ESCUELA SUPERIOR POLITÉCNICA DEL LITORAL

Facultad de Ingeniería en Electricidad y Computación

Ingeniería en software 2

Paralelo #3

Taller#2: Continous Integration

Grupo Nº: 4

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Fecha de entrega:

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Término Académico:

2021-1S

Introduction

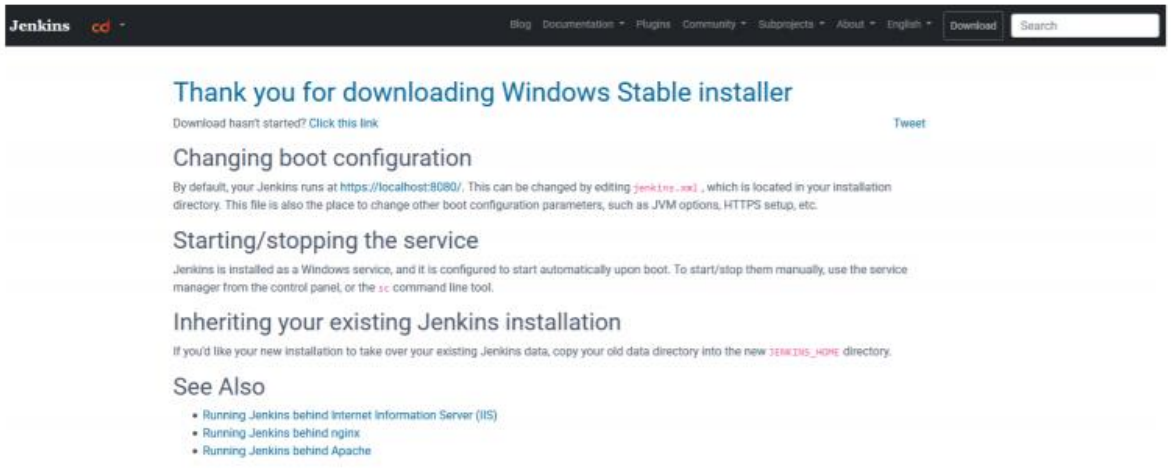
Continuous integration consists of automating the integration of code changes from multiple contributors into a single software project. Each integration can then be verified through automated build and automated testing [1]. It is important and almost necessary to reduces risk, improve better communication, higher product quality and reduced waiting time. Also, we can get benefits liked increased visibility, quality teams and risk migration. [2]

It is recommended to apply for projects that required the intervention of a group and need to work with constant communication about changes that are made, the bad thing for large projects is that you must scale for it using additional serves or environment and maybe will be take more minutes to the development process. So, in better case can use it for small and medium projects where it is works well.

The result of not doing the continuous integration of a project would be expensive because can originated problems like: more difficult to find and fix problems, deployment pipelines take a lot of time to complete, not having a tool to verify if programmer's code is valid, In addition, it will cost more for developers to learn about what has been implemented or generated, causing a huge learning curve.

Development

1. Install Jenkins



Thank you for downloading Windows Stable installer

Download hasn't started? Click this link

Changing boot configuration

By default, your Jenkins runs at https://localhost:8080/. This can be changed by editing `jenkins.xml`, which is located in your installation directory. This file is also the place to change other boot configuration parameters, such as JVM options, HTTPS setup, etc.

Starting/stopping the service

Jenkins is installed as a Windows service, and it is configured to start automatically upon boot. To start/stop them manually, use the service manager from the control panel, or the `sc` command line tool.

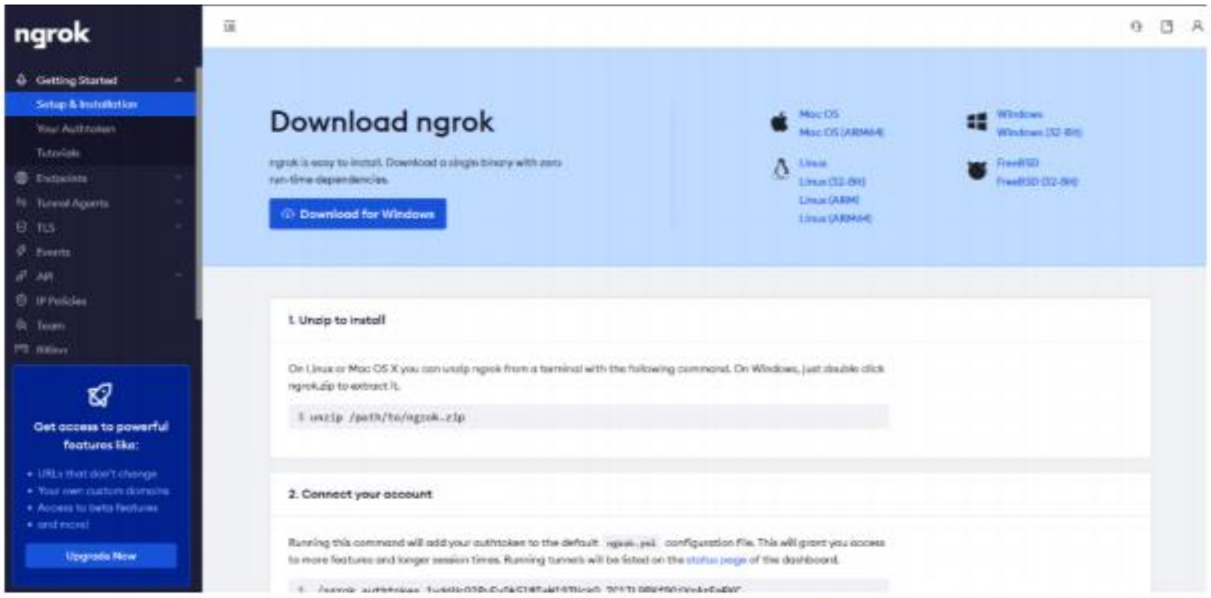
Inheriting your existing Jenkins installation

