Step 1: Generate an input file to the Pi MapReduce program

Step 1.1: Create a regular Java program which accepts two command line arguments.
R: The radius
N: The number of (x, y) pairs to create The Java program then randomly generates N pairs of (x, y) and displays them on the standard output.

Step 1.2: Run the program created in Step 1.1 and save the result in a file. The file is the input to Step 2's Pi MapReduce program.

Step 2: Create a MapReduce program to calculate the numbers of inside darts and outside darts.

Step 3: Use the file generated in Step 1.2 as the input to execute the MapReduce program created in Step 2

Step 4: Calculate Pi in the driver program based on the numbers of inside darts and outside darts.

GenerateRandomNumbers.java

```
import java.io.File;
import java.io.FileWriter;
import java.io.IOException;
import java.util.Scanner;

public class GenerateRandomNumbers {
   public static void main(String[] args) {
      System.out.println("How many random numbers to generate:");   // we use 1000000 to test
      Scanner input = new Scanner(System.in);
      int RandomNumCount = input.nextInt();

      System.out.println("What's the radius?");   //we use 200 to test
      int radius = input.nextInt();
      int diameter = radius * 2;
```

```
        input.close();

        try {

            // it creates file input4
            File file = new File("./PiCalculationInput");
            file.createNewFile();

            // Prepare input data
            FileWriter writer = new FileWriter(file);
            //writer.write(radius + "\r\n");
            //writer.write(System.getProperty("line.separator"));

            for (int i = 0; i < RandomNumCount; i++) {
                int xvalue = (int) (Math.random() * diameter);
                int yvalue = (int) (Math.random() * diameter);
                writer.write("(" + xvalue + "," + yvalue + ") ");
            }

            // send the data into the file
            writer.flush();

            // closing the write after pushing the data inside the .txt file
