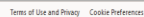


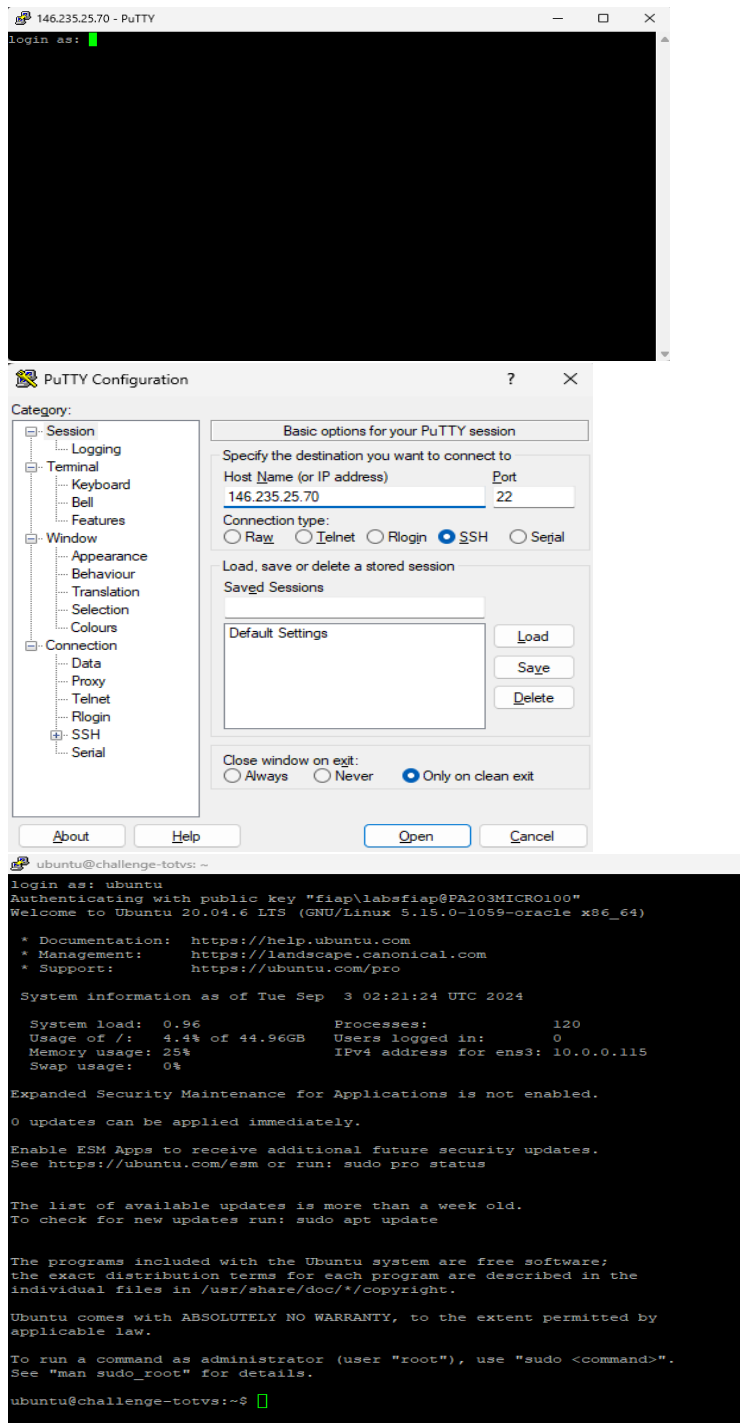


Backup Recovery Database & Data Ingestion

Milton Goya

1. Criar uma Instância na OCI
 - a. Acessar a OCI
 - b. Criar uma Nova Instância
 - c. Selecionar imagem, nesse caso utilizamos Ubuntu 20.04
 - d. Fazer upload da chave privada `fiap_oracle.ppk`





3. Atualizar o Sistema

- Instalar Java
- Exportar a variável do Java para seu ambiente

Comandos:

