LAB PROGRAMS -9TH JULY

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1.Odd Even Sum

driver.java

```
package oddeven;
import java.io.*;
import java.util.*;
import org.apache.hadoop.mapred.*;
import org.apache.hadoop.io.*;
import org.apache.hadoop.fs.Path;

public class driver
{
   public static void main(String args[]) throws IOException
   {
         JobConf conf=new JobConf(driver.class);
         conf.setMapperClass(mapper.class);
         conf.setReducerClass(reducer.class);
         conf.setOutputKeyClass(Text.class);
         conf.setOutputValueClass(IntWritable.class);
         FileInputFormat.addInputPath(conf, new Path(args[0]));
         FileOutputFormat.setOutputPath(conf,new Path(args[1]));
         JobClient.runJob(conf);
   }
}
```

mapper.java

```
package oddeven;
import java.io.*;
import java.util.*;
import org.apache.hadoop.mapred.*;
import org.apache.hadoop.io.*;

public class mapper extends MapReduceBase implements Mapper<LongWritable , Text ,
Text , IntWritable>
{
   public void map(LongWritable key,Text value,OutputCollector<Text,IntWritable>
output,Reporter r) throws IOException
```

```
    {
        String[] line=value.toString().split(" ");
        for(String num:line){
            int number=Integer.parseInt(num);
            if(number%2==0) {
                output.collect(new Text("even"),new IntWritable(number));
            }
            else{
                output.collect(new Text("odd"),new IntWritable(number));
            }
        }
    }
}
```

reducer.java

```
package oddeven;
import java.io.*;
import java.util.*;
import org.apache.hadoop.mapred.*;
import org.apache.hadoop.io.*;
public class reducer extends MapReduceBase implements
Reducer<Text,IntWritable,Text,IntWritable>
{
    public void reduce(Text key,Iterator<IntWritable>
value,OutputCollector<Text,IntWritable> output ,Reporter r) throws IOException
    {
        int sum=0,count=0;
        while(value.hasNext()){
            sum+=value.next().get();
            count++;
        }
        output.collect(new Text("Sum of "+key+" Numbers"),new IntWritable(sum));
        output.collect(new Text(key+" Number count"),new IntWritable(count));
    }
}
```

int.txt

1 2 3 4 5 6 7 8 9 10

Steps to run

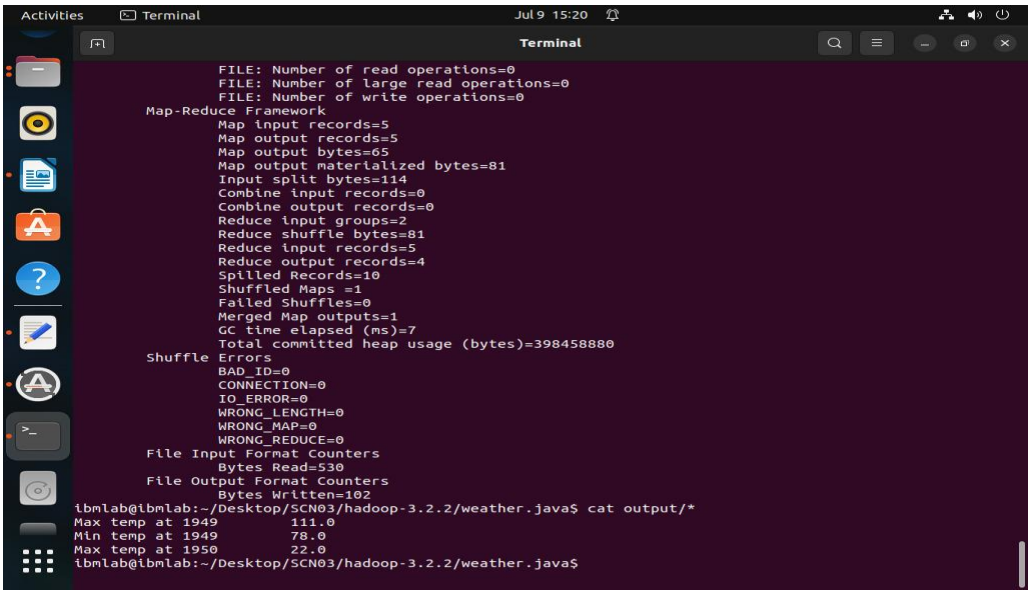
1. Create a New File named Bash.sh
2. Copy the Below code and Paste inside Bash.sh and save that File.

```
export JAVA_HOME=$(readlink -f $(which javac) | awk 'BEGIN {FS="/bin"} {print
```

$1}')
export PATH=$(echo $PATH):$(pwd)/bin
export CLASSPATH=$(hadoop classpath)