            writer.close();
        } catch (IOException e) {
            e.printStackTrace();
        }
    }
}
```

Picalculation.java

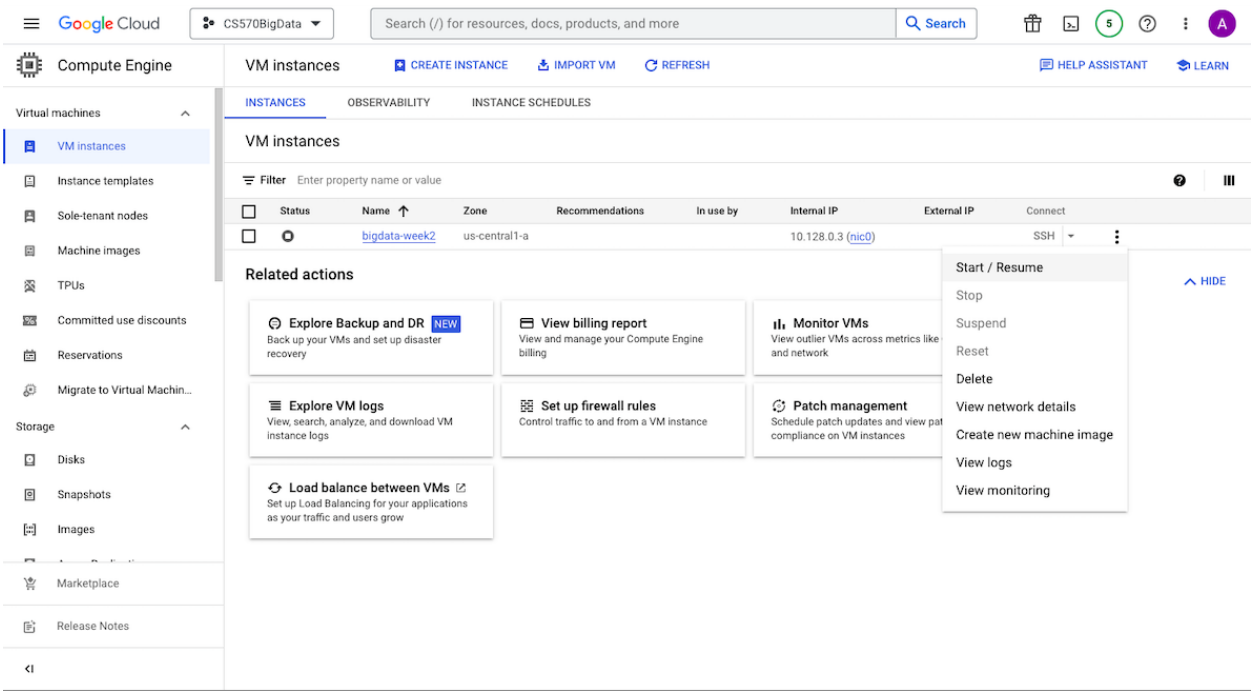
```
import java.io.*;
import java.util.*;
import java.lang.Object;
import java.net.URI;

import org.apache.hadoop.fs.Path;
import org.apache.hadoop.conf.*;
import org.apache.hadoop.io.*;
import org.apache.hadoop.mapreduce.*;
import org.apache.hadoop.mapreduce.Mapper.Context;
```

```
import org.apache.hadoop.mapreduce.lib.input.FileInputFormat;
import org.apache.hadoop.mapreduce.lib.input.TextInputFormat;
import org.apache.hadoop.mapreduce.lib.output.FileOutputFormat;
import org.apache.hadoop.mapreduce.lib.output.TextOutputFormat;
import org.apache.hadoop.fs.*;

public class PiCalculation {

   public static class TokenizerMapper
        extends Mapper<Object, Text, Text, IntWritable> {

      private final static IntWritable one = new IntWritable(1);
      private Text word = new Text();
      private int totalLines = 0;

      public void map(Object key, Text value, Context context) throws IOException,
InterruptedException {

         totalLines += 1;
         String line = value.toString();
         line = line.replace("(", "");
         line = line.replace(")", "");
         line = line.replace(",", " ");

         StringTokenizer itr = new StringTokenizer(line);
         int radius = 200;// Same as the one you give in PiDataGenerator stage
         while (itr.hasMoreTokens()) {
            String x, y;
            x = itr.nextToken();
            if (itr.hasMoreTokens()) {
               y = itr.nextToken();
            } else {
               y = "0";
            }
            int xvalue = (int) (Integer.parseInt(x));
            int yvalue = (int) (Integer.parseInt(y));
            double check = Math.sqrt(Math.pow((radius - xvalue), 2) + Math.pow((radius - yvalue),
2));

            if (check < radius) {
               word.set("inside");
            } else {
               word.set("outside");
            }
```

