

Tutorial uso de mapreduce y hdfs

Pablo Moreno Quintero

Escuela de Ciencias e Ingeniería, Universidad EAFIT

Pregrado en Ingeniería de Sistemas

Edwin Nelson Montoya Munera

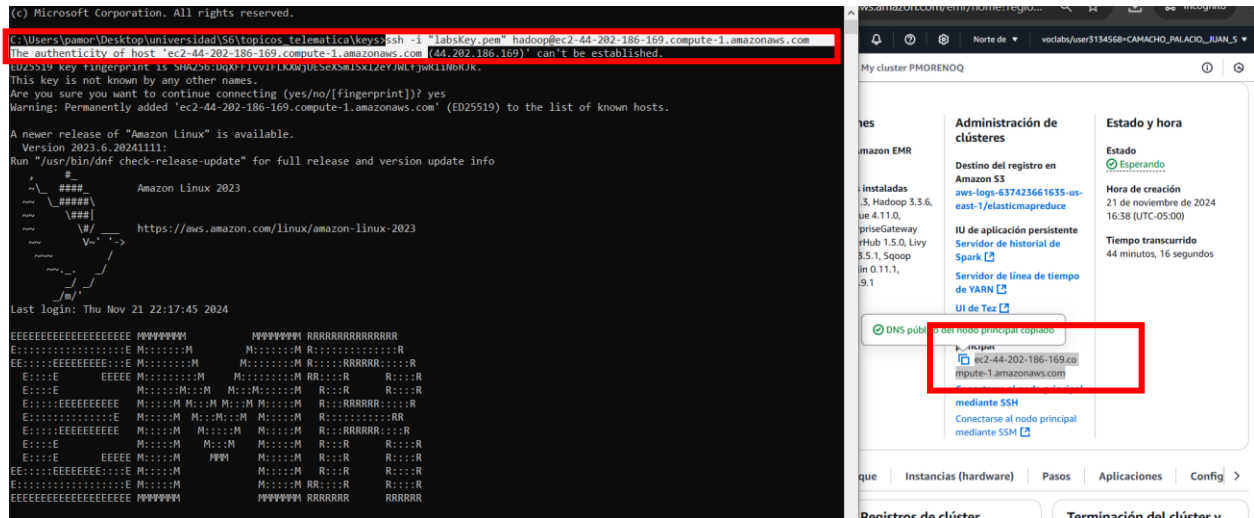
23 de noviembre de 2024

1. Acceder a nuestra instancia EC2 del nodo máster.

En consola

`ssh -i "<ubicacion de la clave .pem>" hadoop@<DNS clúster principal>`

Posteriormente nos debe mostrar la siguiente pantalla en nuestra consola



Luego de acceder a nuestra instancia master debemos descargar git

Damos “yes” cuando lo pida.

```
[hadoop@ip-172-31-15-33 ~]$ sudo yum install git
Last metadata expiration check: 0:50:47 ago on Thu Nov 21 21:39:25 2024.
Dependencies resolved.
```

Package	Architecture	Version	Repository	Size
Installing:				
git	x86_64	2.40.1-1.amzn2023.0.3	amazonlinux	54 k
Installing dependencies:				
git-core	x86_64	2.40.1-1.amzn2023.0.3	amazonlinux	4.3 M
git-core-doc	noarch	2.40.1-1.amzn2023.0.3	amazonlinux	2.6 M
perl-Error	noarch	1:0.17029-5.amzn2023.0.2	amazonlinux	41 k
perl-Git	noarch	2.40.1-1.amzn2023.0.3	amazonlinux	42 k
perl-TermReadKey	x86_64	2.38-9.amzn2023.0.2	amazonlinux	36 k
perl-lib	x86_64	0.65-477.amzn2023.0.6	amazonlinux	15 k

```

Transaction Summary
=====
Install 7 Packages

Total download size: 7.1 M
Installed size: 34 M
Is this ok [y/N]: y
Downloading Packages:
(1/7): git-2.40.1-1.amzn2023.0.3.x86_64.rpm           941 kB/s | 54 kB    00:00
(2/7): git-core-doc-2.40.1-1.amzn2023.0.3.noarch.rpm  29 MB/s | 2.6 MB   00:00
(3/7): perl-Error-0.17029-5.amzn2023.0.2.noarch.rpm   1.2 MB/s | 41 kB   00:00
(4/7): git-core-2.40.1-1.amzn2023.0.3.x86_64.rpm     34 MB/s | 4.3 MB   00:00
(5/7): perl-Git-2.40.1-1.amzn2023.0.3.noarch.rpm     1.1 MB/s | 42 kB   00:00
(6/7): perl-TermReadKey-2.38-9.amzn2023.0.2.x86_64.rpm 956 kB/s | 36 kB   00:00
(7/7): perl-lib-0.65-477.amzn2023.0.6.x86_64.rpm     737 kB/s | 15 kB   00:00
-----
Total                                           35 MB/s | 7.1 MB   00:00
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
```

