Trabajo Práctico 7 - Servidor de Build (de integración continua).

1- Poniendo en funcionamiento Jenkins

```
Dockerfile.jenkins
  Open ~
                                           Save
                                                   \equiv
            F
                                                             ×
                  ~/Documents/Ingenieria de ...
 1 FROM jenkins/jenkins:lts
 3 USER root
 5 # Instala dependencias necesarias
 6 RUN apt-get update && apt-get install -y \
 7
       apt-transport-https \
       software-properties-common \
 9
       wget
10
11 # Agrega el repositorio de Microsoft y actualiza
12 RUN wget -q https://packages.microsoft.com/config/ubuntu/
  20.04/packages-microsoft-prod.deb -O packages-microsoft-
  prod.deb && \
       dpkg -i packages-microsoft-prod.deb && \
       apt-get update
14
15
16 # Instala el SDK de .NET Core
17 RUN apt-get install -y dotnet-sdk-7.0
19 USER jenkins
                Plain Text \vee Tab Width: 8 \vee
Loading file "/...
                                              Ln 19, Col 13
                                                                 INS
```

```
t<mark>incho@IdeaPad-5-14ALCO5:~/Documents/Ingenieria de Software III/TP7</mark>S docker build -t jenkins-with-dotnetc
ore -f Dockerfile.jenkins
+] Building 76.3s (9/9) FINISHED
                                                                                                           docker:desktop-linux
 => [1/4] FROM docker.io/jenkins/jenkins:lts@sha256:b705323eaf70a7da4c1eed8b816f33dff2d5c8c367117
=> => resolve docker.io/jenkins/jenkins:lts@sha256:b705323eaf70a7da4c1eed8b816f33dff2d5c8c3671170
 => => extracting sha256:012c0b3e998c1a0c0bedcf712eaaafb188580529dd026a04aa1ce13fdb39e42b
 => => extracting sha256:5e0093fb8d5f36e86b93870a544e50bf21f3968e872f91ad0a2bc9abdc672472
 => => extracting sha256:3a7be85a26d2887982180264f604ffb596884aa270ed5a80eed3b30711cfd44c
     [2/4] RUN apt-get update && apt-get install -y apt-transport-https software-propertie [3/4] RUN wget -q https://packages.microsoft.com/config/ubuntu/20.04/packages-microsoft-prod.d
What's Next?
 View a summary of image vulnerabilities and recommendations \rightarrow docker scout quickview
```

tincho@IdeaPad-5-14ALCO5:~/Documents/Ingenieria de Software III/TP7\$ mkdir -p ~/jenkins

tincho@IdeaPad-5-14ALC05:~/Documents/Ingenieria de Software III/TP7\$ docker run -d -p 8080:8080 -p 50000:
50000 --name jenkins \
> -v ~/jenkins:/var/jenkins_home \
> jenkins-with-dotnetcore
3b9ff43d468e5d3a67e7c4dea3dd4c391db0298e56ca85670f192c08d2e7771d
tincho@IdeaPad-5-14ALC05:~/Documents/Ingenieria de Software III/TP7\$ chmod 777 ~/jenkins

Getting Started

Unlock Jenkins

To ensure Jenkins is securely set up by the administrator, a password has been written to the log (**not sure where to find it?**) and this file on the server:

/var/jenkins_home/secrets/initialAdminPassword

Please copy the password from either location and paste it below.

Administrator password		

Continue

Customize Jenkins

Plugins extend Jenkins with additional features to support many different needs.

Install suggested plugins

Install plugins the Jenkins community finds most useful.

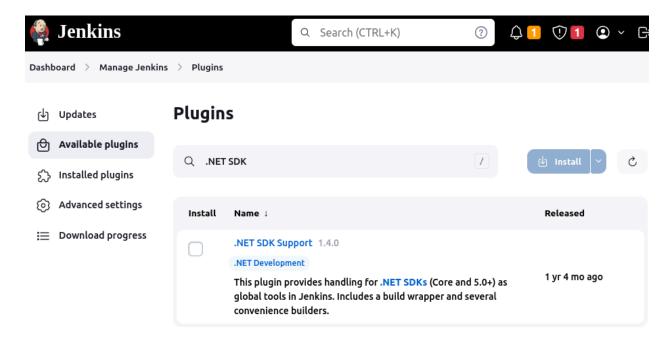
Select plugins to install

Select and install plugins most suitable for your needs.

