tools in the market for the inspection of our code. It can analyse and manage code for more than 20 languages, though it is written in Java itself.

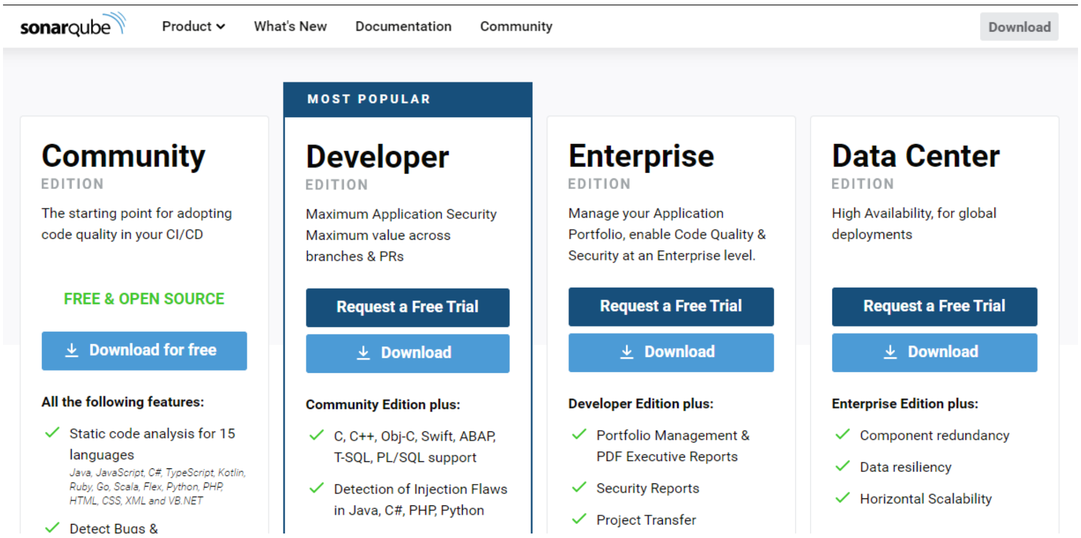
Below are the steps that you can follow to inspect your code with the help of SonarQube on a Maven Project. (It also includes how you can download SonarQube on your windows)

Please Notice: SonarQube works on jdk11+ editions.

Step1) To download SonarQube, go to the following link

https://www.sonarqube.org/downloads/

(the community edition is free and hence, used in this experiment)



Community
EDITION
The starting point for adopting code quality in your CI/CD

FREE & OPEN SOURCE

All the following features:

- ✓ Static code analysis for 15 languages
  Java, JavaScript, C#, TypeScript, Kotlin, Ruby, Go, Scala, Flex, Python, PHP, HTML, CSS, XML and VB.NET
- ✓ Detect Bugs &

MOST POPULAR

Developer
EDITION
Maximum Application Security
Maximum value across branches & PRs

Community Edition plus:

- ✓ C, C++, Obj-C, Swift, ABAP, T-SQL, PL/SQL support
- ✓ Detection of Injection Flaws in Java, C#, PHP, Python

Enterprise
EDITION
Manage your Application Portfolio, enable Code Quality & Security at an Enterprise level.

Developer Edition plus:

- ✓ Portfolio Management & PDF Executive Reports
- ✓ Security Reports
- ✓ Project Transfer

Data Center
EDITION
High Availability, for global deployments

Enterprise Edition plus:

