Sonarqube server and Sonar Scanner setup

Version: 0.0.1

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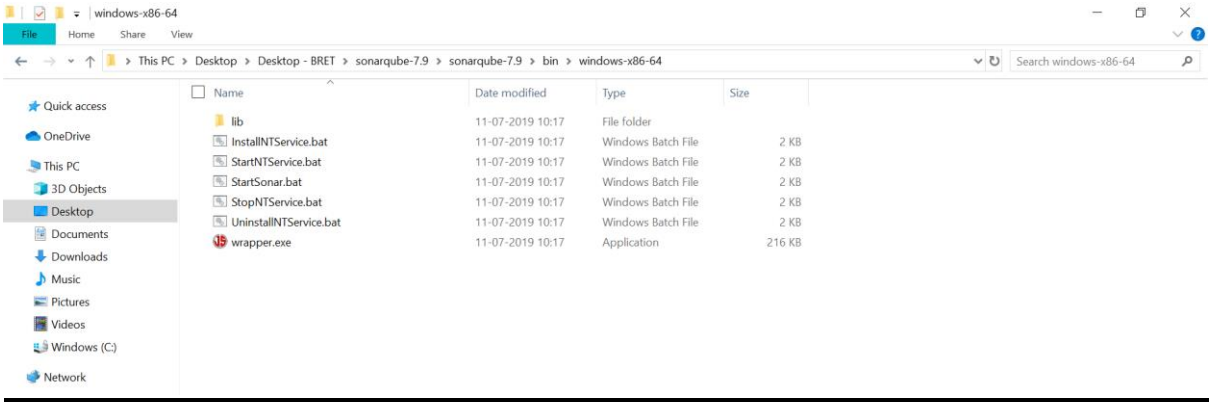
Please follow the given set of instructions to setup the sonarqube server and Java code analyzer.

