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|  | Name of the student: | | Yash Sankpal | | | | Roll No. | | 8695 | |  |
| Practical Number: | | 9 | | | | Date of Practical: | |  | |
| Relevant CO’s | | At the end of the course students will be able to apply appropriate algorithms for extracting knowledge from given dataset. | | | | | | | |
| Sign here to indicate that you have read all the relevant material provided Sign: before attempting this practical  Practical grading using Rubrics Practical grading using Rubrics  Indicator Very Poor Poor Average Good Excellent | | | | | | | | | |
| Timeline  (2) | More than a  session late  (0) | | NA | NA | NA | | Early or on  time (2) | |  |
| Code de-  sign (2) | N/A | | Very poor  code design  with no  comments and indenta-  tion(0.5) | Poor code  design with  very comments and  indentation  (1) | Design with good coding standards  (1.5) | | Accurate design  with better coding  satndards (2) | |
| Performance  (4) | Unable to  perform the experiment  (0) | | Able to  partially  perform the experiment  (1) | Able to  perform the experiment for certain use cases (2) | Able to  perform the experiment considering  most of the  use cases (3) | | Able to  perform the experiment considering all use cases  (4) | |
| Postlab (2) | Both an-  swers incorrect (0) | | N/A | One answer  correct (1) | N/A | | Both an-  swers correct (2) | |
| |  |  | | --- | --- | | Total Marks (10) | Sign of instructor with date | |  |  | | | | | | | | | |

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| Practical  Course title: Big Data Analytics  Course term: 2018-2019  Problem Statement: To find common friends in social network graph using map-reduce.  Theory:  These days most social network sites (such as Facebook, hi5, LinkedIn) offer services to help you share messages, pictures, and videos among friends. Some sites even offer video chat services to help you connect with friends. By definition, friend is a person whom one knows, likes, and trusts. For example, Facebook has a list of friends, and friends are a bi-directional thing on Facebook. If I’m your friend, you’re mine too. Typically social networks (such as Facebook) pre-compute calculations when they can to reduce the processing time of requests. One common processing request is the ”You and Mary (as your friend) have 185 friends in common” feature. When you visit someone’s profile, you see a list of friends that you have in common. This list doesn’t change frequently so it had to be wasteful to recalculate it every time you visited the profile. There are many way to find out the common friends between users of a social network. |

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| Code:  Write map-reduce code to implement algorithm code for mapper: |
| package exp9;  import java.io.IOException;  import org.apache.hadoop.io.LongWritable;  import org.apache.hadoop.io.Text;  import org.apache.hadoop.mapreduce.Mapper;  public class M9 extends Mapper<LongWritable, Text, Text, Text> {  public void map(LongWritable ikey, Text ivalue, Context context) throws IOException, InterruptedException {    String[] value = ivalue.toString().split(",");  String[] values = value[1].split(" ");    for(int i=0;i<values.length;i++) {  if(Integer.parseInt(values[i]) < Integer.parseInt(value[0])) {  context.write(new Text(values[i]+" "+value[0]),new Text(value[1]));  }  else {  context.write(new Text(value[0]+" "+values[i]),new Text(value[1]));  }  }  }  } |
| Code for Reducer: |
| package exp9;  import java.io.IOException;  import java.util.\*;  import java.util.stream.Collectors;  import org.apache.hadoop.io.Text;  import org.apache.hadoop.mapreduce.Reducer;  public class R9 extends Reducer<Text, Text, Text, Text> {  public void reduce(Text \_key, Iterable<Text> values, Context context) throws IOException, InterruptedException {  // process values    Set<String> last,temp;  List<String> valuesList = new ArrayList<String>();  List<String> list;    for (Text val : values) {  valuesList.add(val.toString());  }    list = Arrays.*stream*(valuesList.get(0).split(" ")).collect(Collectors.*toList*());    last = new HashSet<String>(list);    for(int i=1;i<valuesList.size();i++) {  list.clear();  list = Arrays.*stream*(valuesList.get(i).split(" ")).collect(Collectors.*toList*());  temp = new HashSet<String>(list);  last.retainAll(temp);  temp.clear();  }    context.write(\_key, new Text("-"+String.*join*(" ",last)));    }  } |
| Code for Driver Class: |
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| package exp9;  import org.apache.hadoop.conf.Configuration;  import org.apache.hadoop.fs.FileSystem;  import org.apache.hadoop.fs.Path;  import org.apache.hadoop.io.Text;  import org.apache.hadoop.mapreduce.Job;  import org.apache.hadoop.mapreduce.lib.input.FileInputFormat;  import org.apache.hadoop.mapreduce.lib.output.FileOutputFormat;  public class D9 {  public static void main(String[] args) throws Exception {  Configuration conf = new Configuration();    Path output = new Path("hdfs://localhost:9000/exp9/output");  FileSystem fs = FileSystem.*get*(output.toUri(),conf);    if(fs.exists(output)) {  fs.delete(output,true);  }  Job job = Job.*getInstance*(conf, "exp9");  job.setJarByClass(D9.class);  // **TODO**: specify a mapper  job.setMapperClass(M9.class);  // **TODO**: specify a reducer  job.setReducerClass(R9.class);    job.setMapOutputKeyClass(Text.class);  job.setMapOutputValueClass(Text.class);  // **TODO**: specify output types  job.setOutputKeyClass(Text.class);  job.setOutputValueClass(Text.class);  // **TODO**: specify input and output DIRECTORIES (not files)  FileInputFormat.*setInputPaths*(job, new Path("hdfs://localhost:9000/exp9/input/BDAexp9data"));  FileOutputFormat.*setOutputPath*(job, new Path("hdfs://localhost:9000/exp9/output"));  System.***out***.println(job.waitForCompletion(true));  }  } |

PostLab:

Explain applications of above code in Facebook as social network

Answer for postlab question

If a person searches or stalks someones profile he/she will get to only those friends who are mutual to each other but not anything else.

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| Explain applications of above code in LinkedIn as social network Answer for postlab question |