- ✓ Component redundancy
- ✓ Data resiliency
- ✓ Horizontal Scalability

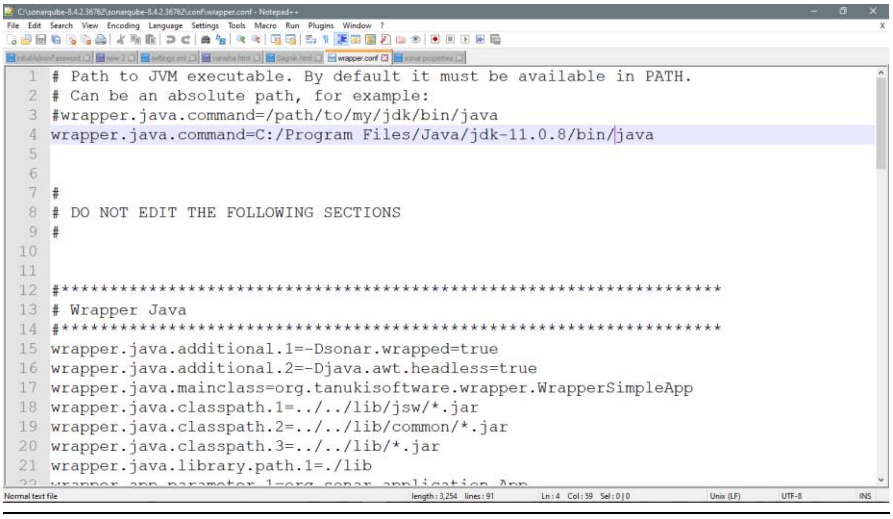
Step2) Unzip the file and go to

>>sonarqube_location/conf/wrapper..conf

Open this with Notepad and set your jdk location in

`wrapper.java.command` as

>>your/jdk/location/bin/java

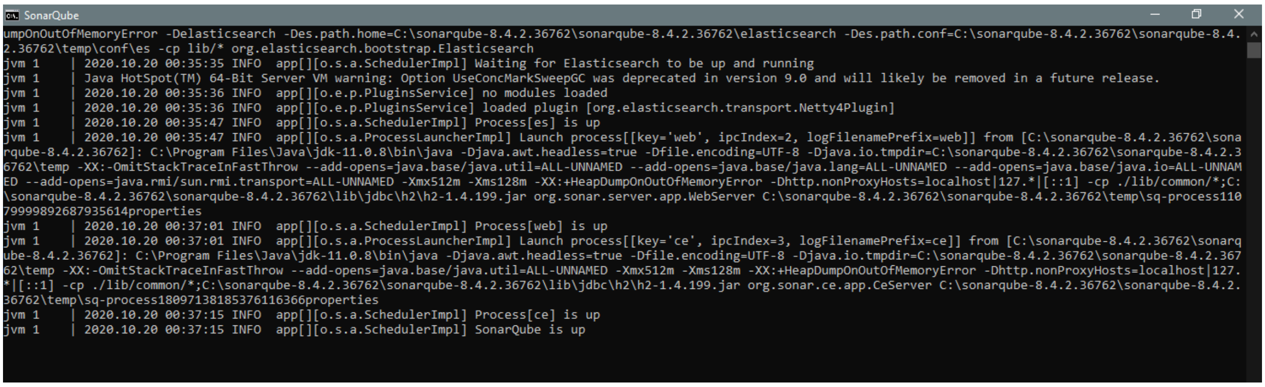

C:\sonarqube-8.4.2.36762\sonarqube-8.4.2.36762\conf\wrapper.conf - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
wrapper.conf
sonar.properties
Normal text file
length : 3,254 lines : 91
Ln : 4 Col : 59 Sel : 0 | 0
Unix (LF)
UTF-8
INS

```
# Path to JVM executable. By default it must be available in PATH.
# Can be an absolute path, for example:
#wrapper.java.command=/path/to/my/jdk/bin/java
wrapper.java.command=C:/Program Files/Java/jdk-11.0.8/bin/java


#
# DO NOT EDIT THE FOLLOWING SECTIONS
#


#********************************************************************
# Wrapper Java
#********************************************************************
wrapper.java.additional.1=-Dsonar.wrapped=true
wrapper.java.additional.2=-Djava.awt.headless=true
wrapper.java.mainclass=org.tanukisoftware.wrapper.WrapperSimpleApp
wrapper.java.classpath.1=../../lib/jsw/*.jar
wrapper.java.classpath.2=../../lib/common/*.jar
wrapper.java.classpath.3=../../lib/*.jar
wrapper.java.library.path.1=./lib
wrapper.app.parameter.1=org.sonar.application.App
```