Clonamos el repositorio

Git clone <https://github.com/st0263eafit/st0263-242>

```
[hadoop@ip-172-31-15-33 ~]$ git clone https://github.com/st0263eafit/st0263-242.git
```

Utilizamos los siguientes comandos para crear directorios de hdfs

Hdfs dfs -mkdir <ruta>

Y el siguiente comando para verificar su creación

Hdfs dfs -ls <ruta>

```
[hadoop@ip-172-31-12-162 ~]$ hdfs dfs -mkdir /user/hadoop/datasets
[hadoop@ip-172-31-12-162 ~]$ hdfs dfs -ls /user/hadoop/datasets
[hadoop@ip-172-31-12-162 ~]$ hdfs dfs -mkdir /user/hadoop/datasets/gutenberg-small
[hadoop@ip-172-31-12-162 ~]$ hdfs dfs -ls /user/hadoop/datasets/gutenberg-small
```

Movemos los archivos descargados a hdfs

```
hdfs dfs -put /home/ec2-home/st0263-242/bigdata/datasets/gutenberg-small/*.txt
/user/hadoop/datasets/gutenberg-small/
```

```
[hadoop@ip-172-31-15-33 ~]$ hdfs dfs -ls /
Found 4 items
drwxr-xr-x - hdfs hdfsadmingroup 0 2024-11-21 21:49 /apps
drwxrwxrwt - hdfs hdfsadmingroup 0 2024-11-21 21:51 /tmp
drwxr-xr-x - hdfs hdfsadmingroup 0 2024-11-21 21:49 /user
drwxr-xr-x - hdfs hdfsadmingroup 0 2024-11-21 21:49 /var
[hadoop@ip-172-31-15-33 ~]$ hdfs dfs -ls /user
Found 9 items
drwxrwxrwx - hadoop hdfsadmingroup 0 2024-11-21 21:49 /user/hadoop
drwxr-xr-x - mapred mapred 0 2024-11-21 21:49 /user/history
drwxrwxrwx - hdfs hdfsadmingroup 0 2024-11-21 21:49 /user/hive
drwxrwxrwx - hue hue 0 2024-11-21 21:49 /user/hue
drwxrwxrwx - livy livy 0 2024-11-21 21:49 /user/livy
drwxrwxrwx - oozie oozie 0 2024-11-21 21:50 /user/oozie
drwxrwxrwx - root hdfsadmingroup 0 2024-11-21 21:49 /user/root
drwxrwxrwx - spark spark 0 2024-11-21 21:49 /user/spark
drwxrwxrwx - zeppelin hdfsadmingroup 0 2024-11-21 21:49 /user/zeppelin
```

