```
bigdata@bigdata-VirtualBox:~/A1$ $HADOOP_HOME/bin/hadoop fs -cat
/user/bigdata/SpeedCamera.txt
UPS234 17-JAN-2019 190
PKR856 12-DEC-2018 120
PKR856 12-FEB-2018 80
PKR856 01-JAN-2019 60
ALUK234 21-OCT-2020 200
ALUK234 22-OCT-2020 60
UPS234 17-JAN-2019 190
PKR856 12-DEC-2018 120
PKR856 12-FEB-2018 80
PKR856 01-JAN-2019 60
ALUK234 21-OCT-2020 200
ALUK234 22-OCT-2020 60
UPS234 17-JAN-2019 190
PKR856 12-DEC-2018 120
PKR856 12-FEB-2018 80
PKR856 01-JAN-2019 60
ALUK234 21-OCT-2020 200
ALUK234 22-OCT-2020 60
UPS234 17-JAN-2019 190
PKR856 12-DEC-2018 120
PKR856 12-FEB-2018 80
PKR856 01-JAN-2019 60
ALUK234 21-OCT-2020 200
ALUK234 22-OCT-2020 60

bigdata@bigdata-VirtualBox:~/A1$ export
HADOOP_CLASSPATH=$($HADOOP_HOME/bin/hadoop classpath)
bigdata@bigdata-VirtualBox:~/A1$ javac -classpath ${HADOOP_CLASSPATH}
solution2.java
bigdata@bigdata-VirtualBox:~/A1$ jar cf solution2.jar solution2*.class
bigdata@bigdata-VirtualBox:~/A1$ $HADOOP_HOME/bin/hadoop jar
solution2.jar solution2 SpeedCamera.txt out
21/10/13 00:41:02 INFO client.RMProxy: Connecting to ResourceManager at
bigdata-VirtualBox/10.0.2.15:8032
21/10/13 00:41:03 WARN mapreduce.JobResourceUploader: Hadoop command-line
option parsing not performed. Implement the Tool interface and execute
your application with ToolRunner to remedy this.
21/10/13 00:41:03 INFO input.FileInputFormat: Total input paths to
process : 1
21/10/13 00:41:03 INFO mapreduce.JobSubmitter: number of splits:1
21/10/13 00:41:03 INFO mapreduce.JobSubmitter: Submitting tokens for job:
job_1633997001299_0005
21/10/13 00:41:04 INFO impl.YarnClientImpl: Submitted application
application_1633997001299_0005
21/10/13 00:41:04 INFO mapreduce.Job: The url to track the job:
http://bigdata-VirtualBox:8088/proxy/application_1633997001299_0005/
21/10/13 00:41:04 INFO mapreduce.Job: Running job: job_1633997001299_0005
21/10/13 00:41:11 INFO mapreduce.Job: Job job_1633997001299_0005 running
in uber mode : false
21/10/13 00:41:11 INFO mapreduce.Job:  map 0% reduce 0%
21/10/13 00:41:16 INFO mapreduce.Job:  map 100% reduce 0%
21/10/13 00:41:22 INFO mapreduce.Job:  map 100% reduce 100%
21/10/13 00:41:23 INFO mapreduce.Job: Job job_1633997001299_0005
completed successfully
21/10/13 00:41:23 INFO mapreduce.Job: Counters: 49
      File System Counters
```

```
            FILE: Number of bytes read=46
            FILE: Number of bytes written=237657
            FILE: Number of read operations=0
            FILE: Number of large read operations=0
            FILE: Number of write operations=0
            HDFS: Number of bytes read=664
            HDFS: Number of bytes written=34
            HDFS: Number of read operations=6
            HDFS: Number of large read operations=0
            HDFS: Number of write operations=2
      Job Counters
            Launched map tasks=1
            Launched reduce tasks=1
            Data-local map tasks=1
            Total time spent by all maps in occupied slots (ms)=2830
            Total time spent by all reduces in occupied slots (ms)=3287
            Total time spent by all map tasks (ms)=2830
            Total time spent by all reduce tasks (ms)=3287
            Total vcore-milliseconds taken by all map tasks=2830
            Total vcore-milliseconds taken by all reduce tasks=3287
            Total megabyte-milliseconds taken by all map tasks=2897920
            Total megabyte-milliseconds taken by all reduce tasks=3365888
      Map-Reduce Framework
            Map input records=25
            Map output records=16
            Map output bytes=180
            Map output materialized bytes=46
            Input split bytes=115
            Combine input records=16
            Combine output records=3
            Reduce input groups=3
            Reduce shuffle bytes=46
            Reduce input records=3
            Reduce output records=3
            Spilled Records=6
            Shuffled Maps =1
            Failed Shuffles=0
            Merged Map outputs=1
            GC time elapsed (ms)=154
            CPU time spent (ms)=1370
            Physical memory (bytes) snapshot=447000576
            Virtual memory (bytes) snapshot=3823681536
            Total committed heap usage (bytes)=329777152
      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=549
      File Output Format Counters
            Bytes Written=34
bigdata@bigdata-VirtualBox:~/A1$ $HADOOP_HOME/bin/hadoop fs -cat
/user/bigdata/out/part-r-00000
ALUK234     200
PKR856      100
```

UPS234 190
bigdata@bigdata-VirtualBox:~/A1$

```
import java.io.IOException;
import java.util.StringTokenizer;

import org.apache.hadoop.conf.Configuration;
import org.apache.hadoop.fs.Path;
import org.apache.hadoop.io.IntWritable;
import org.apache.hadoop.io.Text;
import org.apache.hadoop.mapreduce.Job;
import org.apache.hadoop.mapreduce.Mapper;
import org.apache.hadoop.mapreduce.Reducer;
import org.apache.hadoop.mapreduce.lib.input.FileInputFormat;
import org.apache.hadoop.mapreduce.lib.output.FileOutputFormat;

public class solution2 {

  public static void main(String[] args) throws Exception {
    Configuration conf = new Configuration();
    Job job = Job.getInstance(conf, "word count");
    job.setJarByClass(solution2.class);
    job.setMapperClass(TokenizerMapper.class);
    job.setCombinerClass(solution2Reducer.class);
    job.setReducerClass(solution2Reducer.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);
  }
  public static class TokenizerMapper
       extends Mapper<Object, Text, Text, IntWritable>{

    private final static IntWritable speed = new IntWritable(0);
    private Text rego = new Text();
    private Text date = new Text();
    private Text rego_date = new Text();

    public void map(Object key, Text value, Context context
                    ) throws IOException, InterruptedException {
      StringTokenizer itr = new StringTokenizer(value.toString());
      while (itr.hasMoreTokens()) {
        rego.set(itr.nextToken());
        date.set(itr.nextToken());
        speed.set( Integer.parseInt(itr.nextToken()) );
        if (speed.get() > 60)
          context.write(rego, speed);
      }
    }
  }

  public static class solution2Reducer
       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 total = 0;
        int counter = 0;

      for (IntWritable val : values) {
 total = total + val.get();
          counter++;
      }
      result.set(total/counter);
      context.write(key, result);
    }
  }
}
```