If you'd like your new installation to take over your existing Jenkins data, copy your old data directory into the new `JENKINS_HOME` directory.

See Also

- Running Jenkins behind Internet Information Server (IIS)
- Running Jenkins behind nginx
- Running Jenkins behind Apache

2. Install ngrok



Download ngrok

ngrok is easy to install. Download a single binary with zero run-time dependencies.

1. Unzip to install

On Linux or Mac OS X you can unzip ngrok from a terminal with the following command. On Windows, just double click ngrok.zip to extract it.

```
$ unzip /path/to/ngrok.zip
```

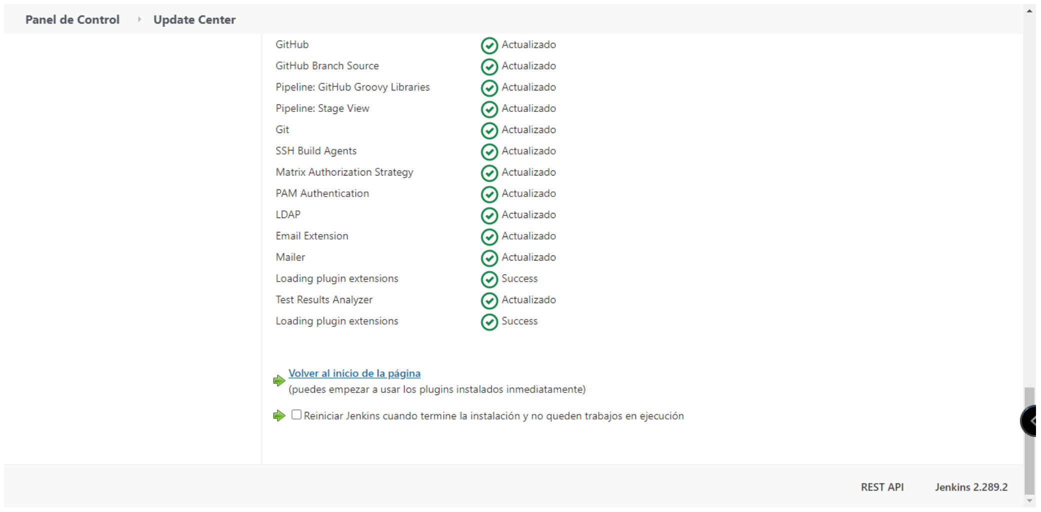
2. Connect your account

Running this command will add your authtoken to the default `ngrok.yml` configuration file. This will grant you access to more features and longer session times. Running tunnels will be listed on the status page of the dashboard.

```
$ ./ngrok authtoken [illegible]
```

Url of the repository: https://github.com/santiagopalma/continuous-integration.git

1- Installation of test result analyzer.

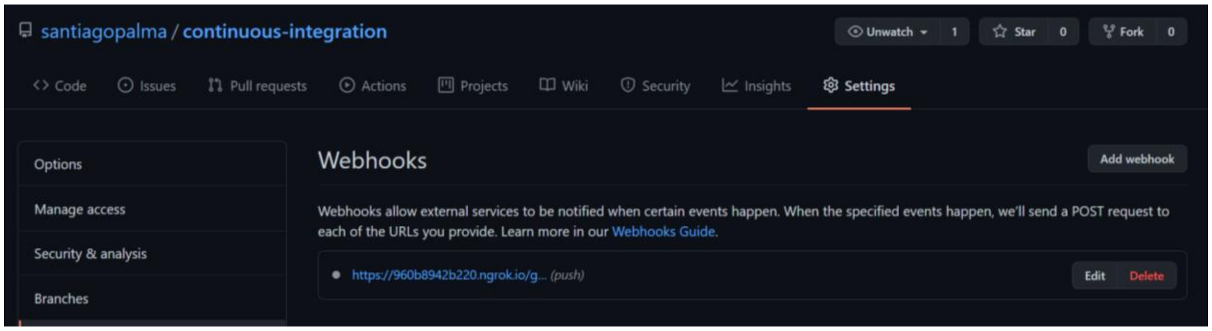


GitHub	✓ Actualizado
GitHub Branch Source	✓ Actualizado
Pipeline: GitHub Groovy Libraries	✓ Actualizado
Pipeline: Stage View	✓ Actualizado
Git	✓ Actualizado
SSH Build Agents	✓ Actualizado
Matrix Authorization Strategy	✓ Actualizado
PAM Authentication	✓ Actualizado
LDAP	✓ Actualizado
Email Extension	✓ Actualizado
Mailer	✓ Actualizado
Loading plugin extensions	✓ Success
Test Results Analyzer	✓ Actualizado
Loading plugin extensions	✓ Success

Volver al inicio de la página
(puedes empezar a usar los plugins instalados inmediatamente)

☐ Reiniciar Jenkins cuando termine la instalación y no queden trabajos en ejecución

2- Create a GitHub repository and setup the Jenkins connection.