hdfs dfs -get /user/hadoop/datasets/gutenberg-small/* user/datasets/

verificamos

```
[hadoop@ip-172-31-12-162 ~]$ sudo ls /home/hadoop/st0263-242/bigdata/datasets/gutenberg-small/
AbrahamLincoln__LincolnLetters.txt
AbrahamLincoln__LincolnsFirstInauguralAddress.txt
AbrahamLincoln__LincolnsGettysburgAddressGivenNovember-19-1863.txt
AbrahamLincoln__LincolnsInauguralsAddressesandLettersSelections.txt
AbrahamLincoln__LincolnsSecondInauguralAddress.txt
AbrahamLincoln__SpeechesandLettersofAbrahamLincoln1832-1865.txt
AbrahamLincoln__StateoftheUnionAddresses.txt
AbrahamLincoln__TheEmancipationProclamation.txt
AbrahamLincoln__TheLifeandPublicServiceofGeneralZacharyTaylorAnAddress.txt
AbrahamLincoln__TheWritingsofAbrahamLincolnVolume1.txt
AbrahamLincoln__TheWritingsofAbrahamLincolnVolume2.txt
AbrahamLincoln__TheWritingsofAbrahamLincolnVolume3.txt
AbrahamLincoln__TheWritingsofAbrahamLincolnVolume4.txt
AbrahamLincoln__TheWritingsofAbrahamLincolnVolume5.txt
AbrahamLincoln__TheWritingsofAbrahamLincolnVolume6.txt
AbrahamLincoln__TheWritingsofAbrahamLincolnVolume7.txt

[hadoop@ip-172-31-12-162 ~]$ hdfs dfs -ls /user/hadoop/datasets
Found 1 items
drwxr-xr-x - hadoop hdfsadmingroup 0 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small
[hadoop@ip-172-31-12-162 ~]$ hdfs dfs -ls /user/hadoop/datasets/gutenberg-small/
Found 16 items
-rw-r--r-- 1 hadoop hdfsadmingroup 5878 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln__LincolnLetters.txt
-rw-r--r-- 1 hadoop hdfsadmingroup 21586 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln__LincolnsFirstInauguralAddress.txt
-rw-r--r-- 1 hadoop hdfsadmingroup 1653 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln__LincolnsGettysburgAddressGivenNovember-19-1863.txt
-rw-r--r-- 1 hadoop hdfsadmingroup 262883 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln__LincolnsInauguralsAddressesandLettersSelections.txt
-rw-r--r-- 1 hadoop hdfsadmingroup 4893 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln__LincolnsSecondInauguralAddress.txt
-rw-r--r-- 1 hadoop hdfsadmingroup 516298 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln__SpeechesandLettersofAbrahamLincoln1832-1865.txt
-rw-r--r-- 1 hadoop hdfsadmingroup 167895 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln__StateoftheUnionAddresses.txt
-rw-r--r-- 1 hadoop hdfsadmingroup 3928 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln__TheEmancipationProclamation.txt
-rw-r--r-- 1 hadoop hdfsadmingroup 45664 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln__TheLifeandPublicServiceofGeneralZacharyTaylorAnAddress.txt
-rw-r--r-- 1 hadoop hdfsadmingroup 459086 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln__TheWritingsofAbrahamLincolnVolume1.txt
-rw-r--r-- 1 hadoop hdfsadmingroup 505150 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln__TheWritingsofAbrahamLincolnVolume2.txt
-rw-r--r-- 1 hadoop hdfsadmingroup 254941 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln__TheWritingsofAbrahamLincolnVolume3.txt
-rw-r--r-- 1 hadoop hdfsadmingroup 209643 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln__TheWritingsofAbrahamLincolnVolume4.txt
-rw-r--r-- 1 hadoop hdfsadmingroup 602851 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln__TheWritingsofAbrahamLincolnVolume5.txt
-rw-r--r-- 1 hadoop hdfsadmingroup 601102 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln__TheWritingsofAbrahamLincolnVolume6.txt