\$sudo apt update

\$ sudo apt install openjdk-21-jdk -y

\$ java -version

\$ javac -version

\$ sudo nano /etc/environment

JAVA_HOME=/usr/lib/jvm/java-21-openjdk-amd64

\$ source /etc/environment

```
ubuntu@challenge-totvs:~$ sudo apt update
```

```
Fetches 32.8 MB in 18s (1837 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
35 packages can be upgraded. Run 'apt list --upgradable' to see them.
ubuntu@challenge-totvs:~$
```

```
Reading state information... Done
35 packages can be upgraded. Run 'apt list --upgradable' to see them.
ubuntu@challenge-totvs:~$ sudo apt install openjdk-21-jdk -y
```

```
Setting up openjdk-21-jdk:amd64 (21.0.4+7-lubuntu2~20.04) ...
update-alternatives: using /usr/lib/jvm/java-21-openjdk-amd64/bin/jconsole to provide /usr/bin/jconsole (jconsole) in auto mode
Processing triggers for libgdk-pixbuf2.0-0:amd64 (2.40.0+dfsg-3ubuntu0.5) ...
ubuntu@challenge-totvs:~$
```

```
ubuntu@challenge-totvs:~$ java -version
openjdk version "21.0.4" 2024-07-16
OpenJDK Runtime Environment (build 21.0.4+7-Ubuntu-lubuntu220.04)
OpenJDK 64-Bit Server VM (build 21.0.4+7-Ubuntu-lubuntu220.04, mixed mode, sharing)
ubuntu@challenge-totvs:~$ javac -version
javac 21.0.4
ubuntu@challenge-totvs:~$
```

ubuntu@challenge-totvs: ~

```
GNU nano 4.8 /etc/environment
PATH="/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:/snap/bin"
JAVA_HOME=/usr/lib/jvm/java-21-openjdk-amd64
```

4. Baixar e Instalar o Hadoop
- a. Configurar usuário Hadoop
- b. Instalar OpenSSH Server

Comandos:

\$ source /etc/environment

\$ sudo addgroup hadoop

\$ sudo adduser --ingroup hadoop hadoop

\$ sudo adduser hadoop sudo

\$ sudo apt install openssh-server -y

```
ubuntu@challenge-totvs:~$ sudo nano /etc/environment
ubuntu@challenge-totvs:~$
```

```
ubuntu@challenge-totvs:~$ sudo nano /etc/environment
ubuntu@challenge-totvs:~$ source /etc/environment
ubuntu@challenge-totvs:~$
```

```
ubuntu@challenge-totvs:~$ sudo addgroup hadoop
Adding group `hadoop' (GID 1002) ...
Done.
ubuntu@challenge-totvs:~$
```

```
ubuntu@challenge-totvs:~$ sudo adduser --ingroup hadoop hadoop
Adding user `hadoop' ...
Adding new user `hadoop' (1002) with group `hadoop' ...
Creating home directory `/home/hadoop' ...
Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for hadoop
Enter the new value, or press ENTER for the default
    Full Name []:
    Room Number []:
    Work Phone []:
    Home Phone []:
    Other []:
Is the information correct? [Y/n] Y
ubuntu@challenge-totvs:~$
```

```
ubuntu@challenge-totvs:~$ sudo adduser hadoop sudo
Adding user `hadoop' to group `sudo' ...
Adding user hadoop to group sudo
Done.
ubuntu@challenge-totvs:~$
```

```
Adding user hadoop to group sudo
Done.
```

```
ubuntu@challenge-totvs:~$ sudo apt install openssh-server -y
```

```
Reading package lists... Done
Building dependency tree
Reading state information... Done
openssh-server is already the newest version (1:8.2p1-4ubuntu0.11).
0 upgraded, 0 newly installed, 0 to remove and 35 not upgraded.
ubuntu@challenge-totvs:~$
```

5. Baixar e Iniciar sistema

- Configurar variáveis do Hadoop
- Configurar o Hadoop
- Formatar Namenode
- Iniciar Namenode e Datanodes
- Testar criando um dir e movendo um arquivo local para o hdfs