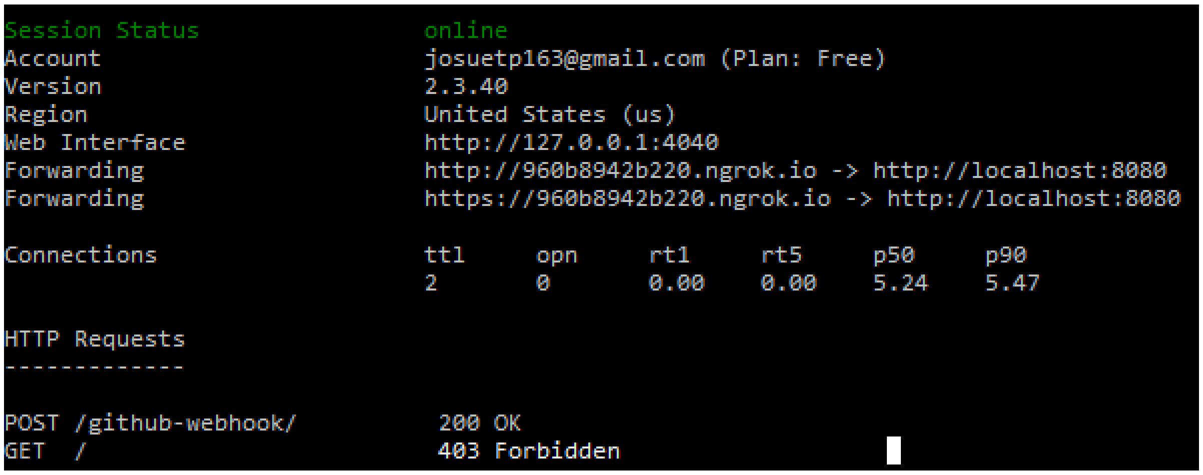


Webhooks

Webhooks allow external services to be notified when certain events happen. When the specified events happen, we'll send a POST request to each of the URLs you provide. Learn more in our Webhooks Guide.

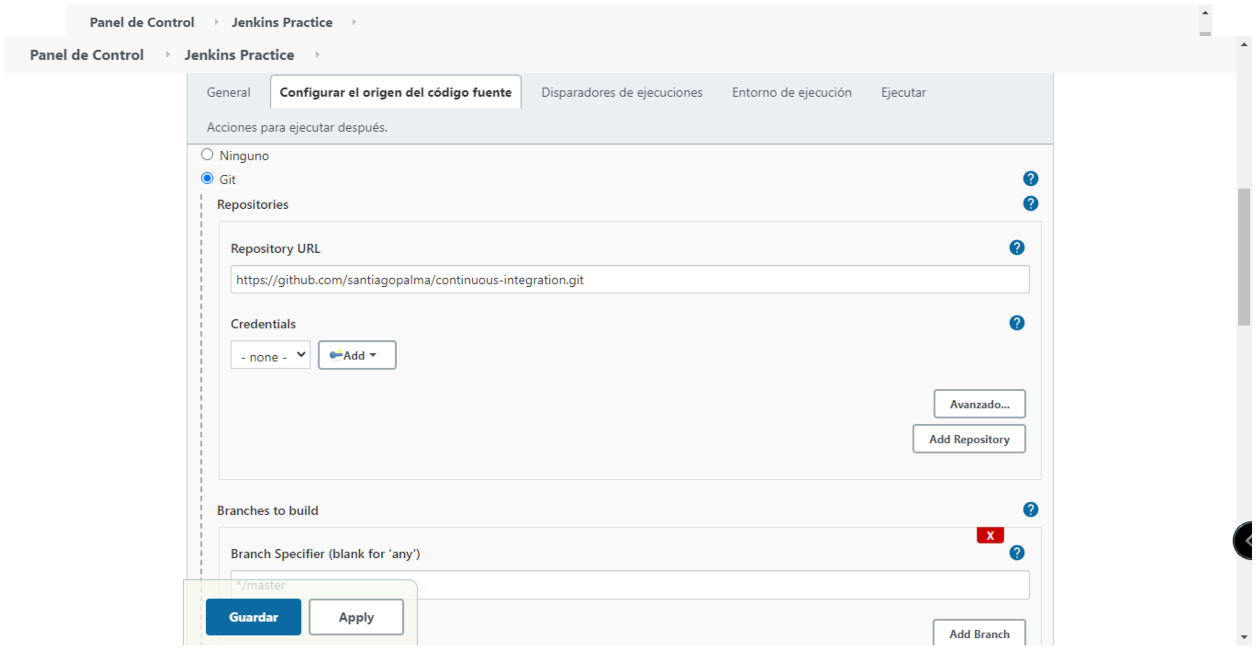
https://960b8942b220.ngrok.io/g... (push)