Create First Admin User

Username martin Password Confirm password Full name Martin Lescano E-mail address 2007861@ucc.edu.ar|

2- Instalando Plugins y configurando herramientas



Git Success SSH Build Agents Success Matrix Authorization Strategy Success PAM Authentication Success LDAP Success **Email Extension** Success Mailer Success Loading plugin extensions Success .NET SDK Support Success Loading plugin extensions ··· Running Restarting Jenkins Pending

→ Go back to the top page

(you can start using the installed plugins right away)

→ Restart Jenkins when installation is complete and no jobs are running

.NET SDK Support 1.4.0

This plugin provides handling for .NET SDKs (Core and 5.0+) as global tools in Jenkins. Includes a build wrapper and several convenience builders.



 \otimes

Report an issue with this plugin

Install	Name ↓	Released
	Command Agent Launcher 107.v773860566e2e Agent Management Allows agents to be launched using a specified command.	2 mo 10 days ago
	Oracle Java SE Development Kit Installer 73.vddf737284550 Allows the Oracle Java SE Development Kit (JDK) to be installed via download from Oracle's website.	2 mo 14 days ago
	JSch dependency 0.2.8-65.v052c39de79b_2 Library plugins (for use by other plugins) Miscellaneous Jenkins plugin that brings the JSch library as a plugin dependency, and provides an SSHAuthenticatorFactory for using JSch with the ssh-credentials plugin.	5 mo 15 days ago
	SSH server 3.312.v1c601b_c83b_0e Adds SSH server functionality to Jenkins, exposing CLI commands through it.	2 mo 14 days ago
	JavaScript GUI Lib: ACE Editor bundle 1.1 JavaScript GUI Lib: ACE Editor bundle plugin. This plugin is deprecated. In general, this means that it is either obsolete, no longer being developed, or may no longer work. Learn more.	7 yr 7 mo ago
	JavaScript GUI Lib: Moment.js bundle 1.1.1	

3- Creando el primer Job de estilo libre



Freestyle project

This is the central feature of Jenkins. Jenkins will build your project, combining any SCM with any build system, and this can be even used for something other than software build.

Build Steps

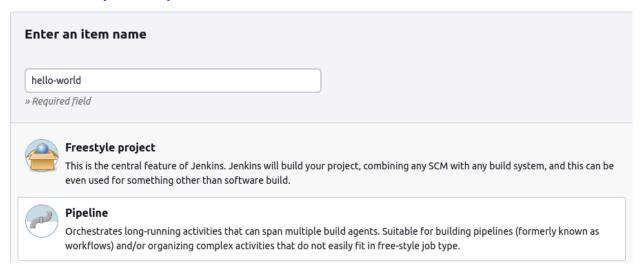


Console Output

```
Started by user Martin Lescano
Running as SYSTEM
Building in workspace /var/jenkins_home/workspace/first-job
[first-job] $ /bin/sh -xe /tmp/jenkins18023625555639462663.sh
+ date +%Y-%m-%d %H:%M:%S
+ current_datetime=2023-10-17 01:07:06
+ echo La fecha y hora actual es: 2023-10-17 01:07:06
La fecha y hora actual es: 2023-10-17 01:07:06
Finished: SUCCESS
```

La salida indica que un trabajo de Jenkins llamado "first-job" fue iniciado por el usuario Martin Lescano. El trabajo ejecutó un script temporal que obtuvo la fecha y hora actual y la mostró en la salida del trabajo. La ejecución del trabajo se completó con éxito y la fecha y hora actual fue "2023-10-17 01:07:06".