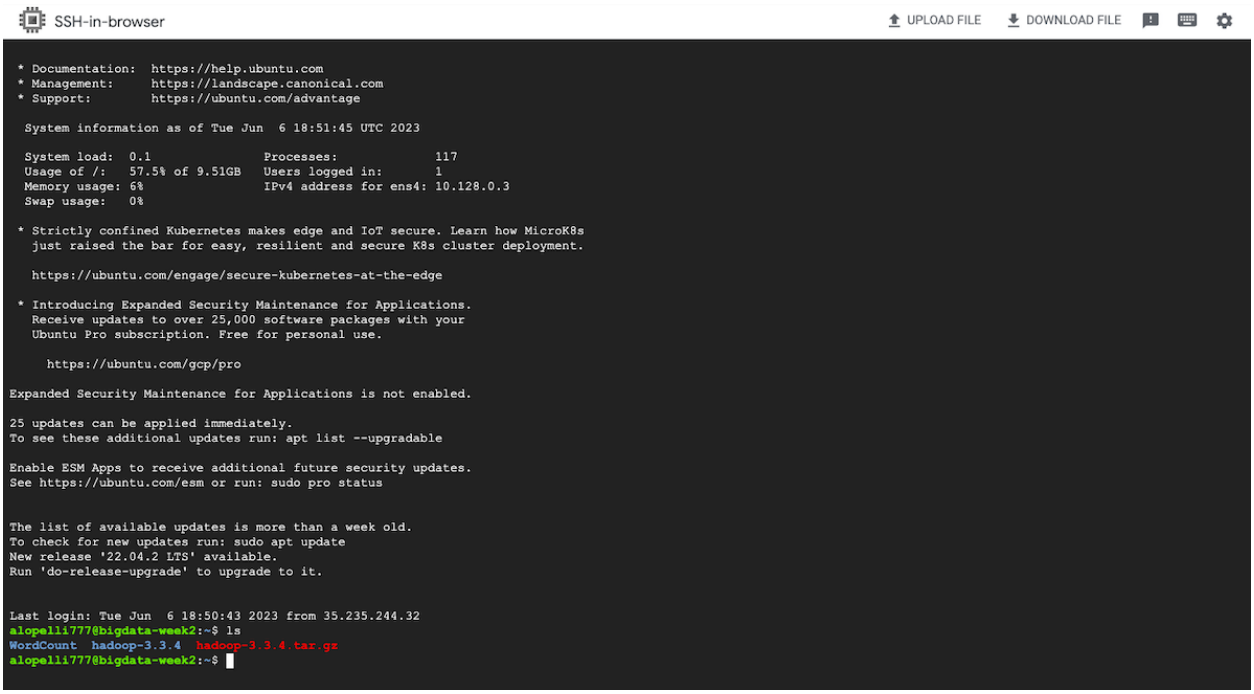
```
            context.write(word, one);
        }
    }
}

public static class IntSumReducer
        extends Reducer<Text, IntWritable, Text, IntWritable> {
    private IntWritable result = new IntWritable();

    public void reduce(Text key, Iterable<IntWritable> values,
            Context context) throws IOException, InterruptedException {
        int sum = 0;
        for (IntWritable val : values) {
            sum += val.get();
        }
        result.set(sum);
        context.write(key, result);
    }
}

public static void main(String[] args) throws Exception {
    Configuration conf = new Configuration();
    Job job = Job.getInstance(conf, "pi calculation");
    job.setJarByClass(PiCalculation.class);
    job.setMapperClass(TokenizerMapper.class);
    job.setCombinerClass(IntSumReducer.class);
    job.setReducerClass(IntSumReducer.class);
    job.setOutputKeyClass(Text.class);
    job.setOutputValueClass(IntWritable.class);
    FileInputFormat.addInputPath(job, new Path(args[0]));
    FileOutputFormat.setOutputPath(job, new Path(args[1]));
    // System.exit(job.waitForCompletion(true) ? 0 : 1);
    job.waitForCompletion(true);
    String filePath = args[1] + "/" + "part-r-00000";
    Path path = new Path(filePath);
    FileSystem fs = FileSystem.get(path.toUri(), conf);

    BufferedReader br = new BufferedReader(new InputStreamReader(fs.open(path)));

    String z, inside = null, outside = null;

    String line1, line2;

    line1 = br.readLine();
```

```
        System.out.println(line1);
        line2 = br.readLine();
        System.out.println(line2);

        line1 = line1.replace("inside", "").trim();
        line2 = line2.replace("outside", "").trim();

        System.out.println("Inside:" + line1 + ", Outside:" + line2);

        if (line1 != null && line2 != null) {
           double invalue = Double.valueOf(line1);
           double outvalue = Double.valueOf(line2);
           double pi = 4 * (invalue / (invalue + outvalue));
           System.out.println("PI:" + pi);
        }

        fs.close();
     }
}
```