3. Execute the bash.sh File using following command source Bash.sh.
4. Verify JAVA_HOME variable to be set to Java Path and PATH variable has your USN
Hadoop Folder.If any previous PATH set to Hadoop Folder remove that inside .bashrc file.
5. Verify Hadoop is Installed or not by executing hadoop command.if command gives Information about Hadoop command then Hadoop is Successfully Installed.
6. Create a folder oddeven and move to that folder
7. Make the driver.java , mapper.java and reducer.java files
8. Compile all java files (driver.java mapper.java reducer.java)
javac -d . *.java
9. Set driver class in manifest
echo Main-Class: oddeven.driver > Manifest.txt
10. Create an executable jar file
jar cfm oddeven.jar Manifest.txt oddeven/*.class
11. oe.txt is input file for Oddeven create Input File
echo 1 2 3 4 5 6 7 8 9 10 > oe.txt
12. Run the jar file
hadoop jar oddeven.jar oe.txt output
13. To see the Output
cat output/*

Output Screenshots



2. Weather

driver.java

```
package weather;
import java.util.*;
import java.io.*;
import org.apache.hadoop.mapred.*;
import org.apache.hadoop.io.*;
import org.apache.hadoop.fs.Path;

public class driver
{
   public static void main(String args[]) throws IOException
   {
         JobConf conf=new JobConf(driver.class);
         conf.setMapperClass(mapper.class);
         conf.setReducerClass(reducer.class);
         conf.setOutputKeyClass(Text.class);
         conf.setOutputValueClass(DoubleWritable.class);
         FileInputFormat.addInputPath(conf, new Path(args[0]));
         FileOutputFormat.setOutputPath(conf,new Path(args[1]));
         JobClient.runJob(conf);
   }
}
```

mapper.java

```
package weather;
import java.util.*;
import java.io.*;
import org.apache.hadoop.mapred.*;
import org.apache.hadoop.io.*;

public class mapper extends MapReduceBase implements Mapper<LongWritable,
Text,Text,DoubleWritable>{
   public void map(LongWritable key , Text value , OutputCollector<Text,DoubleWritable>
output, Reporter r) throws IOException
   {
         String line=value.toString();
```

```
        String year=line.substring(15,19);
        Double temp=Double.parseDouble(line.substring(87,92));
        output.collect(new Text(year), new DoubleWritable(temp));
    }
}
```

reducer.java

```
package weather;
import java.util.*;
import java.io.*;
import org.apache.hadoop.mapred.*;
import org.apache.hadoop.io.*;
class reducer extends MapReduceBase implements
Reducer<Text,DoubleWritable,Text,DoubleWritable> {
    public void reduce(Text key, Iterator<DoubleWritable> value,
OutputCollector<Text,DoubleWritable> output, Reporter r) throws IOException{
        Double max=-9999.0;
        Double min=9999.0;
        while(value.hasNext()){
            Double temp=value.next().get();
            max=Math.max(max,temp);
            min=Math.min(min,temp);
        }
        output.collect(new Text("Max temp at "+ key), new DoubleWritable(max));
        output.collect(new Text("Min temp at "+ key), new DoubleWritable(min));
    }
}
```

Input.txt

```
0067011990999991950051507004+68750+023550FM-
12+038299999V0203301N00671220001CN9999999N9+00001+99999999999
0043011990999991950051512004+68750+023550FM-
12+038299999V0203201N00671220001CN9999999N9+00221+99999999999
0043011990999991950051518004+68750+023550FM-
12+038299999V0203201N00261220001CN9999999N9-00111+99999999999
0043012650999991949032412004+62300+010750FM-
12+048599999V0202701N00461220001CN0500001N9+01111+99999999999
0043012650999991949032418004+62300+010750FM-
12+048599999V0202701N00461220001CN0500001N9+00781+99999999999
```

Steps to run

1. Create a New File named Bash.sh
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```
export JAVA_HOME=$(readlink -f $(which javac) | awk 'BEGIN {FS="/bin"} {print $1}')
export PATH=$(echo $PATH):$(pwd)/bin
export CLASSPATH=$(hadoop classpath)
```

3. Execute the bash.sh File using following command source Bash.sh.
4. Verify JAVA_HOME variable to be set to Java Path and PATH variable has your USN Hadoop Folder.If any previous PATH set to Hadoop Folder remove that inside .bashrc file.
5. Verify Hadoop is Installed or not by executing hadoop command.if command gives Information about Hadoop command then Hadoop is Successfully Installed.
6. Create a folder weather and move to that folder
7. Make the driver.java , mapper.java and reducer.java files
8. Compile all java files (driver.java mapper.java reducer.java)

```
javac -d . *.java
```

9. Set driver class in manifest

```
echo Main-Class: weather.driver > Manifest.txt
```

10. Create an executable jar file

```
jar cfm oddeven.jar Manifest.txt weather/*.class
```

11. create input file input.txt
12. Run the jar file

```
hadoop jar weather.jar oe.txt output
```

13. To see the Output

```
cat output/*
```

Output Screenshots