Setting up Sonarqube server

1. Download and Extract the zip files from the box folder link: https://ibm.ent.box.com/folder/81908480942.

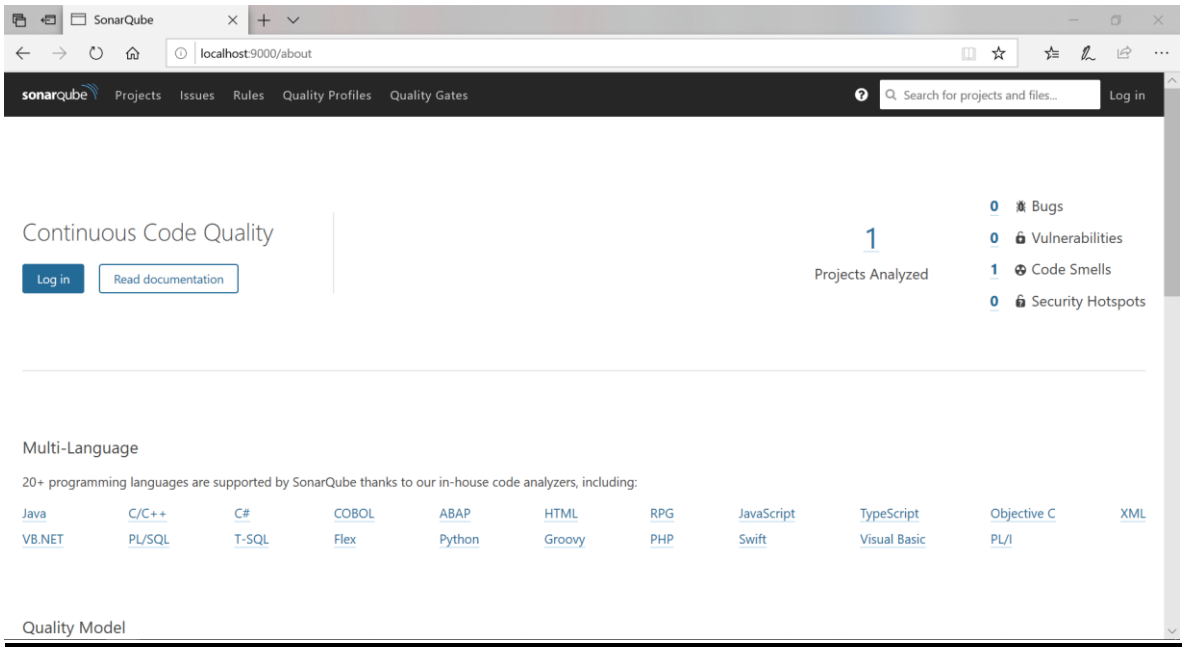
2. Go to sonarqube-7.9\sonarqube-7.9\bin\windows-x86-64 and run command prompt in the current directory. Type in the command: `StartSonar.bat`. Now wait until the sonarqube server is up.




```
C:\Users\JaspalBatra\Desktop\Desktop - BRET\sonarqube-7.9\sonarqube-7.9\bin\windows-x86-64>StartSonar.bat
wrapper  | --> Wrapper Started as Console
wrapper  | Launching a JVM...
jvm 1    | Wrapper (Version 3.2.3) http://wrapper.tanukisoftware.org
jvm 1    |   Copyright 1999-2006 Tanuki Software, Inc.  All Rights Reserved.
jvm 1    |
jvm 1    | 2019.07.12 23:43:15 INFO  app[][o.s.a.AppFileSystem] Cleaning or creating temp directory C:\Users\JaspalBatra\Desktop\Desktop - BRET\sonarqube-7.9\sonarqube-7.9\
temp
jvm 1    | 2019.07.12 23:43:15 INFO  app[][o.s.a.es.EsSettings] Elasticsearch listening on /127.0.0.1:9001
jvm 1    | 2019.07.12 23:43:15 INFO  app[][o.s.a.ProcessLauncherImpl] Launch process[[key='es', ipcIndex=1, logFilenamePrefix=es]] from [C:\Users\JaspalBatra\Desktop\Deskto
p - BRET\sonarqube-7.9\sonarqube-7.9\elasticsearch]: C:\Program Files\Java\jdk-11.0.3\bin\java -XX:+UseConcMarkSweepGC -XX:CMSInitiatingOccupancyFraction=75 -XX:+UseCMSInit
iatingOccupancyOnly -Des.networkaddress.cache.ttl=60 -Des.networkaddress.cache.negative.ttl=10 -XX:+AlwaysPreTouch -Xss1m -Djava.awt.headless=true -Dfile.encoding=UTF-8 -Dj
na.nosys=true -XX:-OmitStackTraceInFastThrow -Dio.netty.noUnsafe=true -Dio.netty.noKeySetOptimization=true -Dio.netty.recycler.maxCapacityPerThread=0 -Dlog4j.shutdownHookEn
abled=false -Dlog4j2.disable.jmx=true -Djava.io.tmpdir=C:\Users\JaspalBatra\Desktop\Desktop - BRET\sonarqube-7.9\sonarqube-7.9\temp -XX:ErrorFile=../logs/es_hs_err_pid%p.lo
g -Xms512m -Xmx512m -XX:+HeapDumpOnOutOfMemoryError -Delasticsearch -Des.path.home=C:\Users\JaspalBatra\Desktop\Desktop - BRET\sonarqube-7.9\sonarqube-7.9\elasticsearch -De
s.path.conf=C:\Users\JaspalBatra\Desktop\Desktop - BRET\sonarqube-7.9\sonarqube-7.9\temp\conf\es -cp lib/* org.elasticsearch.bootstrap.Elasticsearch
jvm 1    | 2019.07.12 23:43:15 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    | 2019.07.12 23:43:17 INFO  app[][o.e.p.PluginsService] no modules loaded