GCP Environment



Hadoop Environment



Prepare input data

Commands:

```
$ mkdir PiCalculation
$ cd PiCalculation
$ vi GenerateRandomNumbers.java
$ javac GenerateRandomNumbers.java
$ java -cp . GenerateRandomNumbers
```

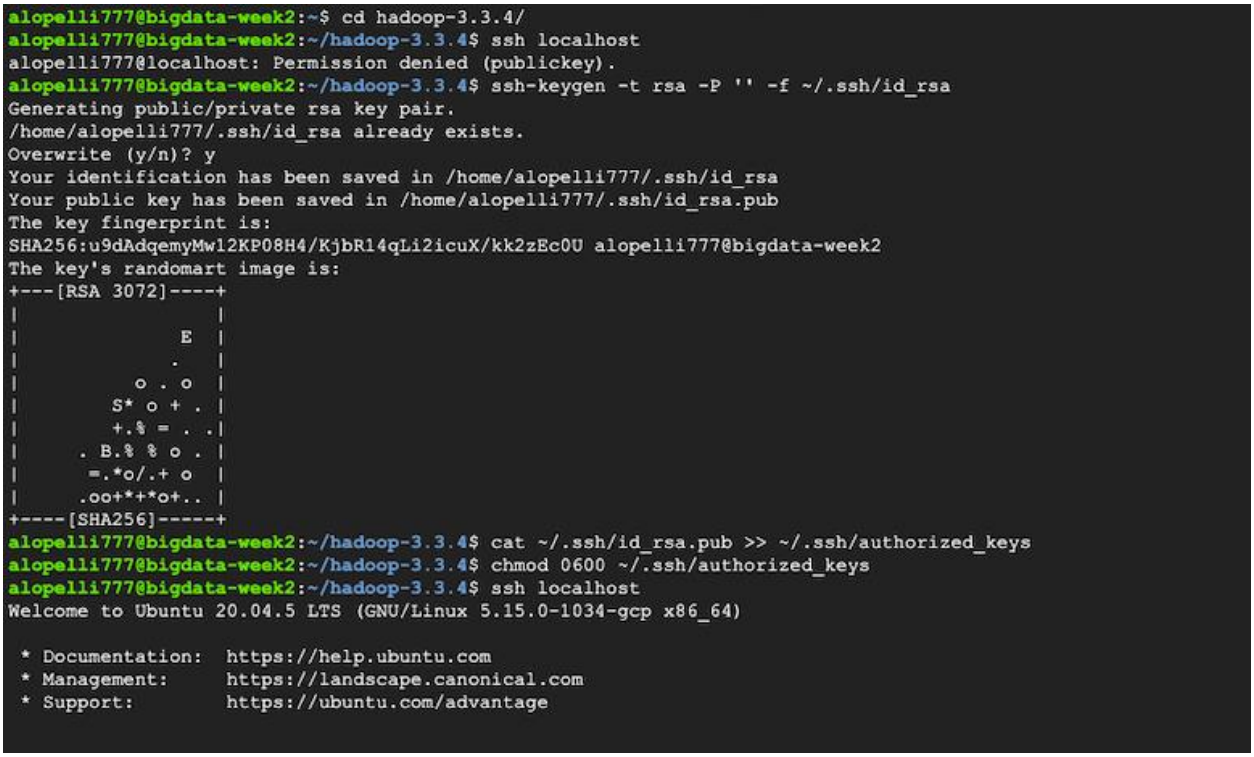
Setup passphraseless ssh

check that you can ssh to the localhost without a passphrase:

```
$ cd hadoop-3.3.4/
$ ssh localhost
```

If you cannot ssh to localhost without a passphrase, execute the following commands:

```
$ ssh-keygen -t rsa -P '' -f ~/.ssh/id_rsa
$ cat ~/.ssh/id_rsa.pub >> ~/.ssh/authorized_keys
$ chmod 0600 ~/.ssh/authorized_keys
$ ssh localhost
```



Make the HDFS directories required to execute MapReduce jobs(Copy input data to HDFS)

$ cd ..
$ cd hadoop-3.3.4/
$ bin/hdfs namenode -format
$ sbin/start-dfs.sh
$ wget http://localhost:9870/
$ bin/hdfs dfs -mkdir /user
$ bin/hdfs dfs -mkdir /user/alopelli777
$ bin/hdfs dfs -mkdir /user/ alopelli777/picalculate
$ bin/hdfs dfs -mkdir /user/ alopelli777/picalculate/input
$ bin/hdfs dfs -put ../PiCalculation/PiCalculationInput /user/ alopelli777/picalculate/input