-rw-r--r-- 1 hadoop hdfsadmingroup 478689 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln__TheWritingsofAbrahamLincolnVolume7.txt
```

```
[hadoop@ip-172-31-12-162 datasets]$ ls
AbrahamLincoln_LincolnLetters.txt
AbrahamLincoln_LincolnsFirstInauguralAddress.txt
AbrahamLincoln_LincolnsGettysburgAddressGivenNovember-19-1863.txt
AbrahamLincoln_LincolnsInauguralAddressesandLettersSelections.txt
AbrahamLincoln_LincolnsSecondInauguralAddress.txt
AbrahamLincoln_SpeechesandLettersofAbrahamLincoln1832-1865.txt
AbrahamLincoln_StateoftheUnionAddresses.txt
AbrahamLincoln_TheEmancipationProclamation.txt
AbrahamLincoln_TheLifeandPublicServiceofGeneralZacharyTaylorAnAddress.txt
AbrahamLincoln_TheWritingsofAbrahamLincolnVolume1.txt
AbrahamLincoln_TheWritingsofAbrahamLincolnVolume2.txt
AbrahamLincoln_TheWritingsofAbrahamLincolnVolume3.txt
AbrahamLincoln_TheWritingsofAbrahamLincolnVolume4.txt
AbrahamLincoln_TheWritingsofAbrahamLincolnVolume5.txt
AbrahamLincoln_TheWritingsofAbrahamLincolnVolume6.txt
AbrahamLincoln_TheWritingsofAbrahamLincolnVolume7.txt
[hadoop@ip-172-31-12-162 datasets]$ hdfs dfs -ls /user/hadoop/datasets/gutenberg-small/
Found 16 items
-rw-r--r-- 1 hadoop hdfsadmin group 5878 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln_LincolnLetters.txt
-rw-r--r-- 1 hadoop hdfsadmin group 21586 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln_LincolnsFirstInauguralAddress.txt
-rw-r--r-- 1 hadoop hdfsadmin group 1653 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln_LincolnsGettysburgAddressGivenNovember-19-1863.txt
-rw-r--r-- 1 hadoop hdfsadmin group 262883 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln_LincolnsInauguralAddressesandLettersSelections.txt
-rw-r--r-- 1 hadoop hdfsadmin group 4093 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln_LincolnsSecondInauguralAddress.txt
-rw-r--r-- 1 hadoop hdfsadmin group 516298 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln_SpeechesandLettersofAbrahamLincoln1832-1865.txt
-rw-r--r-- 1 hadoop hdfsadmin group 167895 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln_StateoftheUnionAddresses.txt
-rw-r--r-- 1 hadoop hdfsadmin group 3928 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln_TheEmancipationProclamation.txt
-rw-r--r-- 1 hadoop hdfsadmin group 45664 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln_TheLifeandPublicServiceofGeneralZacharyTaylorAnAddress.txt
-rw-r--r-- 1 hadoop hdfsadmin group 459006 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln_TheWritingsofAbrahamLincolnVolume1.txt
-rw-r--r-- 1 hadoop hdfsadmin group 595150 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln_TheWritingsofAbrahamLincolnVolume2.txt
-rw-r--r-- 1 hadoop hdfsadmin group 254941 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln_TheWritingsofAbrahamLincolnVolume3.txt
-rw-r--r-- 1 hadoop hdfsadmin group 209643 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln_TheWritingsofAbrahamLincolnVolume4.txt
-rw-r--r-- 1 hadoop hdfsadmin group 692051 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln_TheWritingsofAbrahamLincolnVolume5.txt
-rw-r--r-- 1 hadoop hdfsadmin group 691182 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln_TheWritingsofAbrahamLincolnVolume6.txt
-rw-r--r-- 1 hadoop hdfsadmin group 478689 2024-11-22 23:35 /user/hadoop/datasets/gutenberg-small/AbrahamLincoln_TheWritingsofAbrahamLincolnVolume7.txt
```