Step3) Move to the bin folder and click on `StartSonar.bat`

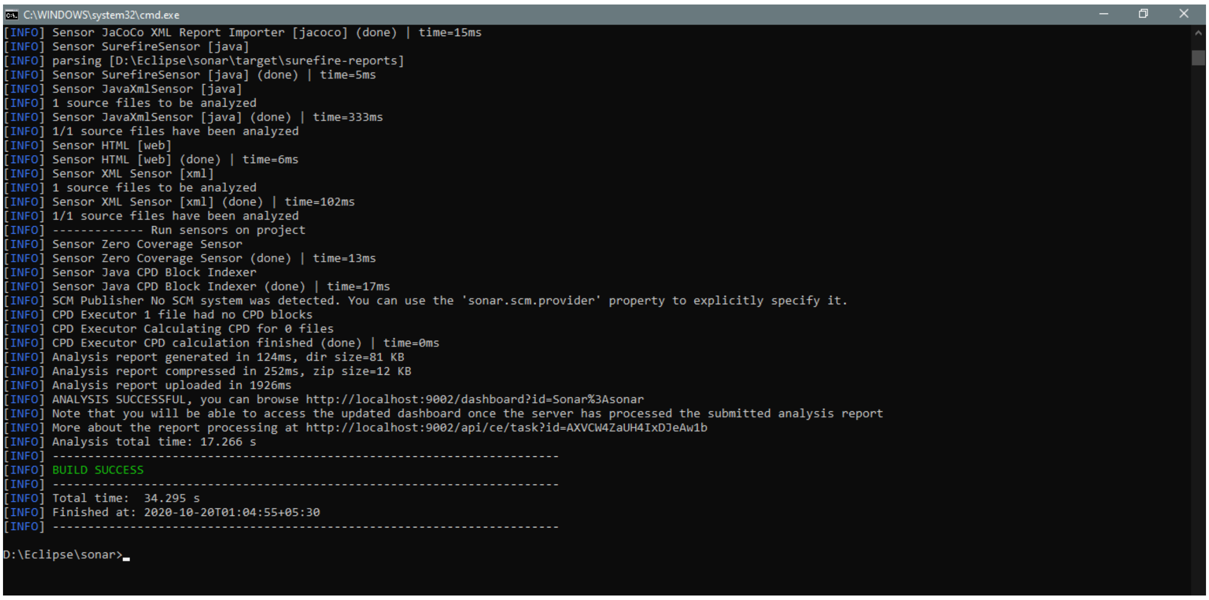


```
umpOnOutOfMemoryError -Delasticsearch -Des.path.home=C:\sonarqube-8.4.2.36762\sonarqube-8.4.2.36762\elasticsearch -Des.path.conf=C:\sonarqube-8.4.2.36762\sonarqube-8.4.
2.36762\temp\conf\es -cp lib/* org.elasticsearch.bootstrap.Elasticsearch
jvm 1    | 2020.10.20 00:35:35 INFO  app[][o.s.a.SchedulerImpl] Waiting for Elasticsearch to be up and running
jvm 1    | Java HotSpot(TM) 64-Bit Server VM warning: Option UseConcMarkSweepGC was deprecated in version 9.0 and will likely be removed in a future release.
jvm 1    | 2020.10.20 00:35:36 INFO  app[][o.e.p.PluginsService] no modules loaded
jvm 1    | 2020.10.20 00:35:36 INFO  app[][o.e.p.PluginsService] loaded plugin [org.elasticsearch.transport.Netty4Plugin]
jvm 1    | 2020.10.20 00:35:47 INFO  app[][o.s.a.SchedulerImpl] Process[es] is up
jvm 1    | 2020.10.20 00:35:47 INFO  app[][o.s.a.ProcessLauncherImpl] Launch process[[key='web', ipcIndex=2, logFilenamePrefix=web]] from [C:\sonarqube-8.4.2.36762\sona
rqube-8.4.2.36762]: C:\Program Files\Java\jdk-11.0.8\bin\java -Djava.awt.headless=true -Dfile.encoding=UTF-8 -Djava.io.tmpdir=C:\sonarqube-8.4.2.36762\sonarqube-8.4.2.3
6762\temp -XX:-OmitStackTraceInFastThrow --add-opens=java.base/java.util=ALL-UNNAMED --add-opens=java.base/java.lang=ALL-UNNAMED --add-opens=java.base/java.io=ALL-UNNAM