Comandos:

```
$ sudo su - hadoop
$ ssh-keygen -t rsa -P "" -f ~/.ssh/id_rsa
$ cat ~/.ssh/id_rsa.pub >> ~/.ssh/authorized_keys
$ chmod 0600 ~/.ssh/authorized_keys
$ wget https://dlcdn.apache.org/hadoop/common/hadoop-3.3.6/hadoop-3.3.6.tar.gz
$ tar xzf hadoop-3.3.6.tar.gz
$ sudo mv hadoop-3.3.6 /usr/local/hadoop
$ sudo chown -R hadoop:hadoop /usr/local/hadoop
$ sudo nano /usr/local/hadoop/etc/hadoop/hadoop-env.sh
export JAVA_HOME=/usr/lib/jvm/java-21-openjdk-amd64
$ sudo nano /usr/local/hadoop/etc/hadoop/core-site.xml
```

```
$ sudo nano /usr/local/hadoop/etc/hadoop/hdfs-site.xml
$ sudo nano /usr/local/hadoop/etc/hadoop/mapred-site.xml
$ sudo nano /usr/local/hadoop/etc/hadoop/yarn-site.xml
$ sudo mkdir -p /home/hadoop/dfs/name /home/hadoop/dfs/data /home/hadoop/ tmp
$ sudo chown -R hadoop:hadoop /home/hadoop/dfs /home/hadoop/tmp
$ sudo chmod 750 /home/hadoop/dfs /home/hadoop/tmp
$ /usr/local/hadoop/bin/hdfs namenode -format
$ /usr/local/hadoop/sbin/start-dfs.sh
$ /usr/local/hadoop/sbin/start-yarn.sh
$ sudo su - hadoop
$ nano ~/.bashrc
export HADOOP_HOME=/usr/local/hadoop
export PATH=$HADOOP_HOME/bin:$PATH
$ source ~/.bashrc
```

```
ubuntu@challenge-totvs:~$ sudo su - hadoop
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.
```

```
hadoop@challenge-totvs:~$
```

```
Your identification has been saved in /home/hadoop/.ssh/id_rsa
Your public key has been saved in /home/hadoop/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:Y/vX2SRjgJRGB4ByRVHfkt5QXtn3M79dSt2zIzuTXsg hadoop@challenge-totvs
The key's randomart image is:
+----[RSA 3072]-----+
|      ++=+o  .+|
|      . o    o =.+|
|      o      . * oo|
|      . o +o.|
|      S  + . o=|
|      . oo + o.*|
|      . . E.*B|
|      . . =**o|
|      ...o*.o|
+----[SHA256]-----+
hadoop@challenge-totvs:~$
```

```
hadoop@challenge-totvs:~$ cat ~/.ssh/id_rsa.pub >> ~/.ssh/authorized_keys
hadoop@challenge-totvs:~$ chmod 0600 ~/.ssh/authorized_keys
hadoop@challenge-totvs:~$
```

```
hadoop@challenge-totvs:~$ sudo chown -R hadoop:hadoop /usr/local/hadoop
hadoop@challenge-totvs:~$
```

```
hadoop@challenge-totvs:~$ wget https://d1cdn.apache.org/hadoop/common/hadoop-3.3.6/hadoop-3.3.6.tar.gz
--2024-09-03 02:33:58-- https://d1cdn.apache.org/hadoop/common/hadoop-3.3.6/hadoop-3.3.6.tar.gz
Resolving d1cdn.apache.org (d1cdn.apache.org)... 151.101.2.132, 2a04:4e42::644
Connecting to d1cdn.apache.org (d1cdn.apache.org)|151.101.2.132|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 730107476 (696M) [application/x-gzip]
Saving to: 'hadoop-3.3.6.tar.gz'
```

```
hadoop-3.3.6.tar.gz          5%[==>] 38.53M  5.74MB/s  eta 1m 46s
```

```
hadoop@challenge-totvs:~$ tar xzf hadoop-3.3.6.tar.gz
hadoop@challenge-totvs:~$
```

```
hadoop@challenge-totvs:~$ sudo mv hadoop-3.3.6 /usr/local/hadoop
[sudo] password for hadoop:
hadoop@challenge-totvs:~$
```

```
# Technically, the only required environment variable is JAVA_HOME.
# All others are optional. However, the defaults are probably not
# preferred. Many sites configure these options outside of Hadoop,
# such as in /etc/profile.d
```

```
# The java implementation to use. By default, this environment
# variable is REQUIRED on ALL platforms except OS X!
export JAVA_HOME=/usr/lib/jvm/java-21-openjdk-amd64
```

```
# Location of Hadoop. By default, Hadoop will attempt to determine
# this location based upon its execution path.
# export HADOOP_HOME=
```

```
hadoop@challenge-totvs:~$ sudo nano /usr/local/hadoop/etc/hadoop/hadoop-env.sh
hadoop@challenge-totvs:~$
```