SSH-in-browser UPLOAD FILE DOWNLOAD FILE

```
alopelli777@bigdata-week2:~$ cd hadoop-3.3.4/
alopelli777@bigdata-week2:~/hadoop-3.3.4$ bin/hdfs namenode -format
2023-06-06 19:22:09,065 INFO namenode.NameNode: STARTUP_MSG:
/************************************************************
STARTUP_MSG: Starting NameNode
STARTUP_MSG:   host = bigdata-week2.us-central1-a.c.cs570bigdata-387500.internal/10.128.0.3
STARTUP_MSG:   args = [-format]
STARTUP_MSG:   version = 3.3.4
STARTUP_MSG:   classpath = /home/alopelli777/hadoop-3.3.4/etc/hadoop:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/slf4j-reload4j-1.7.36.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/commons-lang3-3.12.0.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/kerby-config-1.0.1.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/httpclient-4.5.13.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/jetty-http-9.4.43.v20210629.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/kerby-util-1.0.1.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/commons-beanutils-1.9.4.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/jackson-xc-1.9.13.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/kerb-util-1.0.1.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/listenablefuture-9999.0-empty-to-avoid-conflict-with-guava.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/hadoop-auth-3.3.4.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/httpcore-4.4.13.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/kerb-common-1.0.1.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/slf4j-api-1.7.36.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/kerby-pkix-1.0.1.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/hadoop-shaded-guava-1.1.1.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/kerb-crypto-1.0.1.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/jackson-databind-2.12.7.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/jul-to-slf4j-1.7.36.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/jackson-core-asl-1.9.13.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/jersey-json-1.19.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/commons-daemon-1.0.13.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/kerby-xdr-1.0.1.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/jetty-util-ajax-9.4.43.v20210629.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/curator-client-4.2.0.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/jackson-mapper-asl-1.9.13.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/failureaccess-1.0.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/avro-1.7.7.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/commons-io-2.8.0.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/commons-compress-1.21.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/kerb-client-1.0.1.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/jackson-jaxrs-1.9.13.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/commons-logging-1.1.3.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/jsr311-api-1.1.1.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/reload4j-1.2.22.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/paranamer-2.3.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/commons-collections-3.2.2.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/asm-5.0.4.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/jetty-webapp-9.4.43.v20210629.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/animal-sniffer-annotations-1.17.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/snappy-java-1.1.8.2.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/jaxb-api-2.2.11.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/jersey-server-1.19.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/jetty-server-9.4.43.v20210629.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/jackson-annotations-2.12.7.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/commons-codec-1.15.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/kerb-core-1.0.1.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/jsch-0.1.55.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/stax2-api-4.2.1.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/netty-3.10.6.Final.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/kerb-admin-1.0.1.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/jetty-util-9.4.43.v20210629.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/javax.servlet-api-3.1.0.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/kerb-simplekdc-1.0.1.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/jcip-annotations-1.0-1.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/commons-text-1.4.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/jetty-xml-9.4.43.v20210629.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/re2j-1.1.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/curator-framework-4.2.0.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/woodstox-core-5.3.0.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/jakarta.activation-api-1.2.1.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/audience-annotations-0.5.0.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/zookeeper-3.5.6.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/accessors-smart-2.4.7.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/json-smart-2.4.7.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/jaxb-impl-2.2.3-1.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/j2objc-annotations-1.1.jar:/home/alopelli777/hadoop-3.3.4/share/hadoop/common/lib/jetty-security-9.4.43.v20210629.jar:/home/alopelli777/hadoop
```