ED --add-opens=java.rmi/sun.rmi.transport=ALL-UNNAMED -Xmx512m -Xms128m -XX:+HeapDumpOnOutOfMemoryError -Dhttp.nonProxyHosts=localhost|127.*|[::1] -cp ./lib/common/*;C:
\sonarqube-8.4.2.36762\sonarqube-8.4.2.36762\lib\jdbc\h2\h2-1.4.199.jar org.sonar.server.app.WebServer C:\sonarqube-8.4.2.36762\sonarqube-8.4.2.36762\temp\sq-process110
7999989268793561 4properties
jvm 1    | 2020.10.20 00:37:01 INFO  app[][o.s.a.SchedulerImpl] Process[web] is up
jvm 1    | 2020.10.20 00:37:01 INFO  app[][o.s.a.ProcessLauncherImpl] Launch process[[key='ce', ipcIndex=3, logFilenamePrefix=ce]] from [C:\sonarqube-8.4.2.36762\sonarq
ube-8.4.2.36762]: C:\Program Files\Java\jdk-11.0.8\bin\java -Djava.awt.headless=true -Dfile.encoding=UTF-8 -Djava.io.tmpdir=C:\sonarqube-8.4.2.36762\sonarqube-8.4.2.367
62\temp -XX:-OmitStackTraceInFastThrow --add-opens=java.base/java.util=ALL-UNNAMED -Xmx512m -Xms128m -XX:+HeapDumpOnOutOfMemoryError -Dhttp.nonProxyHosts=localhost|127.
*|[::1] -cp ./lib/common/*;C:\sonarqube-8.4.2.36762\sonarqube-8.4.2.36762\lib\jdbc\h2\h2-1.4.199.jar org.sonar.ce.app.CeServer C:\sonarqube-8.4.2.36762\sonarqube-8.4.2.
36762\temp\sq-process1809713818537611 6366properties
jvm 1    | 2020.10.20 00:37:15 INFO  app[][o.s.a.SchedulerImpl] Process[ce] is up
jvm 1    | 2020.10.20 00:37:15 INFO  app[][o.s.a.SchedulerImpl] SonarQube is up
```

