```
chosun@chosun-VirtualBox:~/hadoop$
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/// **************************************************** ///
HomeWorkEX6_3.jar은 맵파일 생성 jar파일
/// **************************************************** ///
chosun@chosun-VirtualBox:~/hadoop$ ls
1987.csv    HomeWorkEX6_1.jar    HomeWorkEX6_5.jar    NOTICE.txt    c++    docs    hadoop-examples-1.2.1.jar    input.txt    libexec
share    2007.csv    HomeWorkEX6_2.jar    LICENSE.txt    README.txt    conf    hadoop-ant-1.2.1.jar    hadoop-minicluster-1.2.1.jar    ivy
logs    src    2008.csv    HomeWorkEX6_3.jar    MyMy.jar    bin    contrib    hadoop-client-1.2.1.jar    hadoop-test-1.2.1.jar    ivy.xml    pids
webapps    CHANGES.txt    HomeWorkEX6_4.jar    MyMyMy.jar    build.xml    dataexpo    hadoop-core-1.2.1.jar    hadoop-tools-1.2.1.jar
lib    sbin    wordcount_output
chosun@chosun-VirtualBox:~/hadoop$
chosun@chosun-VirtualBox:~/hadoop$
chosun@chosun-VirtualBox:~/hadoop$
chosun@chosun-VirtualBox:~/hadoop$ hadoop fs -ls
WARNING: An illegal reflective access operation has occurred
WARNING: Illegal reflective access by org.apache.hadoop.security.authentication.util.KerberosUtil (file:/home/chosun/hadoop-1.2.1/
hadoop-core-1.2.1.jar) to method sun.security.krb5.Config.getInstance()
WARNING: Please consider reporting this to the maintainers of org.apache.hadoop.security.authentication.util.KerberosUtil
WARNING: Use --illegal-access=warn to enable warnings of further illegal reflective access operations
WARNING: All illegal access operations will be denied in a future release
Found 10 items
-rw-r--r--    1 chosun supergroup            15 2019-04-09 22:24 /user/chosun/20154215.txt
drwxr-xr-x    - chosun supergroup             0 2019-04-29 21:21 /user/chosun/HW_0429
drwxr-xr-x    - chosun supergroup             0 2019-04-30 01:43 /user/chosun/HW_0430
drwxr-xr-x    - chosun supergroup             0 2019-04-30 01:44 /user/chosun/HW_Sequencefile
drwxr-xr-x    - chosun supergroup             0 2019-04-29 21:23 /user/chosun/HW_delay_sort
drwxr-xr-x    - chosun supergroup             0 2019-04-08 21:44 /user/chosun/MyMY
-rw-r--r--    1 chosun supergroup     533922063 2019-04-08 21:50 /user/chosun/MyMy
drwxr-xr-x    - chosun supergroup             0 2019-04-09 21:06 /user/chosun/conf
drwxr-xr-x    - chosun supergroup             0 2019-04-08 22:13 /user/chosun/delay
drwxr-xr-x    - chosun supergroup             0 2019-04-09 20:59 /user/chosun/wordcount_output
chosun@chosun-VirtualBox:~/hadoop$
chosun@chosun-VirtualBox:~/hadoop$
chosun@chosun-VirtualBox:~/hadoop$
/// **************************************************** ///
jar 파일 실행
HW_Sequencefile 디렉토리의 파일을 jar파일로 처리한 것을 HW_Mapfile에 저장
MapFileCreator는 클래스 이름
/// **************************************************** ///
chosun@chosun-VirtualBox:~/hadoop$ hadoop jar HomeWorkEX6_3.jar MapFileCreator HW_Sequencefile HW_Mapfile
WARNING: An illegal reflective access operation has occurred
WARNING: Illegal reflective access by org.apache.hadoop.security.authentication.util.KerberosUtil (file:/home/chosun/hadoop-1.2.1/
hadoop-core-1.2.1.jar) to method sun.security.krb5.Config.getInstance()
WARNING: Please consider reporting this to the maintainers of org.apache.hadoop.security.authentication.util.KerberosUtil
WARNING: Use --illegal-access=warn to enable warnings of further illegal reflective access operations
WARNING: All illegal access operations will be denied in a future release
19/04/30 01:55:29 WARN mapred.JobClient: Use GenericOptionsParser for parsing the arguments. Applications should implement Tool for
the same.