jvm 1    | 2019.07.12 23:43:17 INFO  app[][o.e.p.PluginsService] loaded plugin [org.elasticsearch.transport.Netty4Plugin]
jvm 1    | 2019.07.12 23:44:31 INFO  app[][o.s.a.SchedulerImpl] Process[es] is up
jvm 1    | 2019.07.12 23:44:32 INFO  app[][o.s.a.ProcessLauncherImpl] Launch process[[key='web', ipcIndex=2, logFilenamePrefix=web]] from [C:\Users\JaspalBatra\Desktop\Desk
top - BRET\sonarqube-7.9\sonarqube-7.9]: C:\Program Files\Java\jdk-11.0.3\bin\java -Djava.awt.headless=true -Dfile.encoding=UTF-8 -Djava.io.tmpdir=C:\Users\JaspalBatra\Desk
top\Desktop - BRET\sonarqube-7.9\sonarqube-7.9\temp --add-opens=java.base/java.util=ALL-UNNAMED --add-opens=java.base/java.lang=ALL-UNNAMED --add-opens=java.base/java.io=AL
L-UNNAMED --add-opens=java.rmi/sun.rmi.transport=ALL-UNNAMED -Xmx512m -Xms128m -XX:+HeapDumpOnOutOfMemoryError -Dhttp.nonProxyHosts=localhost|127.*|[::1] -cp ./lib/common/*
;C:\Users\JaspalBatra\Desktop\Desktop - BRET\sonarqube-7.9\sonarqube-7.9\lib\jdbc\h2\h2-1.3.176.jar org.sonar.server.app.WebServer C:\Users\JaspalBatra\Desktop\Desktop - BR
ET\sonarqube-7.9\sonarqube-7.9\temp\sq-process1865923951802346135properties
jvm 1    | 2019.07.12 23:45:18 INFO  app[][o.s.a.SchedulerImpl] Process[web] is up
jvm 1    | 2019.07.12 23:45:18 INFO  app[][o.s.a.ProcessLauncherImpl] Launch process[[key='ce', ipcIndex=3, logFilenamePrefix=ce]] from [C:\Users\JaspalBatra\Desktop\Deskto
p - BRET\sonarqube-7.9\sonarqube-7.9]: C:\Program Files\Java\jdk-11.0.3\bin\java -Djava.awt.headless=true -Dfile.encoding=UTF-8 -Djava.io.tmpdir=C:\Users\JaspalBatra\Deskto
p\Desktop - BRET\sonarqube-7.9\sonarqube-7.9\temp --add-opens=java.base/java.util=ALL-UNNAMED -Xmx512m -Xms128m -XX:+HeapDumpOnOutOfMemoryError -Dhttp.nonProxyHosts=localho
st|127.*|[::1] -cp ./lib/common/*;C:\Users\JaspalBatra\Desktop\Desktop - BRET\sonarqube-7.9\sonarqube-7.9\lib\jdbc\h2\h2-1.3.176.jar org.sonar.ce.app.CeServer C:\Users\Jasp
alBatra\Desktop\Desktop - BRET\sonarqube-7.9\sonarqube-7.9\temp\sq-process17538708508104747553properties
jvm 1    | 2019.07.12 23:46:14 INFO  app[][o.s.a.SchedulerImpl] Process[ce] is up
jvm 1    | 2019.07.12 23:46:14 INFO  app[][o.s.a.SchedulerImpl] SonarQube is up
```