3- Ngrok server online and connected to github.



```
Session Status                online
Account                       josuetp163@gmail.com (Plan: Free)
Version                       2.3.40
Region                        United States (us)
Web Interface                 http://127.0.0.1:4040
Forwarding                    http://960b8942b220.ngrok.io -> http://localhost:8080
Forwarding                    https://960b8942b220.ngrok.io -> http://localhost:8080

Connections                   ttl     opn     rt1     rt5     p50     p90
                              2       0       0.00    0.00    5.24    5.47

HTTP Requests
-------------

POST /github-webhook/          200 OK
GET  /                         403 Forbidden
```

4- Configuration of Jenkins


Panel de Control › Jenkins Practice ›

General | Configurar el origen del código fuente | Disparadores de ejecuciones | Entorno de ejecución | Ejecutar

Acciones para ejecutar después.

Ninguno
[✓ Git]

Repositories

Repository URL: https://github.com/santiagopalma/continuous-integration.git

Credentials: - none - | Add

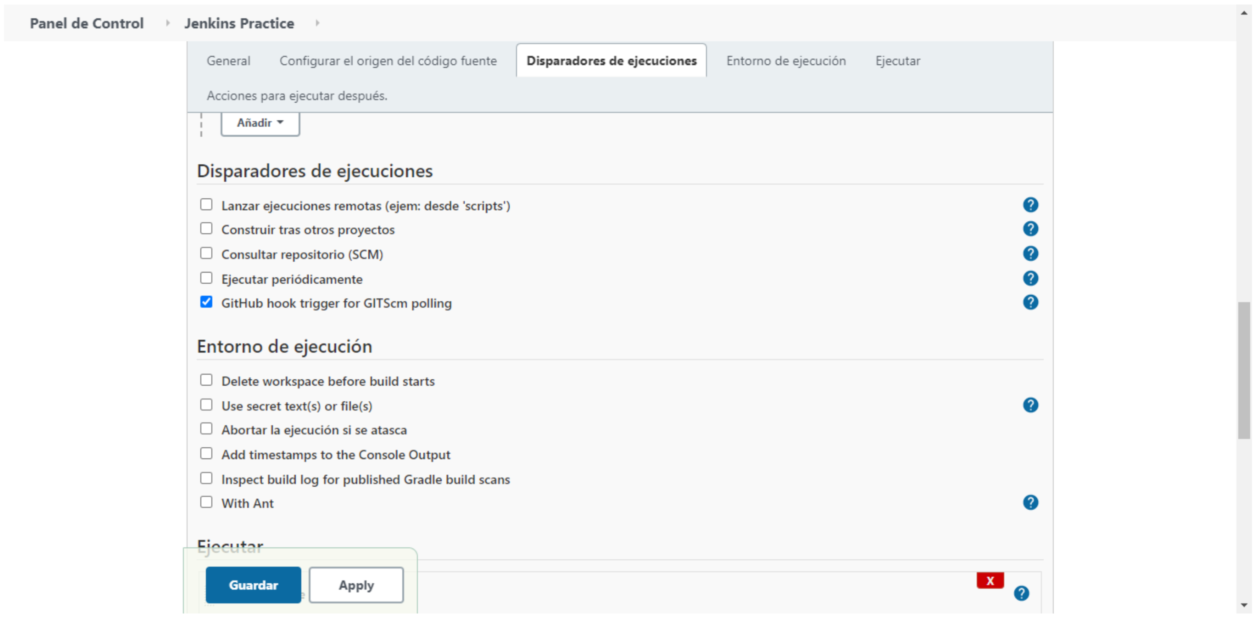
Avanzado... | Add Repository

Branches to build

Branch Specifier (blank for 'any'): */master

Add Branch

Guardar | Apply


Panel de Control › Jenkins Practice ›

General | Configurar el origen del código fuente | Disparadores de ejecuciones | Entorno de ejecución | Ejecutar

Acciones para ejecutar después.

