Assignment -2.1

1. **Task1:** Check whether /user/acadgild directory exists or not in the HDFS. If it doesn't exist then create this. Create a directory /user/acadgild/hadoop.

Answer 1:

test command is used to check the existence of any component. A brief functionality is explained for the different options available in –test command.

Syntax: **hadoop fs –test –[defsz] URI**

- -d: if the path is a directory, return 0.
- -e: if the path exists, return 0.
- -f: if the path is a file, return 0.
- -s: if the path is not empty, return 0.
- -r: if the path exists and read permission is granted, return 0.
- -w: if the path exists and write permission is granted, return 0.
- -z: if the file is zero length, return 0.

The usage is shown in the below screenshot.

```
[acadgild@localhost ~]$ hadoop fs -test -d /user/acadgild
18/02/17 22:06:13 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes where
applicable
[acadgild@localhost ~]$ echo $?
0
[acadgild@localhost ~]$
```

Fig 2.1

Here test command needs to be written to check for existence of a directory.

Hadoop fs –test –d /user/acadgild

Once the above command is executed, check the return code of previous command executed in HDFS by using the **echo** command as mentioned below.

echo $?

If the **return** from **echo** command is **0** then above **directory exists** (refer Fig 2.1) and if the **return** code is **1** then the **directory doesn't exists** (refer Fig 2.2)

```
[acadgild@localhost ~]$ hadoop fs -test -d /user/test
18/02/17 22:20:28 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes where
applicable
[acadgild@localhost ~]$ echo $?
1
[acadgild@localhost ~]$
```

Fig 2.2

Executing the below to create a new directory - /user/acadgild/hadoop (Refer Fig 2.3)

hadoop fs –mkdir /user/acadgild/hadoop

```
[acadgild@localhost ~]$ hadoop fs -mkdir /user/acadgild/hadoop
18/02/17 22:22:45 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes where
applicable
[acadgild@localhost ~]$ echo $?
0
```

Fig 2.3

2. **Task2:** Create a file in HDFS under directory /user/acadgild/haadoop, with name word-count.txt. Whatever we type on screen should get appended to the file. Try to type (on screen) few lines from any online article or textbook.

Answer2:

Execute the below to create word-count.txt file in HDFS location as mentioned (refer Fig 2.4).

hadoop fs -touchz /user/acadgild/hadoop/word-count.txt

```
[acadgild@localhost ~]$ hadoop fs -touchz /user/acadgild/hadoop/word-count.txt
18/02/17 23:02:12 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes where
applicable
[acadgild@localhost ~]$ hadoop fs -ls /user/acadgild/hadoop
18/02/17 23:02:25 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes where
applicable
Found 1 items
-rw-r--r--   1 acadgild supergroup          0 2018-02-17 23:02 /user/acadgild/hadoop/word-count.txt
[acadgild@localhost ~]$
```

Fig 2.4

To save the inputs on screen to the file in HDFS, use **appendToFile** command as below (refer Fig 2.5).

hadoop fs -appendToFile - /user/acadgild/hadoop/word-count.txt

Above command will allow writing content on the screen, so getting article written and once completing hit **Ctrl + D** to come out of the writing space.

```
[acadgild@localhost ~]$ hadoop fs -appendToFile - /user/acadgild/hadoop/word-count.txt
18/02/18 00:26:29 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes where
applicable
It's 2018, but still tough to get online in the Andamans

Visitors from the mainland are at first perplexed and then frustrated when they cannot 'stay connected' in the Andaman and Nicobar Island
s. A strong Internet connection is rare here, data services for smartphones are almost non-existent even in Port Blair and voice calls dr
op frequently. Islanders face difficulty in banking and buying online, and GST returns are often filed late.

Poor connections can potentially be disastrous. In October 2017, a bus with 39 students on its way to Billyground from a college in Mayab
under was gutted in a fire. There were no casualties, but Fire Services personnel reached late because mobile phones did not work at the
site.

"I have been staying at Diglipur since January 2017. Internet is almost non-existent and even the phone network doesn't work for more tha
n 15 days in a month," says Dr. Punam Tripathi, author of Routledge's forthcoming book, The Vulnerable Andaman and Nicobar Islands: A Stu
dy of Disasters and Response. The National Optical Fibre Network (NOFN), envisioned to cover 26 States and Union Territories in 2011, is
yet to connect the Andaman islands, which rely on expensive satellite bandwidth. "Do you have BSNL?" is thus a frequently heard query. BS
NL sources its bandwidth from the Indian Space Research Organisation's GSAT 16 and GSAT 18 satellites. It has hired 24 transponders for 7
2 base transceiver stations (BTS) for 3G and 160 for 2G across the islands, and also has 52 landline exchanges and 480 leased circuits.

Landline-linked broadband Internet is the most reliable data service here. Government authorities, banks and institutional users get 2 Mb
ps leased VSAT (very small aperture terminal) Internet lines. WhatsApp does work in areas where 3G coverage is not available, but is a lo
t slower. A plan to nearly double satellite bandwidth to 2 Gbps was approved by the Department of Telecommunications, but expansion has b
een hit by problems like unsuitability of old technology. Approximately 10% of the 1,300 MHz bandwidth that BSNL gets from ISRO is 'lost
in transmission'.
[acadgild@localhost ~]$
```

