

**FACULTY OF ELECTRICAL AND COMPUTER ENGINEERING**  
**SOFTWARE ENGINEERING II**  
**CONTINUOUS INTEGRATION WORKSHOP - I TERM 2021**

**LAB REPORT**

**GROUP#3:**

- Cajas Correa Rogwi Cajas
- Vivas Avilez Jonathan Andrés
- Vera García Pedro Gabriel

**1. INTRODUCTION**

In the following practice we work in what is called Continuous Integration (CI) using tools like Jenkins to build, test and deploy software and Ngrok to expose a local web server to the Internet.

Continuous Integration is the practice of automate the integration of code changes of various contributors in a central repository where they can run compilations and tests. This practice is important to verify if the new code achieves code quality standards.

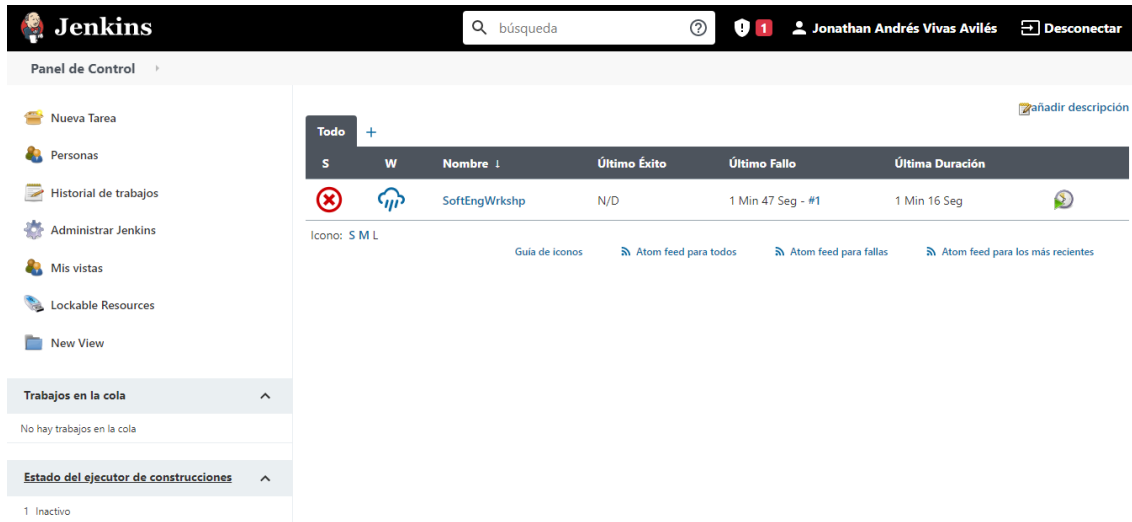
The importance of Continuous Integration is notorious when you can see the problems that appear when it's not used. Without CI the developers have to coordinate and communicate manually every time a code change is made. This problem is visible not only in development team but others departments of the organization. The synchronization task become complex and confuse, the code publications become slower and with more failures.

The problems of not using CI increase when the team and projects size is bigger. And that's why CI is recommended to be used in very large projects when the final product is complex and robust.

## 2. DEVELOPMENT

Repository Link: <https://github.com/jvivas-rock/SoftIng.git>

### Step 1: Jenkins Installation



The screenshot shows the Jenkins web interface. At the top, there's a search bar and user information for Jonathan Andrés Vivas Avilés. The left sidebar contains navigation links like 'Nueva Tarea', 'Personas', 'Historial de trabajos', 'Administrar Jenkins', 'Mis vistas', 'Lockable Resources', and 'New View'. The main area displays a table of jobs. The first job is 'SoftEngWrkshp' with a status of 'N/D' and a duration of '1 Min 47 Seg - #1'. Below the table, there are links for 'Guía de iconos' and 'Atom feed' for various job states.

| S | W | Nombre        | Último Éxito | Último Fallo      | Última Duración |
|---|---|---------------|--------------|-------------------|-----------------|
| ✖ | 🔧 | SoftEngWrkshp | N/D          | 1 Min 47 Seg - #1 | 1 Min 16 Seg    |