hadoop@challenge-totvs: ~

```
GNU nano 4.8 /usr/local/
<?xml version="1.0" encoding="UTF-8"?>
<?xml-stylesheet type="text/xsl" href="configuration.xsl"?>
<!--
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distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License. See accompanying LICENSE file.
-->

<!-- Put site-specific property overrides in this file. -->

<configuration>
<property>
  <name>fs.defaultFS</name>
  <value>hdfs://localhost:9000</value>
</property>
<property>
  <name>hadoop.tmp.dir</name>
  <value>/home/hadoop/tmp</value>
</property>
</configuration>
```

```
hadoop@challenge-totvs:~$ sudo chown -R hadoop:hadoop /usr/local/hadoop
hadoop@challenge-totvs:~$ sudo nano /usr/local/hadoop/etc/hadoop/hadoop-env.sh
hadoop@challenge-totvs:~$ sudo nano /usr/local/hadoop/etc/hadoop/core-site.xml
hadoop@challenge-totvs:~$ sudo nano /usr/local/hadoop/etc/hadoop/hdfs-site.xml
hadoop@challenge-totvs:~$
```

hadoop@challenge-totvs: ~

```
GNU nano 4.8 /usr/local/
<?xml version="1.0" encoding="UTF-8"?>
<?xml-stylesheet type="text/xsl" href="configuration.xsl"?>
<!--
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WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
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limitations under the License. See accompanying LICENSE file.
-->

<!-- Put site-specific property overrides in this file. -->

<configuration>
<property>
  <name>dfs.replication</name>
  <value>1</value>
</property>
<property>
  <name>dfs.namenode.name.dir</name>
  <value>/home/hadoop/dfs/name</value>
</property>
<property>
  <name>dfs.datanode.data.dir</name>
  <value>/home/hadoop/dfs/data</value>
</property>
</configuration>
```


hadoop@challenge-totvs: ~

```
GNU nano 4.8 /usr/local/hadoop/etc/hadoop/hadoop-env.sh
<?xml version="1.0"?>
<?xml-stylesheet type="text/xsl" href="configuration.xsl"?>
<!--
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WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License. See accompanying LICENSE file.
-->

<!-- Put site-specific property overrides in this file. -->

<configuration>
<property>
  <name>mapreduce.framework.name</name>
  <value>yarn</value>
</property>
</configuration>
```

```
hadoop@challenge-totvs:~$ sudo chown -R hadoop:hadoop /usr/local/hadoop
hadoop@challenge-totvs:~$ sudo nano /usr/local/hadoop/etc/hadoop/hadoop-env.sh
hadoop@challenge-totvs:~$ sudo nano /usr/local/hadoop/etc/hadoop/core-site.xml
hadoop@challenge-totvs:~$ sudo nano /usr/local/hadoop/etc/hadoop/hdfs-site.xml
hadoop@challenge-totvs:~$ sudo nano /usr/local/hadoop/etc/hadoop/mapred-site.xml
hadoop@challenge-totvs:~$ sudo nano /usr/local/hadoop/etc/hadoop/yarn-site.xml
hadoop@challenge-totvs:~$
```

hadoop@challenge-totvs: ~

```
GNU nano 4.8 /usr/local/hadoop/etc/hadoop/yarn-site.xml
<?xml version="1.0"?>
<!--
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WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
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limitations under the License. See accompanying LICENSE file.
-->

<configuration>

<!-- Site specific YARN configuration properties -->
<property>
  <name>yarn.nodemanager.aux-services</name>
  <value>mapreduce_shuffle</value>
</property>
<property>
  <name>yarn.nodemanager.aux-services.mapreduce.shuffle.class</name>
  <value>org.apache.hadoop.mapred.ShuffleHandler</value>
</property>
</configuration>
```

```
hadoop@challenge-totvs:~$ sudo mkdir -p /home/hadoop/dfs/name /home/hadoop/dfs/data /home/hadoop/tmp
hadoop@challenge-totvs:~$ sudo chown -R hadoop:hadoop /home/hadoop/dfs /home/hadoop/tmp
hadoop@challenge-totvs:~$ sudo chmod 750 /home/hadoop/dfs /home/hadoop/tmp
hadoop@challenge-totvs:~$
```