2. Gestion de archivos mediante HUE en Amazon EMR

Accedemos al servicio de HUE en las aplicaciones de nuestro clúster

WS [Buscar] [Alt+S] Norte de Virginia voclabs/user3134568=CAMACH

Amazon EMR > EMR en EC2: Clústeres > My cluster PMORENOQ

Propiedades Acciones de arranque Instancias (hardware) Pasos **Aplicaciones** Configuraciones Monitorización Eventos

Interfaces de usuario de aplicaciones información

Las aplicaciones instaladas en el clúster de Amazon EMR publican interfaces de usuario (IU) como sitios web. Puede utilizarlas para supervisar la actividad del clúster.

☒ **IU de la aplicación en el clúster**
Las IU en el clúster solo están disponibles mientras se está ejecutando el clúster. Utilice los siguientes enlaces para comenzar. Para obtener acceso a todas las IU de la aplicación, configure el túnel de SSH.

☐ **IU de aplicación persistente**
Las IU persistentes no requieren el túnel de SSH, ya que se alojan fuera del clúster y están disponibles durante 30 días después de que finalice la aplicación.

IU de la aplicación activa

Estas IU de aplicaciones en clúster están disponibles sin el túnel de SSH.

IU de la aplicación [?](#)

IU del servidor de historial de Spark

IU de la aplicación en el nodo principal

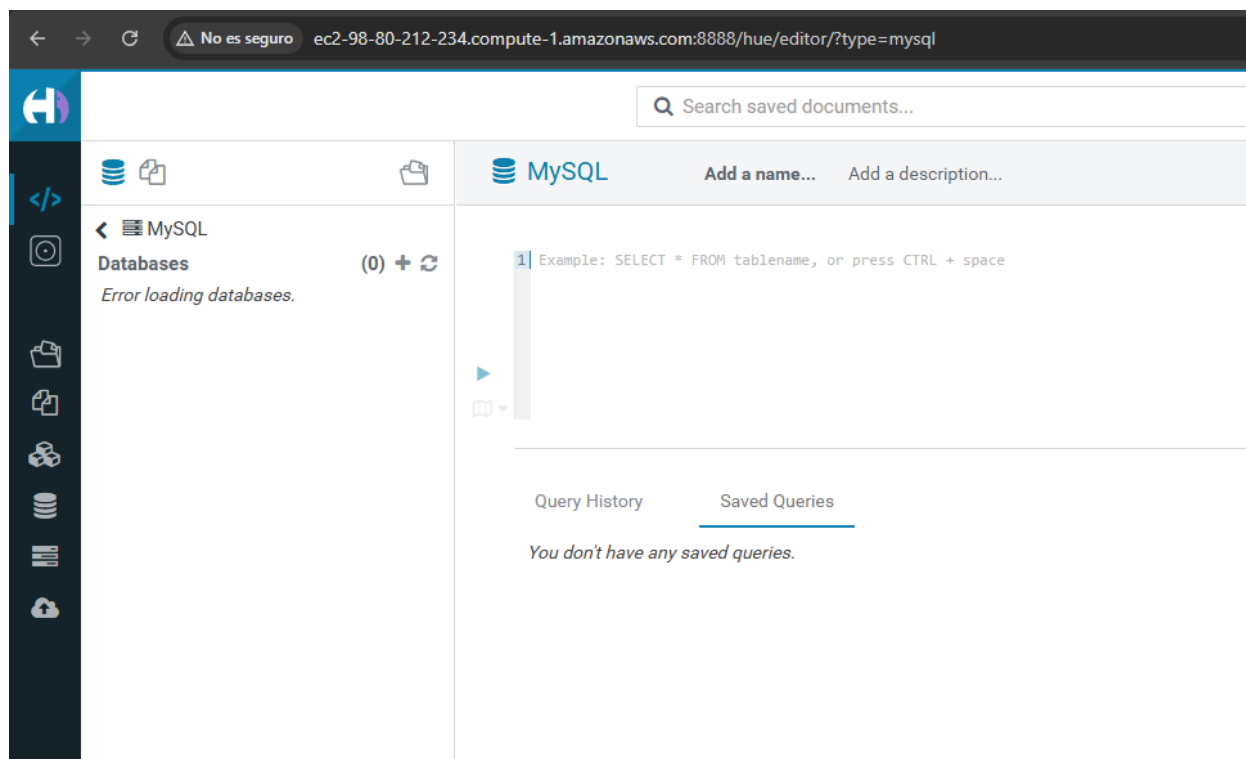
Estas requieren que el túnel de SSH esté habilitado. [Habilitar una conexión SSH](#)

Aplicación	URL de la IU ?
Administrador de recursos	http://ec2-98-80-212-234.compute-1.amazonaws.com:8088/
JupyterHub	https://ec2-98-80-212-234.compute-1.amazonaws.com:9443/
Livy	http://ec2-98-80-212-234.compute-1.amazonaws.com:8998/
Nodo del nombre de HDFS	http://ec2-98-80-212-234.compute-1.amazonaws.com:9870/
Servidor de historial de Spark	http://ec2-98-80-212-234.compute-1.amazonaws.com:18080/
Tonalidad	http://ec2-98-80-212-234.compute-1.amazonaws.com:8888/
zeppelin	http://ec2-98-80-212-234.compute-1.amazonaws.com:8890/