SSH-in-browser UPLOAD FILE DOWNLOAD FILE

```
2023-06-06 19:22:11,016 INFO util.GSet: capacity      = 2^15 = 32768 entries
2023-06-06 19:22:11,075 INFO namenode.FSImage: Allocated new BlockPoolId: BP-1817885133-10.128.0.3-1686079331052
2023-06-06 19:22:11,130 INFO common.Storage: Storage directory /tmp/hadoop-alopelli777/dfs/name has been successfully formatted.
2023-06-06 19:22:11,221 INFO namenode.FSImageFormatProtobuf: Saving image file /tmp/hadoop-alopelli777/dfs/name/current/fsimage.ckpt_0000000000000000000 using no compression
2023-06-06 19:22:11,446 INFO namenode.FSImageFormatProtobuf: Image file /tmp/hadoop-alopelli777/dfs/name/current/fsimage.ckpt_0000000000000000000 of size 406 bytes saved in 0 seconds .
2023-06-06 19:22:11,484 INFO namenode.NNStorageRetentionManager: Going to retain 1 images with txid >= 0
2023-06-06 19:22:11,513 INFO namenode.FSNamesystem: Stopping services started for active state
2023-06-06 19:22:11,513 INFO namenode.FSNamesystem: Stopping services started for standby state
2023-06-06 19:22:11,520 INFO namenode.FSImage: FSImageSaver clean checkpoint: txid=0 when meet shutdown.
2023-06-06 19:22:11,520 INFO namenode.NameNode: SHUTDOWN_MSG:
/************************************************************
SHUTDOWN_MSG: Shutting down NameNode at bigdata-week2.us-central1-a.c.cs570bigdata-387500.internal/10.128.0.3
************************************************************/
alopelli777@bigdata-week2:~/hadoop-3.3.4$ sbin/start-dfs.sh
Starting namenodes on [localhost]
Starting datanodes
Starting secondary namenodes [bigdata-week2]
alopelli777@bigdata-week2:~/hadoop-3.3.4$
```

```
alopelli777@bigdata-week2:~/hadoop-3.3.4$ wget http://localhost:9870/
--2023-06-06 19:24:24--  http://localhost:9870/
Resolving localhost (localhost)... 127.0.0.1
Connecting to localhost (localhost)|127.0.0.1|:9870... connected.
HTTP request sent, awaiting response... 302 Found
Location: http://localhost:9870/index.html [following]
--2023-06-06 19:24:24--  http://localhost:9870/index.html
Reusing existing connection to localhost:9870.
HTTP request sent, awaiting response... 200 OK
Length: 1079 (1.1K) [text/html]
Saving to: 'index.html.5'

index.html.5                        100%[=============================================================================>]   1.05K  --.-
KB/s    in 0s

2023-06-06 19:24:24 (317 MB/s) - 'index.html.5' saved [1079/1079]

alopelli777@bigdata-week2:~/hadoop-3.3.4$
```

```
alopelli777@bigdata-week2:~/hadoop-3.3.4$ bin/hdfs dfs -mkdir /user
alopelli777@bigdata-week2:~/hadoop-3.3.4$ bin/hdfs dfs -mkdir /user/alopelli777
alopelli777@bigdata-week2:~/hadoop-3.3.4$ bin/hdfs dfs -mkdir /user/alopelli777/picalculate
alopelli777@bigdata-week2:~/hadoop-3.3.4$ bin/hdfs dfs -mkdir /user/alopelli777/picalculate/input
alopelli777@bigdata-week2:~/hadoop-3.3.4$ bin/hdfs dfs -put ../PiCalculation/PiCalculationInput /user
```

Code preparation

Build PiCalculation java file

$ cd /hadoop-3.3.4
$ vi PiCalculation.java

Compile PiCalculation.java and create a jar

$ bin/hadoop com.sun.tools.javac.Main PiCalculation.java
$ jar cf wc.jar PiCalculation*class

```
alopelli777@bigdata-week2:~$ cd hadoop-3.3.4/
alopelli777@bigdata-week2:~/hadoop-3.3.4$ vi PiCalculation.java
alopelli777@bigdata-week2:~/hadoop-3.3.4$ ls
 LICENSE-binary                          PiCalculation.java                etc            index.html.5      logs
 LICENSE.txt                             README.txt                        include        index.html.6      output
 NOTICE-binary                          'WordCount$IntSumReducer.class'    index.html     index.html.7      sbin
 NOTICE.txt                             'WordCount$TokenizerMapper.class'  index.html.1   input             share
'PiCalculation$IntSumReducer.class'      WordCount.class                   index.html.2   lib               wc.jar
'PiCalculation$TokenizerMapper.class'    WordCount.java                    index.html.3   libexec
 PiCalculation.class                     bin                               index.html.4   licenses-binary
alopelli777@bigdata-week2:~/hadoop-3.3.4$
```

```
alopelli777@bigdata-week2:~/hadoop-3.3.4$ bin/hadoop com.sun.tools.javac.Main PiCalculation.java
alopelli777@bigdata-week2:~/hadoop-3.3.4$ jar cf wc.jar PiCalculation*class
```

Run

Execute

$ bin/hadoop jar wc.jar PiCalculation /user/alopelli777/picalculate/input /user/alopelli777/picalculate/output7

Output

$ bin/hdfs dfs -ls /user/alopelli777/picalculate/output7
$ bin/hdfs dfs -cat /user/alopelli777/picalculate/output7/part-r-00000