### Step 2: Ngrok Installation

```
ngrok by @inconshreveable

Session Status      online
Account             jvivas-rock (Plan: Free)
Version             2.3.40
Region              United States (us)
Web Interface       http://127.0.0.1:4040
Forwarding           http://ca1c5c3d3c6e.ngrok.io -> http://localhost:8080
Forwarding           https://ca1c5c3d3c6e.ngrok.io -> http://localhost:8080

Connections         ttl    opn    rt1    rt5    p50    p90
                   0      0      0.00   0.00   0.00   0.00
```

### Step 3: Repository with the Webhook

Payload URL \*

<http://ca1c5c3d3c6e.ngrok.io/github-webhook/>

Content type

application/json

### Step 4: Github-Ngrok connection

```
Forwarding           http://ca1c5c3d3c6e.ngrok.io -> http://localhost:8080
Forwarding           https://ca1c5c3d3c6e.ngrok.io -> http://localhost:8080

Connections         ttl    opn    rt1    rt5    p50    p90
                   1      0      0.01   0.00   5.08   5.08

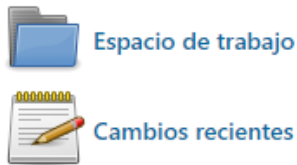
HTTP Requests
-----
POST /github-webhook/ 200 OK
```

## Step 5: "Test Results Analyzer" plugin installed

|                                     |   |       |             |
|-------------------------------------|---|-------|-------------|
| <input checked="" type="checkbox"/> | <b>Test Results Analyzer Plugin</b>   | 0.3.5 | Desinstalar |
|                                     | This plugin shows history of test execution results in a tabular or graphical format. |       |             |

## Step 6: Jenkins project created

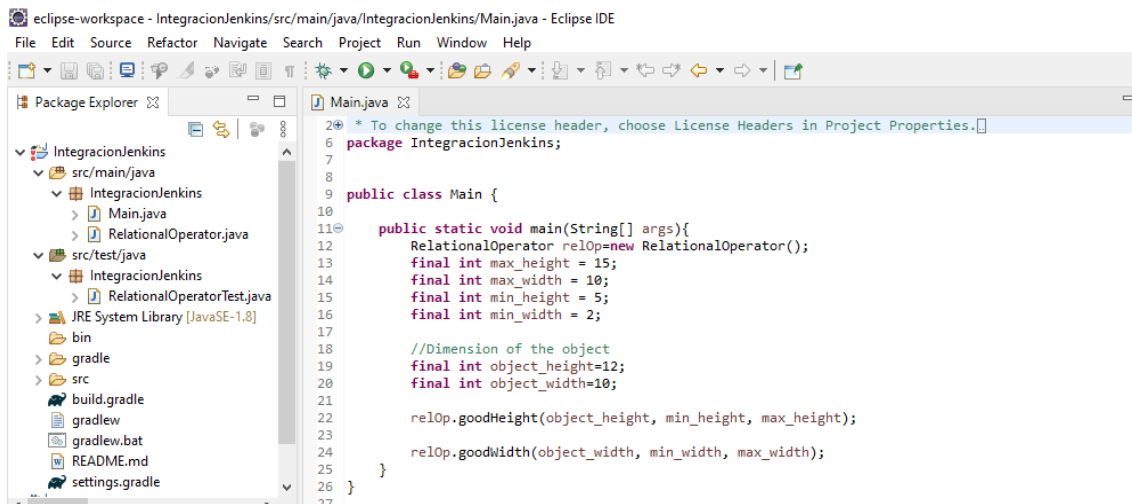
# Proyecto SoftEngWrkshp



## Enlaces permanentes

- "Última ejecución (#1) hace 9 Min 7 Seg"
- "Última ejecución fallida (#1) hace 9 Min 7 Seg"
- "Última ejecución fallida (#1) hace 9 Min 7 Seg"
- "Last completed build (#1) hace 9 Min 7 Seg"