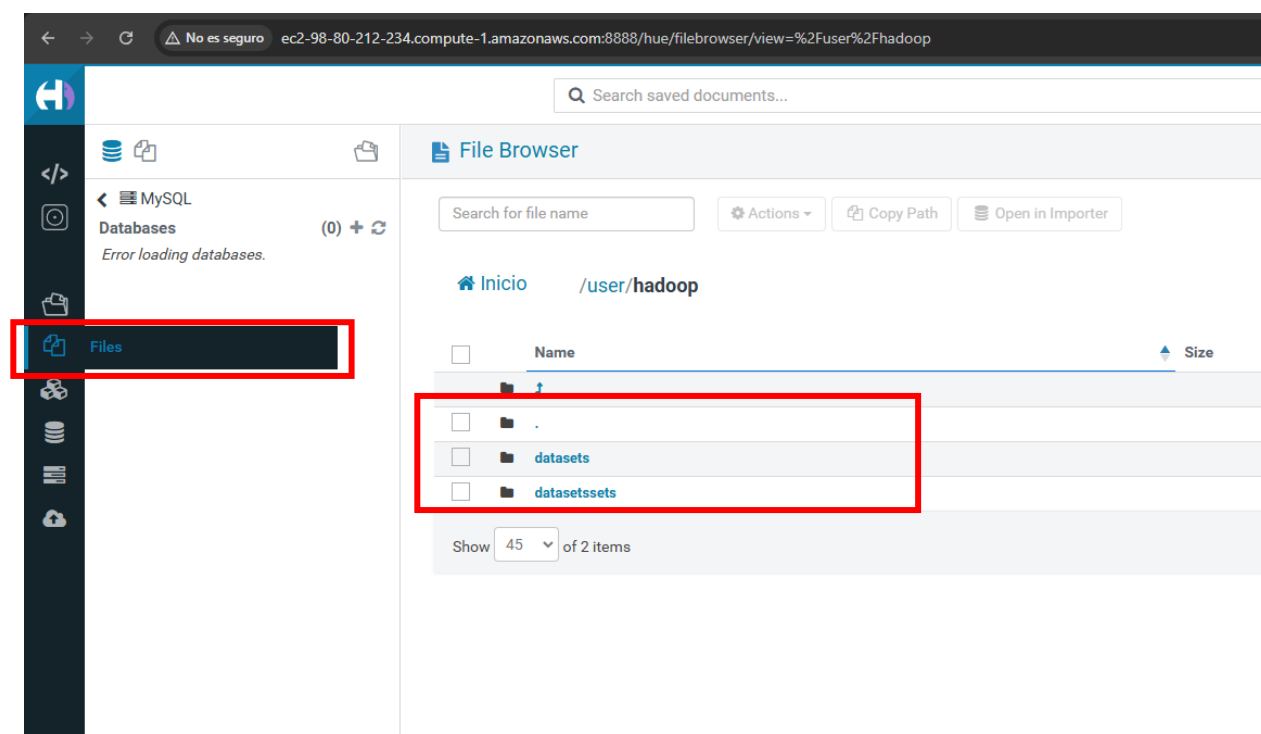
☒ URL de la IU Tonalidad copiado

IU de aplicaciones en los nodos principales y de tareas

Luego de iniciar sesión veremos la siguiente interfaz



Nos dirigimos en la barra de navegación a “files”



Navegamos hasta los archivos que compartimos

Search saved documents...