3. Once the sonarqube server is successfully up, go to http://localhost:9000/about and check the sonarqube server.

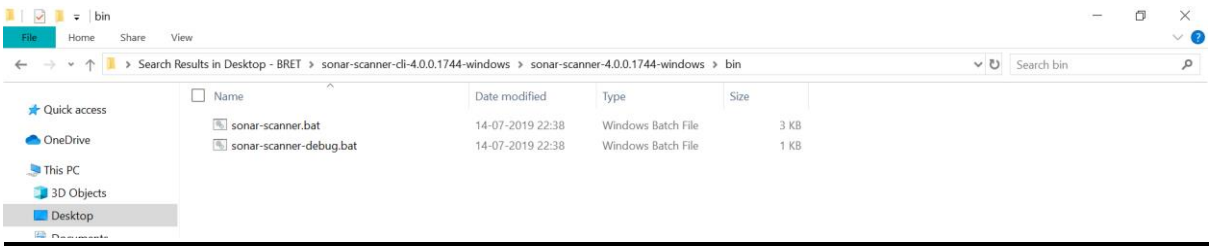
4. Without running Sonar Scanner, initially it will show 0 Projects Analyzed instead of 1 in the below picture. Also, we are done with sonarqube server setup.



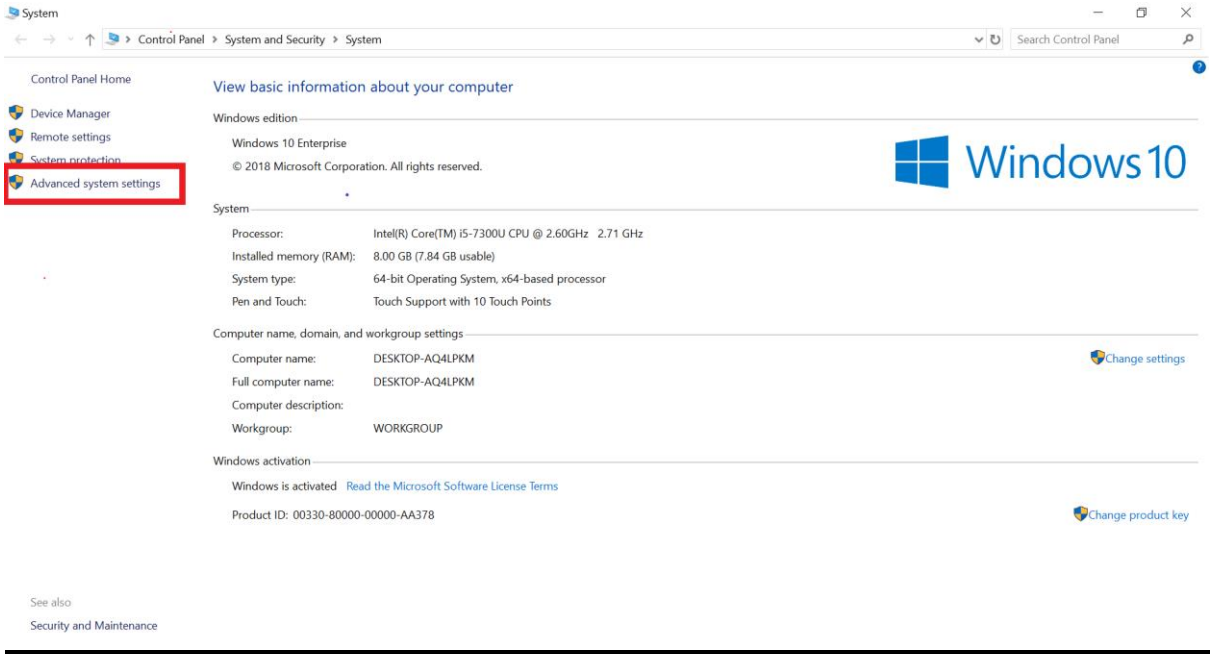
Setting up Sonar scanner

Now we will proceed with setting up the sonar scanner which will analyse the specified Java code.

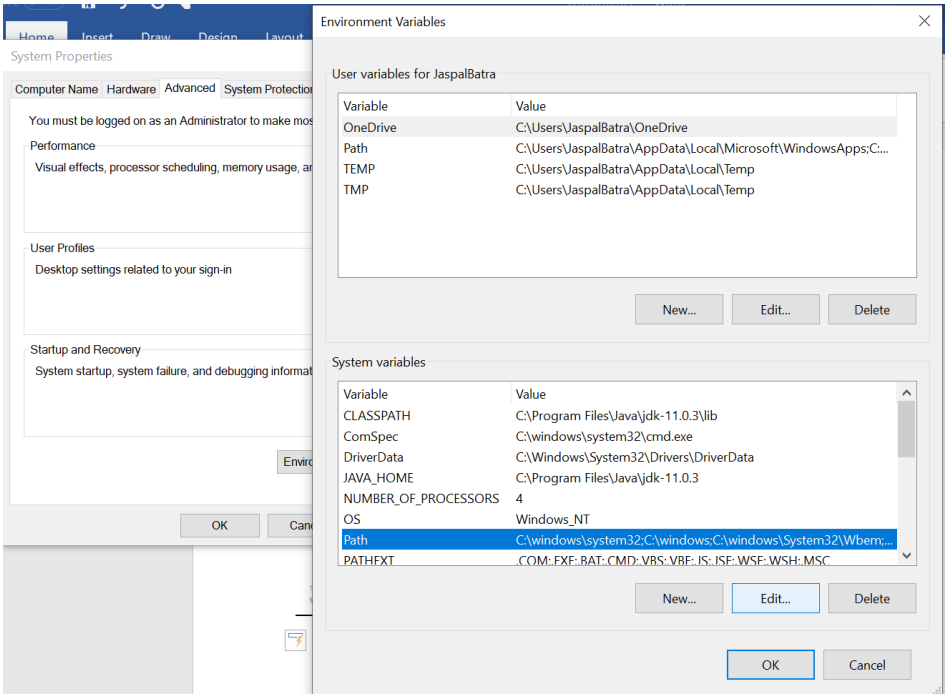
1. We will now be setting the environment variable for sonar scanner, for that go to <Installed directory>\sonar-scanner-cli-4.0.0.1744-windows\sonar-scanner-4.0.0.1744-windows\bin and copy the path.