4- Creando el primer Pipeline Job



Pipeline

Definition

11 12



✓ Console Output

```
Started by user Martin Lescano
[Pipeline] Start of Pipeline
[Pipeline] node
Running on Jenkins in /var/jenkins_home/workspace/hello-world
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Hello)
[Pipeline] echo
Hello World
[Pipeline] }
[Pipeline] // stage
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
```

La salida del "Console Output" indica que se ejecutó un trabajo de Jenkins llamado "hello-world", el cual fue iniciado por el usuario Martin Lescano. Este trabajo es un Pipeline, y se ejecuta en el agente de Jenkins dentro del directorio "/var/jenkins_home/workspace/hello-world".

El Pipeline consta de un solo paso llamado "Hello", que imprime "Hello World" en la salida. El trabajo se ejecutó con éxito y se completó correctamente, como se indica con "Finished: SUCCESS" al final del registro.

5- Creando un Pipeline Job con Git

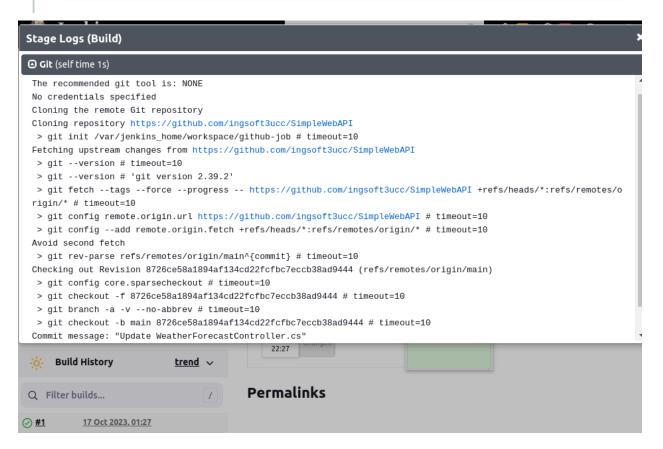


Pipeline

Definition

Pipeline script

```
Script ?
         pipeline {
                                                                           try sample Pipeline... >
    2
            agent any
    3
    4
    5 +
            stages {
                stage('Build') {
    6 =
                    steps {
    // Get some code from a GitHub repository
    7 =
    8
                         git branch: 'main', url: 'https://github.com/ingsoft3ucc/SimpleWebAPI'
    9
   1θ
   11
                    }
   12
   13
   14 }
```



```
Started by user Martin Lescano
[Pipeline] Start of Pipeline
[Pipeline] node
Running on Jenkins in /var/jenkins home/workspace/github-job
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Build)
[Pipeline] git
The recommended git tool is: NONE
No credentials specified
Cloning the remote Git repository
Cloning repository https://github.com/ingsoft3ucc/SimpleWebAPI
> git init /var/jenkins home/workspace/github-job # timeout=10
Fetching upstream changes from https://github.com/ingsoft3ucc/SimpleWebAPI
> git --version # timeout=10
> git --version # 'git version 2.39.2'
> git fetch --tags --force --progress --
https://github.com/ingsoft3ucc/SimpleWebAPI +refs/heads/*:refs/remotes/origin/*
# timeout=10
> git config remote.origin.url https://github.com/ingsoft3ucc/SimpleWebAPI #
> git config --add remote.origin.fetch +refs/heads/*:refs/remotes/origin/* #
timeout=10
Avoid second fetch
> git rev-parse refs/remotes/origin/main^{commit} # timeout=10
Checking out Revision 8726ce58a1894af134cd22fcfbc7eccb38ad9444
(refs/remotes/origin/main)
> git config core.sparsecheckout # timeout=10
> git checkout -f 8726ce58a1894af134cd22fcfbc7eccb38ad9444 # timeout=10
> git branch -a -v --no-abbrev # timeout=10
> git checkout -b main 8726ce58a1894af134cd22fcfbc7eccb38ad9444 # timeout=10
Commit message: "Update WeatherForecastController.cs"
First time build. Skipping changelog.
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
```

6- Utilizando nuestros proyectos.