Stop

$ sbin/stop-dfs.sh

```
alopelli777@bigdata-week2:~/hadoop-3.3.4$ bin/hadoop jar wc.jar PiCalculation /user/alopelli777/picalculate/input2 /use
r/alopelli777/picalculate/output7
2023-06-06 22:26:55,117 INFO impl.MetricsConfig: Loaded properties from hadoop-metrics2.properties
2023-06-06 22:26:55,256 INFO impl.MetricsSystemImpl: Scheduled Metric snapshot period at 10 second(s).
2023-06-06 22:26:55,256 INFO impl.MetricsSystemImpl: JobTracker metrics system started
2023-06-06 22:26:55,531 WARN mapreduce.JobResourceUploader: Hadoop command-line option parsing not performed. Implement
 the Tool interface and execute your application with ToolRunner to remedy this.
2023-06-06 22:26:55,752 INFO input.FileInputFormat: Total input files to process : 1
2023-06-06 22:26:55,782 INFO mapreduce.JobSubmitter: number of splits:1
2023-06-06 22:26:55,965 INFO mapreduce.JobSubmitter: Submitting tokens for job: job_local1544285763_0001
2023-06-06 22:26:55,965 INFO mapreduce.JobSubmitter: Executing with tokens: []
2023-06-06 22:26:56,205 INFO mapreduce.Job: The url to track the job: http://localhost:8080/
2023-06-06 22:26:56,207 INFO mapreduce.Job: Running job: job_local1544285763_0001
2023-06-06 22:26:56,216 INFO mapred.LocalJobRunner: OutputCommitter set in config null
2023-06-06 22:26:56,232 INFO output.FileOutputCommitter: File Output Committer Algorithm version is 2
2023-06-06 22:26:56,232 INFO output.FileOutputCommitter: FileOutputCommitter skip cleanup _temporary folders under outp
ut directory:false, ignore cleanup failures: false
2023-06-06 22:26:56,234 INFO mapred.LocalJobRunner: OutputCommitter is org.apache.hadoop.mapreduce.lib.output.FileOutpu
tCommitter
2023-06-06 22:26:56,331 INFO mapred.LocalJobRunner: Waiting for map tasks
2023-06-06 22:26:56,332 INFO mapred.LocalJobRunner: Starting task: attempt_local1544285763_0001_m_000000_0
2023-06-06 22:26:56,376 INFO output.FileOutputCommitter: File Output Committer Algorithm version is 2
2023-06-06 22:26:56,376 INFO output.FileOutputCommitter: FileOutputCommitter skip cleanup _temporary folders under outp
ut directory:false, ignore cleanup failures: false
2023-06-06 22:26:56,405 INFO mapred.Task:  Using ResourceCalculatorProcessTree : [ ]
```

```
                Map output materialized bytes=33
                Input split bytes=141
                Combine input records=1000000
                Combine output records=2
                Reduce input groups=2
                Reduce shuffle bytes=33
                Reduce input records=2
                Reduce output records=2
                Spilled Records=4
                Shuffled Maps =1
                Failed Shuffles=0
                Merged Map outputs=1
                GC time elapsed (ms)=356
                Total committed heap usage (bytes)=1109393408
        Shuffle Errors
                BAD_ID=0
                CONNECTION=0
                IO_ERROR=0
                WRONG_LENGTH=0
                WRONG_MAP=0
                WRONG_REDUCE=0
        File Input Format Counters
                Bytes Read=9450165
        File Output Format Counters
                Bytes Written=29
inside  785619
outside 214381
Inside:785619, Outside:214381
PI:3.142476
alopelli777@bigdata-week2:~/hadoop-3.3.4$
```

```
alopelli777@bigdata-week2:~/hadoop-3.3.4$ bin/hdfs dfs -ls /user/alopelli777/picalculate/output7
Found 2 items
-rw-r--r--   1 alopelli777 supergroup          0 2023-06-06 22:26 /user/alopelli777/picalculate/output7/_SUCCESS
-rw-r--r--   1 alopelli777 supergroup         29 2023-06-06 22:26 /user/alopelli777/picalculate/output7/part-r-00000
alopelli777@bigdata-week2:~/hadoop-3.3.4$ bin/hdfs dfs -cat /user/alopelli777/picalculate/output7/part-r-00000
inside  785619
outside 214381
```

```
alopelli777@bigdata-week2:~/hadoop-3.3.4$ sbin/stop-dfs.sh

Stopping namenodes on [localhost]
Stopping datanodes
Stopping secondary namenodes [bigdata-week2]
alopelli777@bigdata-week2:~/hadoop-3.3.4$
alopelli777@bigdata-week2:~/hadoop-3.3.4$
```