hadoop@challenge-totvs:~\$ /usr/local/hadoop/bin/hdfs namenode -format

```
WARNING: /usr/local/hadoop/logs does not exist. Creating.
2024-09-03 02:44:18,854 INFO namenode.NameNode: STARTUP_MSG:
/*****
STARTUP_MSG: Starting NameNode
STARTUP_MSG: host = challenge-totvs/127.0.1.1
STARTUP_MSG: args = [-format]
STARTUP_MSG: version = 3.3.6
STARTUP_MSG: classpath = /usr/local/hadoop/etc/hadoop:/usr/local/hadoop/share/hadoop/common/lib/netty-transport-native-kqueue-4.1.89.Final-osx-aarch_64.jar:/usr/local/hadoop/share/hadoop/common/lib/re2j-1.1.jar:/usr/local/hadoop/share/hadoop/common/lib/token-provider-1.0.1.jar:/usr/local/hadoop/share/hadoop/common/lib/kerby-pkix-1.0.1.jar:/usr/local/hadoop/share/hadoop/common/lib/jackson-core-asl-1.9.13.jar:/usr/local/hadoop/share/hadoop/common/lib/netty-codec-memcache-4.1.89.Final.jar:/usr/local/hadoop/share/hadoop/common/lib/commons-math3-3.1.1.jar:/usr/local/hadoop/share/hadoop/common/lib/commons-io-2.8.0.jar:/usr/local/hadoop/share/hadoop/common/lib/juli-to-slf4j-1.7.36.jar:/usr/local/hadoop/share/hadoop/common/lib/netty-codec-dns-4.1.89.Final.jar:/usr/local/hadoop/share/hadoop/common/lib/netty-codec-socks-4.1.89.Final.jar:/usr/local/hadoop/share/hadoop/common/lib/jersey-core-1.19.4.jar:/usr/local/hadoop/share/hadoop/common/lib/chucker-qual-2.5.2.jar:/usr/local/hadoop/share/hadoop/common/lib/listenablefuture-9999.0-empty-to-avoid-conflict-with-guava.jar:/usr/local/hadoop/share/hadoop/common/lib/jetty-xml-9.4.51.v20230217.jar:/usr/local/hadoop/share/hadoop/common/lib/jar311-api-1.1.1.jar:/usr/local/hadoop/share/hadoop/common/lib/commons-net-3.9.0.jar:/usr/local/hadoop/share/hadoop/common/lib/dnsjava-2.1.7.jar:/usr/local/hadoop/share/hadoop/common/lib/netty-handler-proxy-4.1.89.Final.jar:/usr/local/hadoop/share/hadoop/common/lib/snappy-java-1.1.8.2.jar:/usr/local/hadoop/share/hadoop/common/lib/guava-27.0-jre.jar:/usr/local/hadoop/share/hadoop/common/lib/commons-compress-1.21.jar:/usr/local/hadoop/share/hadoop/common/lib/netty-transport-classes-epoll-4.1.89.Final.jar:/usr/local/hadoop/share/hadoop/common/lib/netty-transport-udt-4.1.89.Final.jar:/usr/local/hadoop/share/hadoop/common/lib/jsch-0.1.55.jar:/usr/local/hadoop/share/hadoop/common/lib/
```



```
2024-09-03 02:44:24,554 INFO namenode.NNStorageRetentionManager: Going to retain 1 images with txid >= 0
2024-09-03 02:44:24,636 INFO namenode.FSNamesystem: Stopping services started for active state
2024-09-03 02:44:24,637 INFO namenode.FSNamesystem: Stopping services started for standby state
2024-09-03 02:44:24,640 INFO namenode.FSImage: FSImageSaver clean checkpoint: txid=0 when meet shutdown.
2024-09-03 02:44:24,641 INFO namenode.NameNode: SHUTDOWN_MSG:
/*****
SHUTDOWN_MSG: Shutting down NameNode at challenge-totvs/127.0.1.1
*****/
hadoop@challenge-totvs:~$
```

```
hadoop@challenge-totvs:~$ /usr/local/hadoop/sbin/start-dfs.sh
Starting namenodes on [localhost]
localhost: Warning: Permanently added 'localhost' (ECDSA) to the list of known hosts.
Starting datanodes
Starting secondary namenodes [challenge-totvs]
challenge-totvs: Warning: Permanently added 'challenge-totvs' (ECDSA) to the list of known hosts.
hadoop@challenge-totvs:~$
```

```
hadoop@challenge-totvs:~$ /usr/local/hadoop/sbin/start-yarn.sh
Starting resourcemanager
Starting nodemanagers
hadoop@challenge-totvs:~$
```

```
hadoop@challenge-totvs:~$ sudo su - hadoop
hadoop@challenge-totvs:~$ nano ~/.bashrc
```

```
GNU nano 4.8 /home/hadoop/.bashrc
# ~/.bashrc: executed by bash(1) for non-login shells.
# see /usr/share/doc/bash/examples/startup-files (in the package bash-doc)
# for examples

# If not running interactively, don't do anything
case $- in
  *i*) ;;
  *) return;;
esac

# don't put duplicate lines or lines starting with space in the history.
# See bash(1) for more options
HISTCONTROL=ignoreboth

# append to the history file, don't overwrite it
shopt -s histappend

# for setting history length see HISTSIZE and HISTFILESIZE in bash(1)
HISTSIZE=1000
HISTFILESIZE=2000

# check the window size after each command and, if necessary,
# update the values of LINES and COLUMNS.
shopt -s checkwinsize

# If set, the pattern "****" used in a pathname expansion context will
# match all files and zero or more directories and subdirectories.
#shopt -s globstar

# make less more friendly for non-text input files, see lesspipe(1)
[ -x /usr/bin/lesspipe ] && eval "$(SHELL=/bin/sh lesspipe)"

# set variable identifying the chroot you work in (used in the prompt below)
if [ -z "${debian_chroot:-}" ] && [ -f /etc/debian_chroot ]; then
    debian_chroot=$(cat /etc/debian_chroot)
fi

# set a fancy prompt (non-color, unless we know we "want" color)
case "$TERM" in

# enable programmable completion features (you don't need to enable
# this, if it's already enabled in /etc/bash.bashrc and /etc/profile
# sources /etc/bash.bashrc).
if ! shopt -oq posix; then
    if [ -f /usr/share/bash-completion/bash_completion ]; then
        . /usr/share/bash-completion/bash_completion
    elif [ -f /etc/bash_completion ]; then
        . /etc/bash_completion
    fi
fi
export HADOOP_HOME=/usr/local/hadoop
export PATH=$HADOOP_HOME/bin:$PATH

hadoop@challenge-totvs:~$ sudo su - hadoop
hadoop@challenge-totvs:~$ nano ~/.bashrc
hadoop@challenge-totvs:~$ source ~/.bashrc
```

```
hadoop@challenge-totvs: ~
```

```
hadoop@challenge-totvs:~$ jps
6481 SecondaryNameNode
6162 NameNode
6294 DataNode
7038 Jps
hadoop@challenge-totvs:~$
```

```
hadoop@challenge-totvs:~$ sudo su - ubuntu
ubuntu@challenge-totvs:~$ nano ~/exemplo.txt
```

```
ubuntu@challenge-totvs: ~
```