19/04/30 01:55:29 INFO mapred.FileInputFormat: Total input paths to process : 11
19/04/30 01:55:29 INFO mapred.JobClient: Running job: job_201904300049_0009
19/04/30 01:55:30 INFO mapred.JobClient:  map 0% reduce 0%
19/04/30 01:55:36 INFO mapred.JobClient:  map 18% reduce 0%
19/04/30 01:55:40 INFO mapred.JobClient:  map 36% reduce 0%
19/04/30 01:55:44 INFO mapred.JobClient:  map 54% reduce 12%
19/04/30 01:55:48 INFO mapred.JobClient:  map 72% reduce 12%
19/04/30 01:55:51 INFO mapred.JobClient:  map 81% reduce 12%
19/04/30 01:55:52 INFO mapred.JobClient:  map 90% reduce 12%
19/04/30 01:55:53 INFO mapred.JobClient:  map 100% reduce 24%
19/04/30 01:55:59 INFO mapred.JobClient:  map 100% reduce 69%
19/04/30 01:56:02 INFO mapred.JobClient:  map 100% reduce 72%
```

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19/04/30 01:56:05 INFO mapred.JobClient:  map 100% reduce 75%
19/04/30 01:56:08 INFO mapred.JobClient:  map 100% reduce 77%
19/04/30 01:56:11 INFO mapred.JobClient:  map 100% reduce 80%
19/04/30 01:56:14 INFO mapred.JobClient:  map 100% reduce 83%
19/04/30 01:56:17 INFO mapred.JobClient:  map 100% reduce 85%
19/04/30 01:56:20 INFO mapred.JobClient:  map 100% reduce 88%
19/04/30 01:56:23 INFO mapred.JobClient:  map 100% reduce 90%
19/04/30 01:56:26 INFO mapred.JobClient:  map 100% reduce 93%
19/04/30 01:56:29 INFO mapred.JobClient:  map 100% reduce 95%
19/04/30 01:56:32 INFO mapred.JobClient:  map 100% reduce 98%
19/04/30 01:56:35 INFO mapred.JobClient:  map 100% reduce 100%
19/04/30 01:56:35 INFO mapred.JobClient: Job complete: job_201904300049_0009
19/04/30 01:56:35 INFO mapred.JobClient: Counters: 30
19/04/30 01:56:35 INFO mapred.JobClient:     Map-Reduce Framework
19/04/30 01:56:35 INFO mapred.JobClient:       Spilled Records=20660788
19/04/30 01:56:35 INFO mapred.JobClient:       Map output materialized bytes=731471478
19/04/30 01:56:35 INFO mapred.JobClient:       Reduce input records=7009728
19/04/30 01:56:35 INFO mapred.JobClient:       Virtual memory (bytes) snapshot=25064910848
19/04/30 01:56:35 INFO mapred.JobClient:       Map input records=7009728
19/04/30 01:56:35 INFO mapred.JobClient:       SPLIT_RAW_BYTES=1243
19/04/30 01:56:35 INFO mapred.JobClient:       Map output bytes=717451956
19/04/30 01:56:35 INFO mapred.JobClient:       Reduce shuffle bytes=731471478
19/04/30 01:56:35 INFO mapred.JobClient:       Physical memory (bytes) snapshot=2725203968
19/04/30 01:56:35 INFO mapred.JobClient:       Map input bytes=188805860
19/04/30 01:56:35 INFO mapred.JobClient:       Reduce input groups=1435
19/04/30 01:56:35 INFO mapred.JobClient:       Combine output records=0
19/04/30 01:56:35 INFO mapred.JobClient:       Reduce output records=7009728
19/04/30 01:56:35 INFO mapred.JobClient:       Map output records=7009728
19/04/30 01:56:35 INFO mapred.JobClient:       Combine input records=0
19/04/30 01:56:35 INFO mapred.JobClient:       CPU time spent (ms)=81200