File Browser

Search for file name

Actions Copy Path Open in Importer

Upload New

Inicio /user/hadoop/datasets/gutenberg-small

Name	Size	Usuario	Group	Permissions	Date
.		hadoop	hdfsadmingroup	drwxr-xr-x	November 22, 2024 03:33 PM
AbrahamLincoln__LincolnLetters.txt	5.7 KB	hadoop	hdfsadmingroup	-rw-r--r--	November 22, 2024 03:35 PM
AbrahamLincoln__LincolnFirstInauguralAddress.txt	21.1 KB	hadoop	hdfsadmingroup	-rw-r--r--	November 22, 2024 03:35 PM
AbrahamLincoln__LincolnGettysburgAddressGivenNovember-19-1863.txt	1.6 KB	hadoop	hdfsadmingroup	-rw-r--r--	November 22, 2024 03:35 PM
AbrahamLincoln__LincolnInauguralAddressesandLettersSelections.txt	255.9 KB	hadoop	hdfsadmingroup	-rw-r--r--	November 22, 2024 03:35 PM
AbrahamLincoln__LincolnSecondInauguralAddress.txt	4.0 KB	hadoop	hdfsadmingroup	-rw-r--r--	November 22, 2024 03:35 PM
AbrahamLincoln__SpeechesandLettersofAbrahamLincoln1832-1865.txt	504.2 KB	hadoop	hdfsadmingroup	-rw-r--r--	November 22, 2024 03:35 PM
AbrahamLincoln__StateoftheUnionAddresses.txt	164.0 KB	hadoop	hdfsadmingroup	-rw-r--r--	November 22, 2024 03:35 PM
AbrahamLincoln__TheEmancipationProclamation.txt	3.8 KB	hadoop	hdfsadmingroup	-rw-r--r--	November 22, 2024 03:35 PM
AbrahamLincoln__TheLifeandPublicServiceofGeneralZacharyTaylorAnAddress.txt	44.6 KB	hadoop	hdfsadmingroup	-rw-r--r--	November 22, 2024 03:35 PM
AbrahamLincoln__TheWritingsofAbrahamLincolnVolume1.txt	448.2 KB	hadoop	hdfsadmingroup	-rw-r--r--	November 22, 2024 03:35 PM
AbrahamLincoln__TheWritingsofAbrahamLincolnVolume2.txt	493.3 KB	hadoop	hdfsadmingroup	-rw-r--r--	November 22, 2024 03:35 PM
AbrahamLincoln__TheWritingsofAbrahamLincolnVolume3.txt	249.0 KB	hadoop	hdfsadmingroup	-rw-r--r--	November 22, 2024 03:35 PM
AbrahamLincoln__TheWritingsofAbrahamLincolnVolume4.txt	204.7 KB	hadoop	hdfsadmingroup	-rw-r--r--	November 22, 2024 03:35 PM
AbrahamLincoln__TheWritingsofAbrahamLincolnVolume5.txt	675.8 KB	hadoop	hdfsadmingroup	-rw-r--r--	November 22, 2024 03:35 PM
AbrahamLincoln__TheWritingsofAbrahamLincolnVolume6.txt	587.0 KB	hadoop	hdfsadmingroup	-rw-r--r--	November 22, 2024 03:35 PM
AbrahamLincoln__TheWritingsofAbrahamLincolnVolume7.txt	467.5 KB	hadoop	hdfsadmingroup	-rw-r--r--	November 22, 2024 03:35 PM

Show 45 of 16 items

Page 1 of 1

Vemos un archivo cargado en el sistema.

Search saved documents...

File Browser

Back Edit file Refresh View as binary Download

Last modified: 22/11/2024 18:35:05:00

Usuario: hadoop

Group: hdfsadmingroup

Size: 5.74 KB

Mode: 100644

Inicio /user/hadoop/datasets/gutenberg-small/AbrahamLincoln__LincolnLetters.txt

Page 1 to 2 of 2

LINCOLN LETTERS

By Abraham Lincoln

Published by the Bibliophile Society

NOTE

The letters herein by Lincoln are so thoroughly characteristic of the man, and are in themselves so completely self-explanatory, that it requires no comment to enable the reader fully to understand and appreciate them. It will be observed that the philosophical admonitions in the letter to his brother, Johnston, were written on the same sheet with the letter to his father.

The promptness and decision with which Lincoln despatched the multitudinous affairs of his office during the most turbulent scenes of the Civil War are exemplified in his unequivocal order to the Attorney-General, indorsed on the back of the letter of Hon. Austin A. King, requesting a pardon for John B. Corner. The indorsement bears even date with the letter itself, and Corner was pardoned on the following day.

THE ORIGINALS FROM WHICH THE BETHEN FACSIMILES WERE MADE ARE IN THE COLLECTION OF MR. WILLIAM K. BIXBY, AND THROUGH HIS COURTESY THEY ARE REPRODUCED FOR MEMBERS OF THE BIBLIOPHILE SOCIETY

[Illustration: 01 TO HIS FATHER]

THE FACSIMILES ON THE LEFT CONTAINED