Añadir

Disparadores de ejecuciones

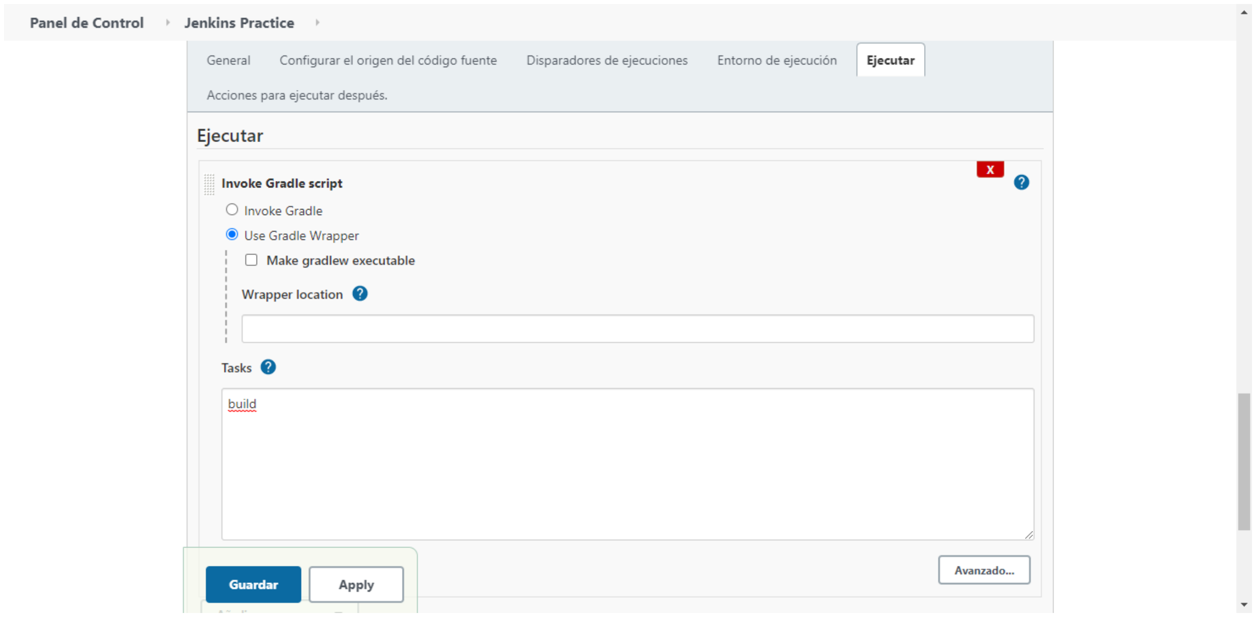
- [ ] Lanzar ejecuciones remotas (ejem: desde 'scripts')
- [ ] Construir tras otros proyectos
- [ ] Consultar repositorio (SCM)
- [ ] Ejecutar periódicamente
- [✓] GitHub hook trigger for GITScm polling

Entorno de ejecución

- [ ] Delete workspace before build starts
- [ ] Use secret text(s) or file(s)
- [ ] Abortar la ejecución si se atasca
- [ ] Add timestamps to the Console Output
- [ ] Inspect build log for published Gradle build scans
- [ ] With Ant

Ejecutar

Guardar | Apply



Panel de Control › Jenkins Practice ›

General | Configurar el origen del código fuente | Disparadores de ejecuciones | Entorno de ejecución | **Ejecutar** | Acciones para ejecutar después.

Ejecutar

Invoke Gradle script

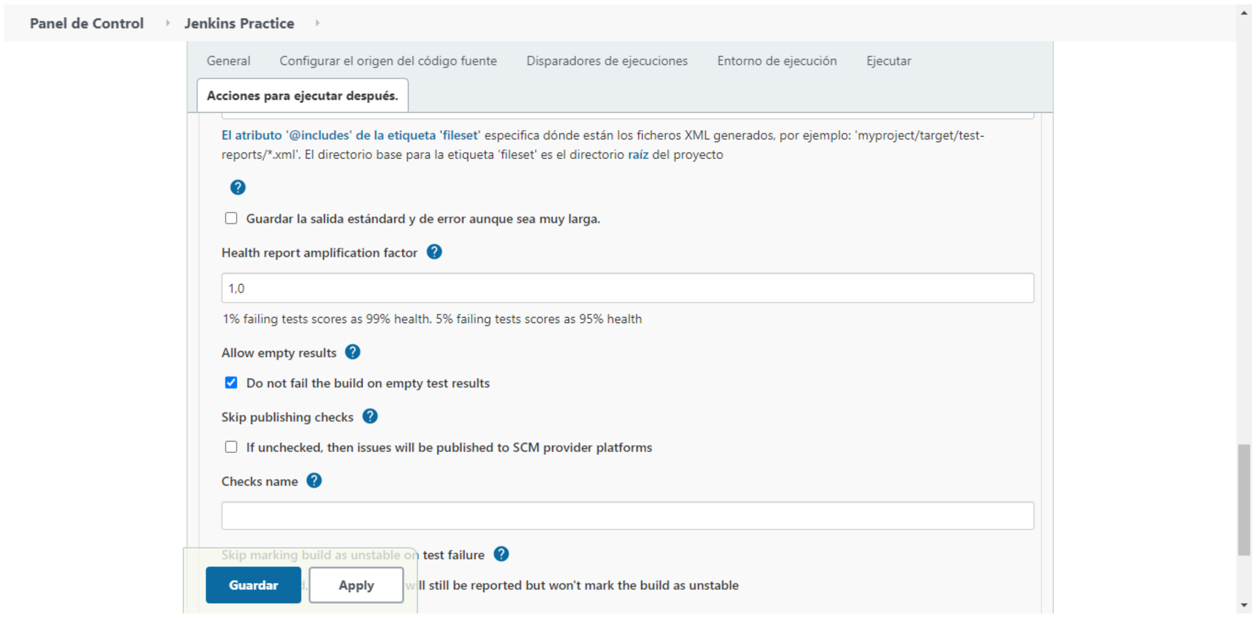
○ Invoke Gradle
● Use Gradle Wrapper
☐ Make gradlew executable

Wrapper location

Tasks

```
build
```

Guardar | Apply | Avanzado...