6.1-.NET Core

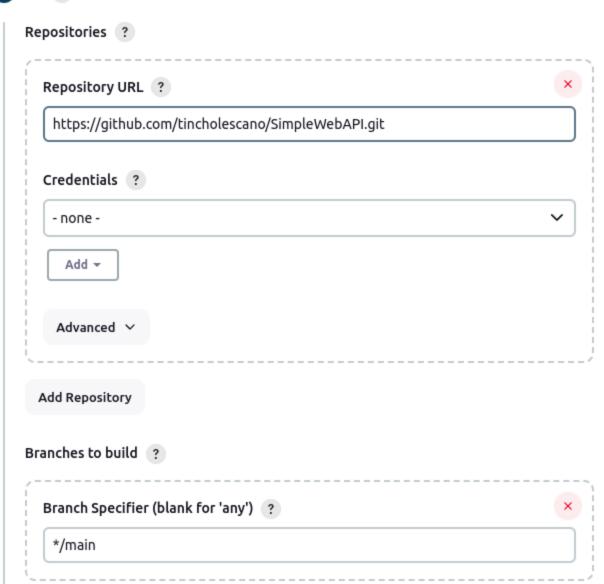
git-netcore-job » Required field

Freesty This is the

Freestyle project

This is the central feature of Jenkins. Jenkins will build your project, combining any SCM with any build system, and this can be even used for something other than software build.





ername with p	assword	
Scope ?		
Global (Jen	ins, nodes, items, all child items, etc)	
Username (
tincholesca	0	
Treat us	ername as secret ?	
Password ?		
ID ?		



```
Started by user Martin Lescano
Running as SYSTEM
Building in workspace /var/jenkins home/workspace/git-netcore-job
The recommended git tool is: NONE
No credentials specified
> git rev-parse --resolve-git-dir /var/jenkins home/workspace/git-netcore-job/.git # timeout=10
Fetching changes from the remote Git repository
> git config remote.origin.url https://github.com/tincholescano/SimpleWebAPI.git # timeout=10
Fetching upstream changes from https://github.com/tincholescano/SimpleWebAPI.git
> git --version # timeout=10
> git --version # 'git version 2.39.2'
> git fetch --tags --force --progress -- https://github.com/tincholescano/SimpleWebAPI.git
+refs/heads/*:refs/remotes/origin/* # timeout=10
> git rev-parse refs/remotes/origin/main^{commit} # timeout=10
Checking out Revision 7b5da5038aee2c5829bd892509c3eeb939fdea94 (refs/remotes/origin/main)
> git config core.sparsecheckout # timeout=10
> git checkout -f 7b5da5038aee2c5829bd892509c3eeb939fdea94 # timeout=10
Commit message: "primer commit"
First time build. Skipping changelog.
[git-netcore-job] $ dotnet build SimpleWebAPI.sln
MSBuild version 17.7.3+8ec440e68 for .NET
 Determining projects to restore...
 All projects are up-to-date for restore.
  SimpleWebAPI -> /var/jenkins home/workspace/git-netcore-
job/SimpleWebAPI/bin/Debug/net7.0/SimpleWebAPI.dll
Build succeeded.
   θ Warning(s)
   θ Error(s)
Time Elapsed 00:00:06.68
.NET Command Completed - Exit Code: 0
[git-netcore-job] $ dotnet publish SimpleWebAPI.sln --self-contained false
MSBuild version 17.7.3+8ec440e68 for .NET
 Determining projects to restore...
 All projects are up-to-date for restore.
  SimpleWebAPI -> /var/jenkins home/workspace/git-netcore-
job/SimpleWebAPI/bin/Debug/net7.0/SimpleWebAPI.dll
  SimpleWebAPI -> /var/jenkins home/workspace/git-netcore-job/SimpleWebAPI/bin/Debug/net7.0/publish/
.NET Command Completed - Exit Code: 0
Finished: SUCCESS
```

6.2- Monitorear Cambios en el repo de GitHub

Build Triggers

	Trigger builds remotely (e.g., from scripts) ?
	Build after other projects are built ?
	Build periodically ?
	GitHub hook trigger for GITScm polling ?
\checkmark	Poll SCM ?
	Schedule ?