Step 4) Navigate to localhost:9002 (in my case. Most probably 9000 in yours) to see you SonarQube dashboard.

Make a Maven project. Save it. Open cmd and go to the location of the project. To execute your project with continuous code analysis enter the following command

```
>>mvn clean install sonar:sonar -Dsonar.host.url=http://localhost:9000 -Dsonar.analysis.mode=publish
```

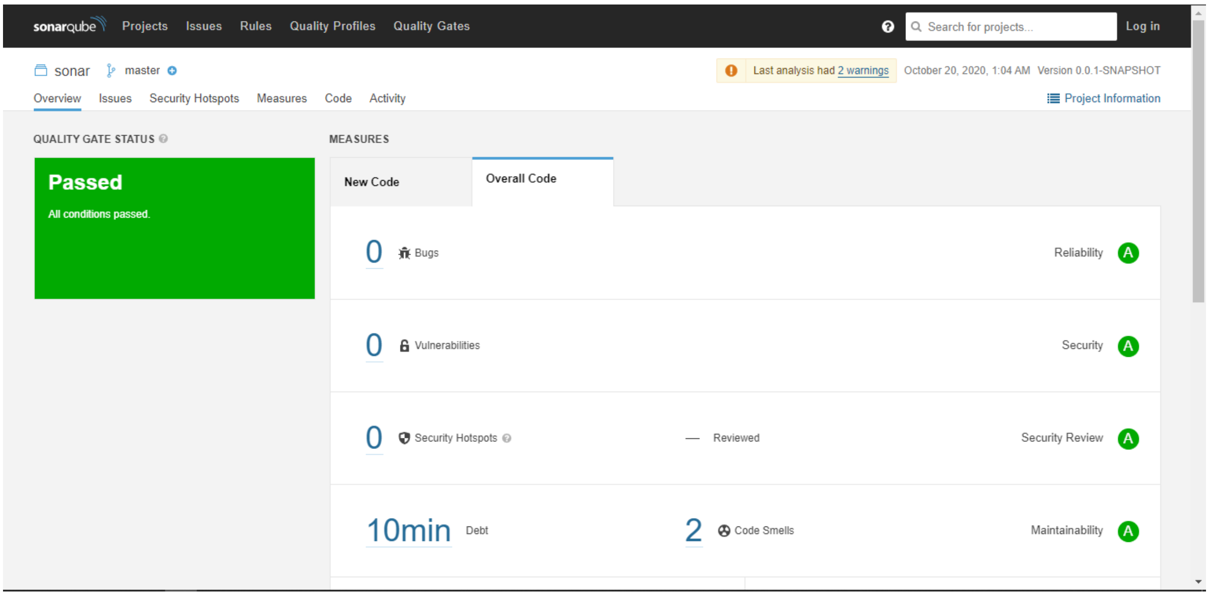


```
[INFO] Sensor JaCoCo XML Report Importer [jacoco] (done) | time=15ms
[INFO] Sensor SurefireSensor [java]
[INFO] parsing [D:\Eclipse\sonar\target\surefire-reports]
[INFO] Sensor SurefireSensor [java] (done) | time=5ms
[INFO] Sensor JavaXmlSensor [java]
[INFO] 1 source files to be analyzed
[INFO] Sensor JavaXmlSensor [java] (done) | time=333ms
[INFO] 1/1 source files have been analyzed
[INFO] Sensor HTML [web]
[INFO] Sensor HTML [web] (done) | time=6ms
[INFO] Sensor XML Sensor [xml]
[INFO] 1 source files to be analyzed
[INFO] Sensor XML Sensor [xml] (done) | time=102ms
[INFO] 1/1 source files have been analyzed
[INFO] ------------- Run sensors on project
[INFO] Sensor Zero Coverage Sensor
[INFO] Sensor Zero Coverage Sensor (done) | time=13ms
[INFO] Sensor Java CPD Block Indexer
[INFO] Sensor Java CPD Block Indexer (done) | time=17ms
[INFO] SCM Publisher No SCM system was detected. You can use the 'sonar.scm.provider' property to explicitly specify it.
[INFO] CPD Executor 1 file had no CPD blocks
[INFO] CPD Executor Calculating CPD for 0 files
[INFO] CPD Executor CPD calculation finished (done) | time=0ms
[INFO] Analysis report generated in 124ms, dir size=81 KB
[INFO] Analysis report compressed in 252ms, zip size=12 KB
[INFO] Analysis report uploaded in 1926ms
[INFO] ANALYSIS SUCCESSFUL, you can browse http://localhost:9002/dashboard?id=Sonar%3Asonar
[INFO] Note that you will be able to access the updated dashboard once the server has processed the submitted analysis report
[INFO] More about the report processing at http://localhost:9002/api/ce/task?id=AXVCW4ZaUH4IxDJeAw1b
[INFO] Analysis total time: 17.266 s
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time:  34.295 s
[INFO] Finished at: 2020-10-20T01:04:55+05:30
[INFO] ------------------------------------------------------------------------

D:\Eclipse\sonar>_
```

If you get “BUILD SUCCESS”, phew! Everything went well.

Step 5) To see the results of your code inspection reload your localhost to get something like this.



Last analysis had 2 warnings October 20, 2020, 1:04 AM Version 0.0.1-SNAPSHOT

Passed

All conditions passed.

0 Bugs Reliability A

0 Vulnerabilities Security A

0 Security Hotspots — Reviewed Security Review A

10min Debt 2 Code Smells Maintainability A

And, your job is done.