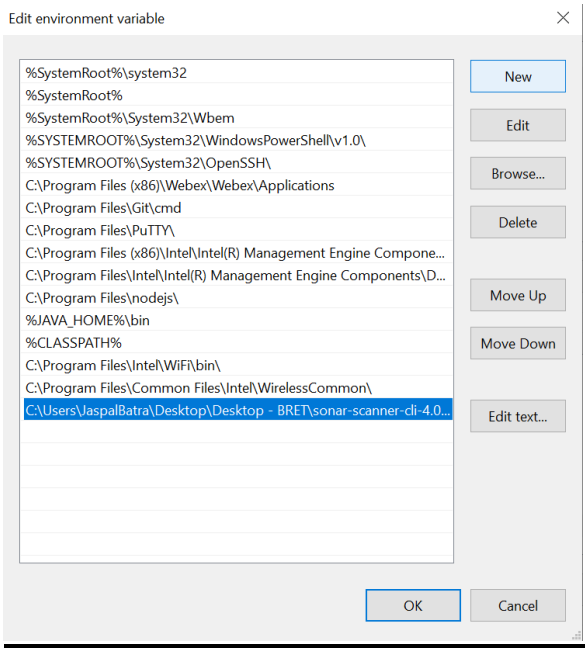
2. Go to system properties and select Advanced system settings.



3. Select the Environment variables. Now edit the Path under system variables by selecting the Path and clicking on Edit.



4. Click on “New” and paste the recently copied path, “<Installed directory>\sonar-scanner-cli-4.0.0.1744-windows\sonar-scanner-4.0.0.1744-windows\bin”.

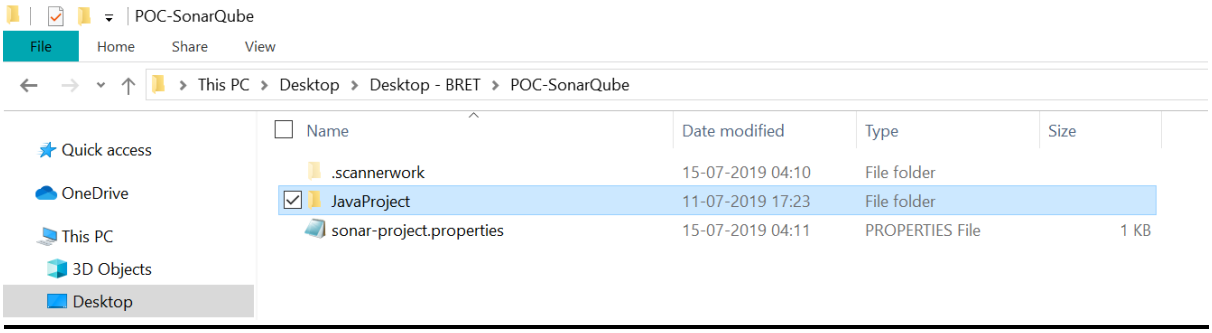


5. The setup for Sonar Scanner is done now.

Setting up Java Project

1. We will now setup up our sonar scanner for a particular project by creating sonar-project.properties file in the Project directory. This setup is project specific and below steps are just meant for demonstration on how to setting up configuration file for POC- SonarQube.

2. In the project directory, JavaProject, we have to create the sonar-project.properties file. It is already provided for demonstration purposes.



3. Here, we need to make sure that this sonar-project.properties file should lie in the root directory only.

4. For understanding the properties defined in the sonar-project.properties file, please refer to the comments along with the properties.

sonar-project.properties - Notepad

File Edit Format View Help

```
# sonar.projectKey - must be unique in a given SonarQube instance. The project's unique key. Allowed characters are: letters, numbers, -, _, . and :, with
at least one non-digit.
sonar.projectKey=JavaProject

# sonar.projectName - defaults to project key. Name of the project that will be displayed on the web interface.
sonar.projectName=JavaProject

# sonar.projectVersion - defaults to 'not provided'
sonar.projectVersion=1.0

# sonar.sources - comma-separated paths to directories containing main source files.The path is either relative to the sonar-project.properties file or is
the absolute path like below. Make sure "/" lash is used instead of "\" lash, to specify the directory.
sonar.sources=C:/Users/JaspalBatra/Desktop/Desktop - BRET/POC-SonarQube/JavaProject/src/com/javaproject/main
```

5. Before Analyzing the JavaCode, go to the properties file and change the sonar.sources to the <Installed Directory>/POC-SonarQube/JavaProject/src/com/javaproject/main and save it.