Panel de Control › Jenkins Practice ›

General | Configurar el origen del código fuente | Disparadores de ejecuciones | Entorno de ejecución | Ejecutar | **Acciones para ejecutar después.**

El atributo '@includes' de la etiqueta 'fileset' especifica dónde están los ficheros XML generados, por ejemplo: 'myproject/target/test-reports/*.xml'. El directorio base para la etiqueta 'fileset' es el directorio raíz del proyecto

☐ Guardar la salida estándard y de error aunque sea muy larga.

Health report amplification factor

1,0

1% failing tests scores as 99% health. 5% failing tests scores as 95% health

Allow empty results

☑ Do not fail the build on empty test results

Skip publishing checks

☐ If unchecked, then issues will be published to SCM provider platforms

Checks name

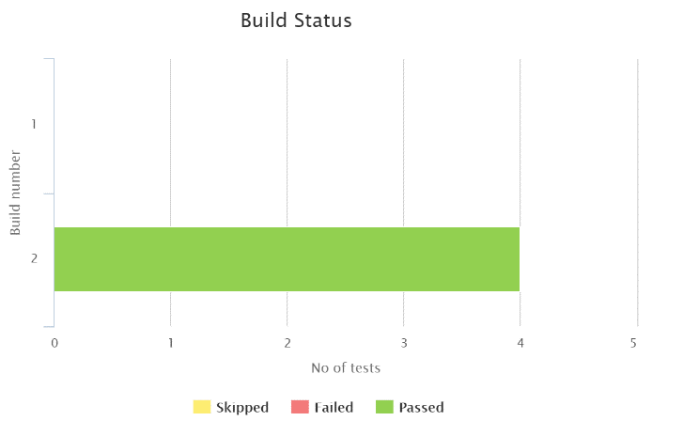
Skip marking build as unstable on test failure

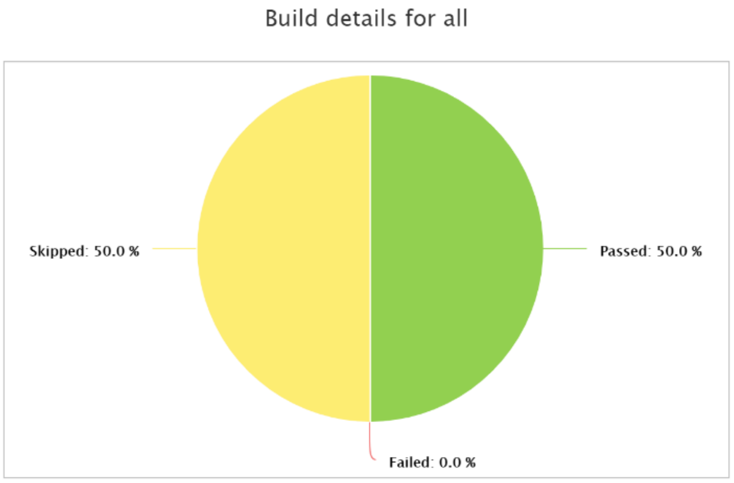
ll still be reported but won't mark the build as unstable

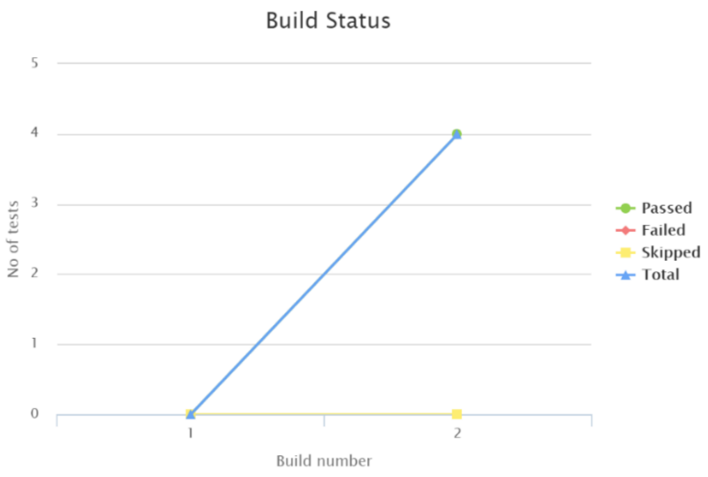
Guardar | Apply

5- First Push to the repository and graphs.

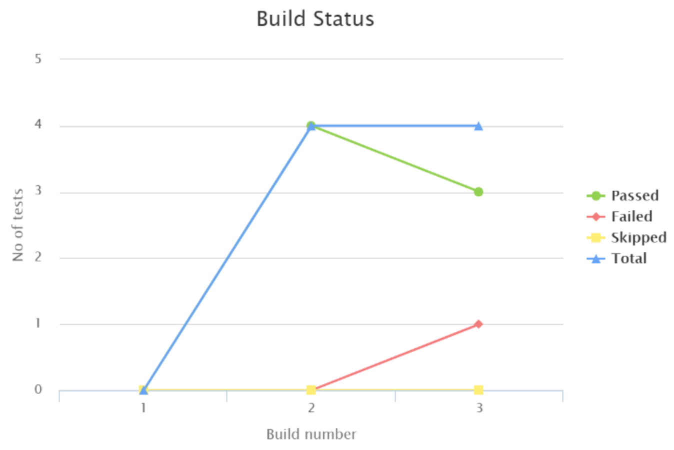
6- As we can see all the test passed correctly but one of them isn't correct until we fixed.