19/04/30 01:56:35 INFO mapred.JobClient:       Total committed heap usage (bytes)=1912602624
19/04/30 01:56:35 INFO mapred.JobClient:     File Input Format Counters
19/04/30 01:56:35 INFO mapred.JobClient:       Bytes Read=188807235
19/04/30 01:56:35 INFO mapred.JobClient:     FileSystemCounters
19/04/30 01:56:35 INFO mapred.JobClient:       HDFS_BYTES_READ=188808478
19/04/30 01:56:35 INFO mapred.JobClient:       FILE_BYTES_WRITTEN=2156233590
19/04/30 01:56:35 INFO mapred.JobClient:       FILE_BYTES_READ=1424083942
19/04/30 01:56:35 INFO mapred.JobClient:       HDFS_BYTES_WRITTEN=161310905
19/04/30 01:56:35 INFO mapred.JobClient:     File Output Format Counters
19/04/30 01:56:35 INFO mapred.JobClient:       Bytes Written=161310905
19/04/30 01:56:35 INFO mapred.JobClient:     Job Counters
19/04/30 01:56:35 INFO mapred.JobClient:       Launched map tasks=11
19/04/30 01:56:35 INFO mapred.JobClient:       Launched reduce tasks=1
19/04/30 01:56:35 INFO mapred.JobClient:       SLOTS_MILLIS_REDUCES=59439
19/04/30 01:56:35 INFO mapred.JobClient:       Total time spent by all reduces waiting after reserving slots (ms)=0
19/04/30 01:56:35 INFO mapred.JobClient:       SLOTS_MILLIS_MAPS=40516
19/04/30 01:56:35 INFO mapred.JobClient:       Total time spent by all maps waiting after reserving slots (ms)=0
19/04/30 01:56:35 INFO mapred.JobClient:       Data-local map tasks=11
MR-Job Result:0
chosun@chosun-VirtualBox:~/hadoop$
chosun@chosun-VirtualBox:~/hadoop$
/// ********************************************************* ///
HW_Mapfile 디렉토리 > part-00000 디렉토리 > data, index 파일 생성 확인
data 파일에 저장된 상위 10개의 키와 값 확인
/// ********************************************************* ///
chosun@chosun-VirtualBox:~/hadoop$ hadoop fs -ls HW_Mapfile
WARNING: An illegal reflective access operation has occurred
WARNING: Illegal reflective access by org.apache.hadoop.security.authentication.util.KerberosUtil (file:/home/chosun/hadoop-1.2.1/
hadoop-core-1.2.1.jar) to method sun.security.krb5.Config.getInstance()
WARNING: Please consider reporting this to the maintainers of org.apache.hadoop.security.authentication.util.KerberosUtil
WARNING: Use --illegal-access=warn to enable warnings of further illegal reflective access operations
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WARNING: All illegal access operations will be denied in a future release
Found 3 items
-rw-r--r--   1 chosun supergroup   0 2019-04-30 01:56 /user/chosun/HW_Mapfile/_SUCCESS
drwxr-xr-x   - chosun supergroup   0 2019-04-30 01:55 /user/chosun/HW_Mapfile/_logs
drwxr-xr-x   - chosun supergroup   0 2019-04-30 01:56 /user/chosun/HW_Mapfile/part-00000
chosun@chosun-VirtualBox:~/hadoop$
chosun@chosun-VirtualBox:~/hadoop$
chosun@chosun-VirtualBox:~/hadoop$
chosun@chosun-VirtualBox:~/hadoop$ hadoop fs -ls HW_Mapfile/part-00000
WARNING: An illegal reflective access operation has occurred