6. Now to run the sonar-scanner command, go to the root folder where sonar-project.properties file is placed. Open the command prompt in the current directory and type “sonar-scanner”.

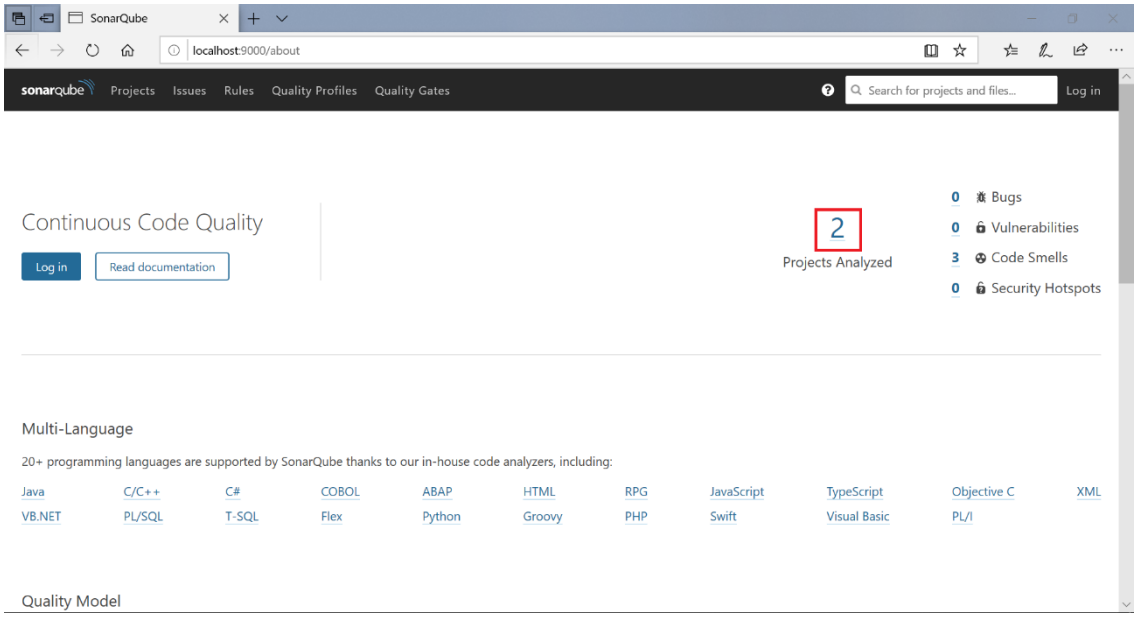
C:\Windows\System32\cmd.exe

```
C:\Users\JaspalBatra\Desktop\Desktop - BRET\POC-SonarQube>sonar-scanner
```

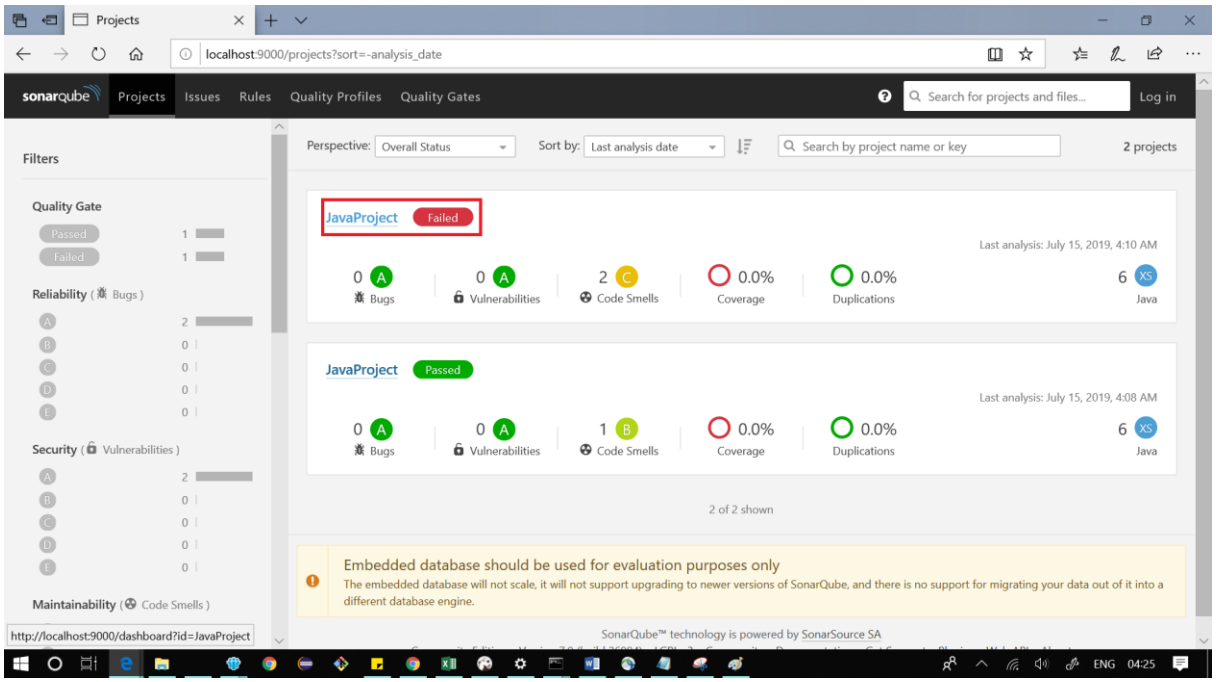
7. Once Execution Success comes up, refresh the browser http://localhost:9000/about