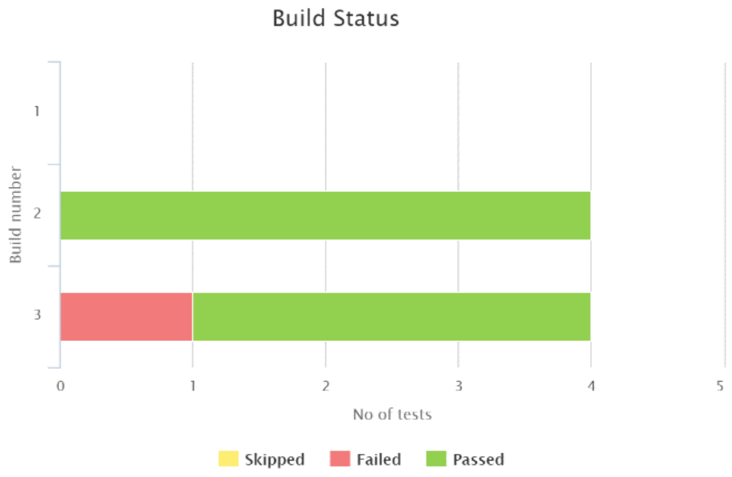


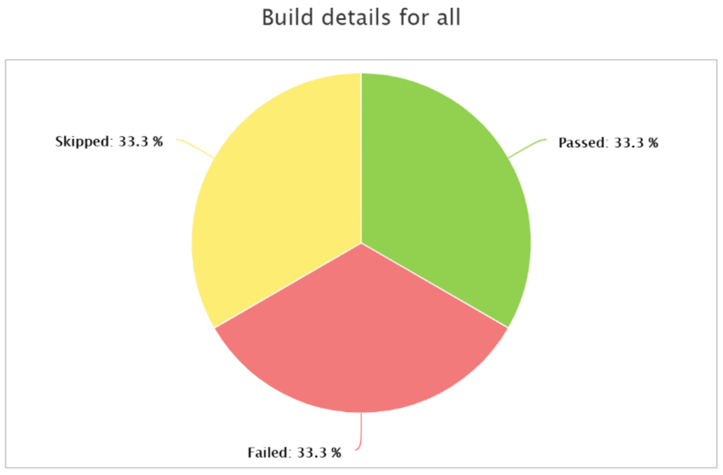




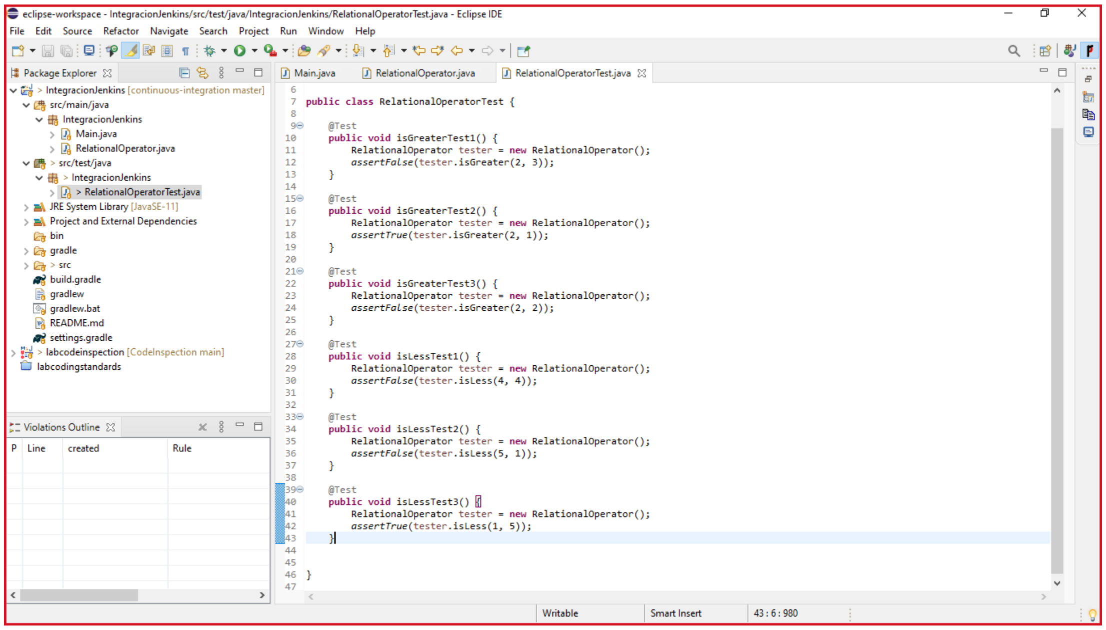
7- After change the operators in isLess method these are the results. One of them caused an error in the test. Because of the operators return false instead of true.