## Step 7: Repository open in Eclipse IDE



## Step 8: Pushing the practice code to the repository

jvivas-rock / SoftIng

<> Code Issues Pull requests Actions Projects Wiki Security Insights Settings

main 1 branch 0 tags Go to file Add file Code

| jvivas-rock Repositorio |             | 5f05b91 23 minutes ago 1 commit |
|-------------------------|-------------|---------------------------------|
| .settings               | Repositorio | 23 minutes ago                  |
| bin                     | Repositorio | 23 minutes ago                  |
| gradle/wrapper          | Repositorio | 23 minutes ago                  |
| src                     | Repositorio | 23 minutes ago                  |
| .classpath              | Repositorio | 23 minutes ago                  |
| .gitignore              | Repositorio | 23 minutes ago                  |
| .project                | Repositorio | 23 minutes ago                  |
| README.md               | Repositorio | 23 minutes ago                  |

## Step 9: Jenkins executions

# Proyecto SoftEngWrkshp



Espacio de trabajo



Cambios recientes

## Enlaces permanentes

- "Última ejecución (#1) hace 17 Min"
- "Última ejecución fallida (#1) hace 17 Min"
- "Última ejecución fallida (#1) hace 17 Min"
- "Last completed build (#1) hace 17 Min"

Panel de Control ▶ SoftEngWrkshp ▼



Configurar



Borrar Proyecto



GitHub Hook Log



GitHub



Rename



Test Results Analyzer



Historia de tareas

Tendencia ^



✖ #1

23-jul-2021 12:39

## Step 10: Test Result Analyzer run results saved in CSV format

Options

Download Test (CSV)

Search:

| Chart | Package/Class/Testmethod | Passed | Transitions | 1 |
|-------|--------------------------|--------|-------------|---|
|-------|--------------------------|--------|-------------|---|

## Top 10 Most Broken Tests

There are no failing tests


No build data retrieved. You may need to select a Module.

Herramienta Recortes


## Step 11: Changes on the function


```
public boolean isLess(int num1, int num2) {
    return num1 < num2;
}
```

## Step 12: Code changes pushed


| Changes <span style="background-color: #d9eaf7;">1</span> |  | History    |    | src/main/java/IntegracionJenkins/RelationalOperator.java  |  |
|---|--|------------|----|---|--|
| <input checked="" type="checkbox"/>                       | 1 changed file   |            |    |   |  |
| <input checked="" type="checkbox"/>                       | src\main\...\RelationalOperator.java  |            |    |   |  |
|   |  | ↑<br>..... |    | @@ -19,7 +19,7 @@ public class RelationalOperator {       |  |
|   |  | 19         | 19 | * @return true if num1 is less than num2, false otherwise |  |
|   |  | 20         | 20 | */  |  |
|   |  | 21         | 21 | public boolean isLess(int num1, int num2) {               |  |
|   |  | 22         | 22 | - return num1 <= num2;                                    |  |
|   |  |            | +  | return num1 < num2;                                       |  |
|   |  | 23         | 23 | }   |  |
|   |  | 24         | 24 |   |  |
|   |  | 25         | 25 |   |  |
|   |  | ↓<br>..... |    | @@ @@   |  |

 Cambio en RelationalOperator|

 jvivas-rock Cambio en RelationalOperator

85a6a5a 1 minute ago

 2 commits

### 3. CONCLUSION

- Continuous Integration is very useful with large projects when the development process is large and complex so the code changes have to be carefully tested. CI automate this process helping the development team to run tests and compilations of the code.

## 4. RECOMENDATIONS

- In the Github repository verify that you are workin on main branch to avoid problems because jenkins works on default with the main branch not the master one.
- Be Carefully with the port you use to run ngrok, it should be the same port that you use for the jenkins server. In this Case is recommended to use the 8080 port.

## 5. REFERENCES

[1] PubNub, <<What is Ngrok?>>. [En línea]. Available:

<https://www.pubnub.com/learn/glossary/what-is-ngrok/#:~:text=ngrok%20is%20a%20cross%2Dplatform,the%20local%20machine%20is%20needed.>

[2] Atlassian, <<What is Continuous Integration?>>. [En Línea]. Available:

<https://www.atlassian.com/es/continuous-delivery/continuous-integration>