	Do you really mean "every minute" when you say "* * * * * *"? Perhaps you meant "H * * * * * " to poll once per hour Would last have run at Tuesday, October 17, 2023 at 1:49:37 AM Coordinated Universal Time; would next run at Tuesday, October 17, 2023 at 1:49:37 AM Coordinated Universal Time. (show details)

Changes

#6 (17 Oct 2023, 02:45:28)

1. cambios 2 — lescanomartin.ml / githubweb

No podemos usar WebHooks en nuestro proyecto debido a restricciones en el entorno, falta de acceso a Internet, permisos insuficientes y limitaciones en Jenkins.

```
tincho@IdeaPad-5-14ALCO5:~/Documents/Ingenieria de Software III/TP7/SimpleWebAPI$ git add .
tincho@IdeaPad-5-14ALCO5:~/Documents/Ingenieria de Software III/TP7/SimpleWebAPI$ git commit -m "cambios 2"
[main 1dfc09e] cambios 2
1 file changed, 2 insertions(+)
tincho@IdeaPad-5-14ALCO5:~/Documents/Ingenieria de Software III/TP7/SimpleWebAPI$ git push
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 16 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), done.
Total 3 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github.com/tincholescano/SimpleWebAPI.git
7b5da50..1dfc09e main -> main
```

Build Triggers

Trigger builds remotely (e.g., from scripts) ?	
Build after other projects are built ?	
Build periodically ?	
Schedule ?	

▲ Do you really mean "every minute" when you say "* * * * *	"? Perhaps you meant "H * * * *" to poll once pe
hour	
Would last have run at Tuesday, October 17, 2023 at 2:54:28 AM	Coordinated Universal Time; would next run at
Tuesday, October 17, 2023 at 2:54:28 AM Coordinated Universal	Time.

Changes

```
#8 (17 Oct 2023, 02:54:00)

1. cambios 2 — lescanomartin.ml / githubweb

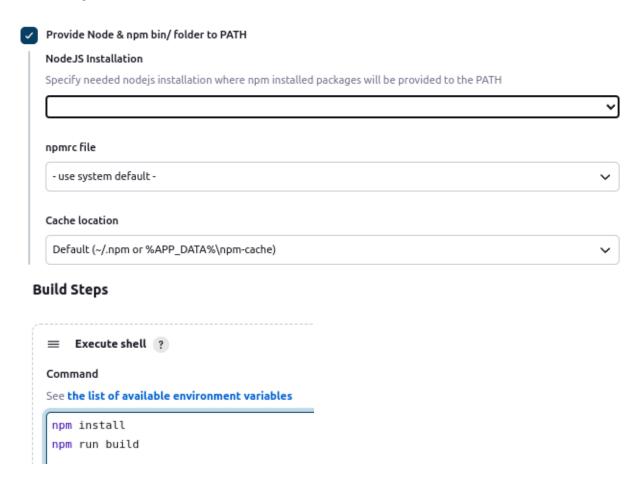
#6 (17 Oct 2023, 02:45:28)

1. cambios 2 — lescanomartin.ml / githubweb
```

La diferencia clave entre una tarea de Poll y la ejecución periódica es que una tarea de Poll responde a cambios en un repositorio, mientras que la ejecución periódica se basa en un horario fijo y se ejecuta independientemente de los cambios en el repositorio. La elección

depende de si queremos responder a eventos específicos o ejecutar tareas en momentos programados

6.3- Node.js



✓ Console Output

```
Started by user Martin Lescano
Running as SYSTEM
Building in workspace /var/jenkins_home/workspace/nodejs-job
[nodejs-job] $ /bin/sh -xe /tmp/jenkins4426643539717185119.sh
+ cd my-app
+ npm install
```