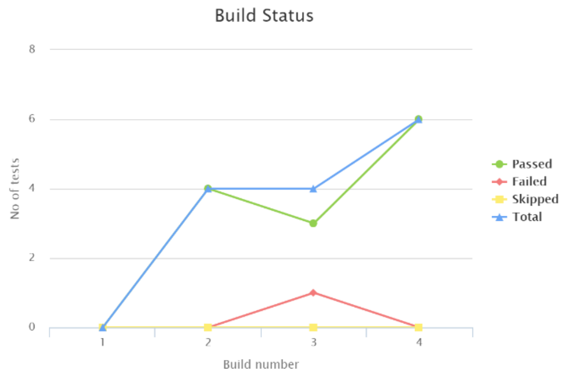


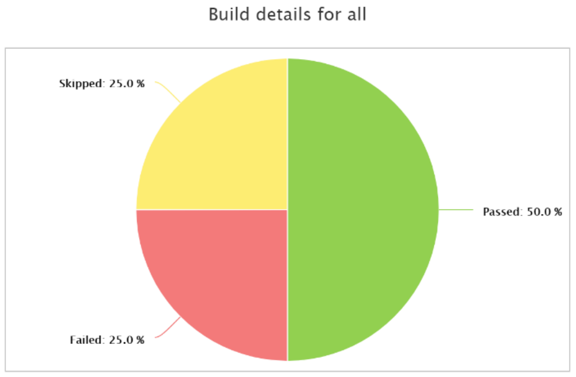
8. Then we Add the missing test cases of each method. On the first method que add when the two inputs are the same values, this must be false. On the second method. We add the case when the first input is lower than the second one returning true.

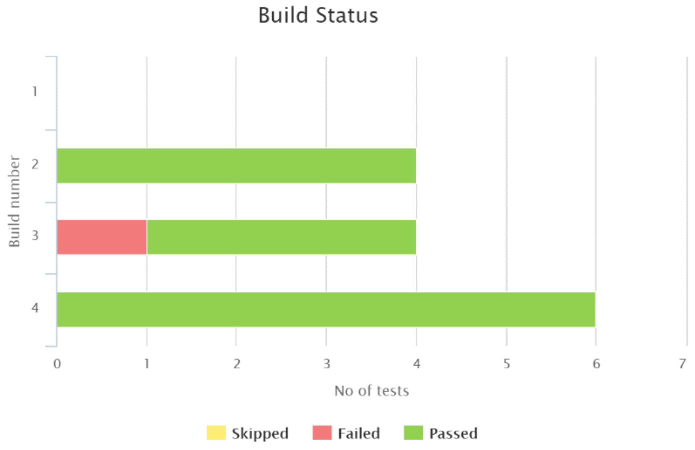

eclipse-workspace - IntegracionJenkins/src/test/java/IntegracionJenkins/RelationalOperatorTest.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Package Explorer
IntegracionJenkins [continuous-integration master]
src/main/java
IntegracionJenkins
Main.java
RelationalOperator.java
src/test/java
IntegracionJenkins
RelationalOperatorTest.java
JRE System Library [JavaSE-11]
Project and External Dependencies
bin
gradle
src
build.gradle
gradlew
gradlew.bat
README.md
settings.gradle
labcodeinspection [CodeInspection main]
labcodingstandards
Violations Outline
P
Line
created
Rule
Main.java
RelationalOperator.java
RelationalOperatorTest.java
Writable
Smart Insert
43 : 6 : 980

```java

public class RelationalOperatorTest {

    @Test
    public void isGreaterTest1() {
        RelationalOperator tester = new RelationalOperator();
        assertFalse(tester.isGreater(2, 3));
    }

    @Test
    public void isGreaterTest2() {
        RelationalOperator tester = new RelationalOperator();
        assertTrue(tester.isGreater(2, 1));
    }

    @Test
    public void isGreaterTest3() {
        RelationalOperator tester = new RelationalOperator();
        assertFalse(tester.isGreater(2, 2));
    }

    @Test
    public void isLessTest1() {
        RelationalOperator tester = new RelationalOperator();
        assertFalse(tester.isLess(4, 4));
    }

    @Test
    public void isLessTest2() {
        RelationalOperator tester = new RelationalOperator();
        assertFalse(tester.isLess(5, 1));
    }

    @Test
    public void isLessTest3() {
        RelationalOperator tester = new RelationalOperator();
        assertTrue(tester.isLess(1, 5));
    }


}

```

Final graphs after add the missing test cases:







Conclusions

1. Continuous integration is a very helpful practice when detecting faults and conducting tests.
2. Jenkins helped us in the execution of tests, in an orderly way and with graphics that showed the details of all the tests carried out.

Recommendations

1. Jenkins works with "master" branch you should rename the "main" branch that GitHub gives as default.
2. During the workshop, when you installed Jenkins, It opened the page on port 8080 but it was not available as a recommendation, you must see if MySQL.exe is active in the task manager and end that task like this, the port will run as it should.

References

[1] M. REHKOPF, "Atlassian CI/CD," Atlassian CO., 10 June 2021. [Online]. Available: https://www.atlassian.com/es/continuous-delivery/continuous-integration. [Accessed 22 July 2021].

[2] I. Gaba, "Simple learn," 15 july 2021. [Online]. Available: https://www.simplilearn.com/tutorials/devops-tutorial/continuous-integration. [Accessed 22 july 2021].

[3] github. [Online]. Available: https://github.com/leortyz/ContinuousIntegration.