C:\Windows\System32\cmd.exe

```
INFO: Load project repositories (done) | time=41ms
INFO: 1/1 source files have been analyzed
INFO: Java Main Files AST scan (done) | time=982ms
INFO: Java Test Files AST scan
INFO: 0 source files to be analyzed
INFO: Java Test Files AST scan (done) | time=0ms
INFO: 0/0 source files have been analyzed
INFO: Sensor JavaSquidSensor [java] (done) | time=1818ms
INFO: Sensor JaCoCo XML Report Importer [jacoco]
INFO: Sensor JaCoCo XML Report Importer [jacoco] (done) | time=23ms
INFO: Sensor SurefireSensor [java]
INFO: parsing [C:\Users\JaspalBatra\Desktop\Desktop - BRET\POC-SonarQube\target\surefire-reports]
INFO: Sensor SurefireSensor [java] (done) | time=61ms
INFO: Sensor JaCoCoSensor [java]
INFO: Sensor JaCoCoSensor [java] (done) | time=20ms
INFO: Sensor JavaXmlSensor [java]
INFO: Sensor JavaXmlSensor [java] (done) | time=21ms
INFO: Sensor HTML [web]
INFO: Sensor HTML [web] (done) | time=73ms
INFO: ------------ Run sensors on project
INFO: Sensor Zero Coverage Sensor
INFO: Sensor Zero Coverage Sensor (done) | time=19ms
INFO: Sensor Java CPD Block Indexer
INFO: Sensor Java CPD Block Indexer (done) | time=47ms
INFO: No SCM system was detected. You can use the 'sonar.scm.provider' property to explicitly specify it.
INFO: 1 file had no CPD blocks
INFO: Calculating CPD for 0 files
INFO: CPD calculation finished
INFO: Analysis report generated in 229ms, dir size=73 KB
INFO: Analysis report compressed in 62ms, zip size=11 KB
INFO: Analysis report uploaded in 101ms
INFO: ANALYSIS SUCCESSFUL, you can browse http://localhost:9000/dashboard?id=JavaProject
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:9000/api/ce/task?id=AWvypLZV-0ldotl47LFu
INFO: Analysis total time: 8.699 s
INFO: ------------------------------------------------------------------------
INFO: EXECUTION SUCCESS
INFO: ------------------------------------------------------------------------
INFO: Total time: 10.672s
INFO: Final Memory: 7M/27M
INFO: ------------------------------------------------------------------------
```



8. Now click on Projects Analyzed, on the next page look for the project you want to see the code review for. This code review will tell about the Bugs, Vulnerabilities, estimated time to resolve the problems, Code Coverage and Duplicate codes. Also, it will compare the last and the new version of the code.



9. Whenever there are some modifications in the Java code and if you wish to analyse the code again, go to the root directory of the project and re-run the sonar-scanner command. Do not forget to refresh the browser page.

Further References

SonarScanner: https://docs.sonarqube.org/latest/analysis/scan/sonarscanner/?src=sidebar