[illegible] hadoop@challenge-totvs: ~

```
ubuntu@challenge-totvs:~$ sudo su - hadoop
hadoop@challenge-totvs:~$ hadoop fs -mkdir /test
hadoop@challenge-totvs:~$ hadoop fs -put /home/ubuntu/exemplo.txt /test
hadoop@challenge-totvs:~$ hadoop fs -ls /test
Found 1 items
-rw-r--r--  1 hadoop supergroup        630 2024-09-03 02:58 /test/exemplo.txt
hadoop@challenge-totvs:~$
```

hadoop@challenge-totvs: ~

```
ubuntu@challenge-totvs:~$ sudo su - hadoop
hadoop@challenge-totvs:~$ hadoop fs -mkdir /test
hadoop@challenge-totvs:~$ hadoop fs -put /home/ubuntu/exemplo.txt /test
hadoop@challenge-totvs:~$ hadoop fs -ls /test
Found 1 items
-rw-r--r--  1 hadoop supergroup      630 2024-09-03 02:58 /test/exemplo.txt
hadoop@challenge-totvs:~$ /usr/local/hadoop/sbin/stop-dfs.sh
Stopping namenodes on [localhost]
Stopping datanodes
Stopping secondary namenodes [challenge-totvs]
hadoop@challenge-totvs:~$ /usr/local/hadoop/sbin/stop-yarn.sh
Stopping nodemanagers
Stopping resourcemanager
hadoop@challenge-totvs:~$
```

ubuntu@challenge-totvs: ~

```
ubuntu@challenge-totvs:~$ sudo su - hadoop
hadoop@challenge-totvs:~$ hadoop fs -mkdir /test
hadoop@challenge-totvs:~$ hadoop fs -put /home/ubuntu/exemplo.txt /test
hadoop@challenge-totvs:~$ hadoop fs -ls /test
Found 1 items
-rw-r--r--  1 hadoop supergroup      630 2024-09-03 02:58 /test/exemplo.txt
hadoop@challenge-totvs:~$ /usr/local/hadoop/sbin/stop-dfs.sh
Stopping namenodes on [localhost]
Stopping datanodes
Stopping secondary namenodes [challenge-totvs]
hadoop@challenge-totvs:~$ /usr/local/hadoop/sbin/stop-yarn.sh
Stopping nodemanagers
Stopping resourcemanager
hadoop@challenge-totvs:~$ sudo su - ubuntu
ubuntu@challenge-totvs:~$
```