WARNING: Illegal reflective access by org.apache.hadoop.security.authentication.util.KerberosUtil (file:/home/chosun/hadoop-1.2.1/hadoop-core-1.2.1.jar) to method sun.security.krb5.Config.getInstance()
WARNING: Please consider reporting this to the maintainers of org.apache.hadoop.security.authentication.util.KerberosUtil
WARNING: Use --illegal-access=warn to enable warnings of further illegal reflective access operations
WARNING: All illegal access operations will be denied in a future release
Found 2 items
-rw-r--r--   1 chosun supergroup 161302998 2019-04-30 01:55 /user/chosun/HW_Mapfile/part-00000/data
-rw-r--r--   1 chosun supergroup   7907 2019-04-30 01:55 /user/chosun/HW_Mapfile/part-00000/index
chosun@chosun-VirtualBox:~/hadoop$
chosun@chosun-VirtualBox:~/hadoop$
chosun@chosun-VirtualBox:~/hadoop$ hadoop fs -text HW_Mapfile/part-00000/data | head -10
WARNING: An illegal reflective access operation has occurred
WARNING: Illegal reflective access by org.apache.hadoop.security.authentication.util.KerberosUtil (file:/home/chosun/hadoop-1.2.1/hadoop-core-1.2.1.jar) to method sun.security.krb5.Config.getInstance()
WARNING: Please consider reporting this to the maintainers of org.apache.hadoop.security.authentication.util.KerberosUtil
WARNING: Use --illegal-access=warn to enable warnings of further illegal reflective access operations
WARNING: All illegal access operations will be denied in a future release
19/04/30 01:59:47 INFO util.NativeCodeLoader: Loaded the native-hadoop library
19/04/30 01:59:47 INFO zlib.ZlibFactory: Successfully loaded & initialized native-zlib library
19/04/30 01:59:47 INFO compress.CodecPool: Got brand-new decompressor
19/04/30 01:59:47 INFO compress.CodecPool: Got brand-new decompressor
19/04/30 01:59:47 INFO compress.CodecPool: Got brand-new decompressor
19/04/30 01:59:47 INFO compress.CodecPool: Got brand-new decompressor
11   2008,8,10,7,1315,1220,1415,1320,OH,5572,N819CA,60,60,14,55,55,JFK,LGA,11,8,38,0,,0,55,0,0,0,0
11   2008,5,15,4,2037,1800,2125,1900,OH,4988,N806CA,48,60,31,145,157,JFK,LGA,11,10,7,0,,0,145,0,0,0,0
17   2008,3,8,6,NA,1105,NA,1128,AA,1368,,NA,23,NA,NA,NA,EWR,LGA,17,NA,NA,1,B,0,NA,NA,NA,NA,NA
21   2008,5,9,5,48,100,117,130,AA,588,N061AA,29,30,11,-13,-12,MIA,FLL,21,6,12,0,,0,NA,NA,NA,NA,NA
21   2008,2,8,5,NA,1910,NA,1931,AA,1668,,NA,21,NA,NA,NA,FLL,MIA,21,NA,NA,1,A,0,NA,NA,NA,NA,NA
24   2008,11,27,4,943,940,1014,956,9E,5816,91469E,31,16,9,18,3,IAH,HOU,24,5,17,0,,0,0,0,18,0,0
24   2008,3,12,3,955,931,1021,948,9E,2009,91619E,26,17,10,33,24,IAH,HOU,24,7,9,0,,0,0,0,9,0,24
24   2008,1,2,3,1245,1025,1340,1125,OH,5610,N806CA,55,60,11,135,140,IAD,DCA,24,5,39,0,,0,135,0,0,0,0
28   2008,2,22,5,2046,2050,NA,2156,OO,3698,N298SW,NA,66,NA,NA,-4,SLC,OGD,28,NA,12,0,,1,NA,NA,NA,NA,NA
30   2008,1,6,7,2226,2200,2301,2240,CO,348,N56859,35,40,11,21,26,SJC,SFO,30,7,17,0,,0,0,0,0,0,21
text: Unable to write to output stream.
chosun@chosun-VirtualBox:~/hadoop$