Fig 2.5

3. **Task3:** Create a file max-temp.txt in local FS. Put some 10 – 15 records of date and temperature example: dd-mm-yyyy, temperature.
   Example:
   10-01-1990, 10
   10-02-1991, 20
   Move this file to HDFS at /user/acadgild/hadoop.
   Answer3:
   Use **nano** command to get the max-temp.txt file created in local FS.
   nano max-temp.txt

This command will open the text editor on screen and we can enter the values as mentioned in the example above (refer Fig 2.6).

```
 GNU nano 2.0.9                    File: max-temp.txt

10-01-1991,10
10-02-1992,9
10-03-1993,13
10-06-1994,30
10-03-1995,14
10-01-1996,25
10-02-1991,27
10-05-1992,29
10-06-1993,33
10-08-1994,20
10-03-1995,19
10-05-1996,2
10-07-1991,0
10-09-1992,45
10-10-1993,41
10-11-1994,6

^G Get Help  ^O WriteOut  ^R Read File  ^Y Prev Page  ^K Cut Text  ^C Cur Pos
^X Exit      ^J Justify   ^W Where Is   ^V Next Page  ^U UnCut Text ^T To Spell
```

Fig 2.6

Ctrl +X to come out of the text editor and use **cat** command (refer Fig 2.7) to read the content to cross check the file is created successfully.

```
[acadgild@localhost ~]$ cat max-temp.txt
10-01-1991,10
10-02-1992,9
10-03-1993,13
10-06-1994,30
10-03-1995,14
10-01-1996,25
10-02-1991,27
10-05-1992,29
10-06-1993,33
10-08-1994,20
10-03-1995,19
10-05-1996,2
10-07-1991,0
10-09-1992,45
10-10-1993,41
10-11-1994,6
[acadgild@localhost ~]$
```

Fig 2.7

Now to move the file max-temp.txt from local FS to HDFS location – use **put** command as below (refer Fig 2.8) and proceed for listing to ensure the file has been moved.

hadoop fs -put /home/acadgild/max-temp.txt /user/acadgild/hadoop

```
[acadgild@localhost ~]$ hadoop fs -put /home/acadgild/max-temp.txt /user/acadgild/hadoop
18/02/18 01:03:26 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes where
applicable
[acadgild@localhost ~]$ hadoop fs -ls /user/acadgild/hadoop
18/02/18 01:04:07 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes where
applicable
Found 2 items
-rw-r--r--   1 acadgild supergroup        220 2018-02-18 01:03 /user/acadgild/hadoop/max-temp.txt
-rw-r--r--   1 acadgild supergroup       2135 2018-02-18 00:29 /user/acadgild/hadoop/word-count.txt
[acadgild@localhost ~]$
```

Fig 2.8

4. **Task4:** Change the permission of file /user/acadgild/hadoop/max-temp.txt, such that only the owner and the group members have full control over the file.
   Others do not have any control over it.
   Answer4:
   Initially get the file permission details for the file /user/acadgild/hadoop/max-temp.txt using **getfacl** command as mentioned below.
   hadoop fs -getfacl /user/acadgild/hadoop/max-temp.txt

```
[acadgild@localhost ~]$ hadoop fs -getfacl /user/acadgild/hadoop/max-temp.txt
18/02/19 11:41:38 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes where
applicable
# file: /user/acadgild/hadoop/max-temp.txt
# owner: acadgild
# group: supergroup
user::rw-
group::r--
other::r--
```

Fig 2.9

Above (figure 2.9) output of **getfacl** command shows
User has – Read, Write access.
Group has – Read access.
Others has – Read access.

Use **chmod** command to modify the file permissions for the max-temp.txt file.

1. This command will **remove** the **read** permission to **other members** (refer fig 2.10).

hadoop fs -chmod o-r /user/acadgild/hadoop/max-temp.txt

```
[acadgild@localhost ~]$ hadoop fs -chmod o-r /user/acadgild/hadoop/max-temp.txt
18/02/19 11:53:29 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes where
applicable
[acadgild@localhost ~]$ hadoop fs -getfacl /user/acadgild/hadoop/max-temp.txt
18/02/19 11:53:38 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes where
applicable
# file: /user/acadgild/hadoop/max-temp.txt
# owner: acadgild
# group: supergroup
user::rw-
group::r--
other::---
```

Fig 2.10

2. This command will **grant** the **read/write/execute** permission to **Owner and Group members** (refer fig 2.11).

hadoop fs -chmod ug+rwx /user/acadgild/hadoop/max-temp.txt

```
[acadgild@localhost ~]$ hadoop fs -chmod ug+rwx /user/acadgild/hadoop/max-temp.txt
18/02/19 12:38:23 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes where
applicable
[acadgild@localhost ~]$ hadoop fs -getfacl /user/acadgild/hadoop/max-temp.txt
18/02/19 12:38:35 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes where
applicable
# file: /user/acadgild/hadoop/max-temp.txt
# owner: acadgild
# group: supergroup
user::rwx
group::rwx
other::---
```

Fig 2.11

Here (refer fig 2.11) the getfacl command shows the file permission has been set only to the owner and group members. There is no file permission for the Other members.