Nagar Yuwak Shikshan Sanstha's
Yeshwantrao Chavan College of Engineering
(An Autonomous Institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)
Hingna Road, Wanadongri, Nagpur - 441 110
NAAC A++
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Department of Computer Technology

Vision of the Department

To be a well-known centre for pursuing computer education through innovative pedagogy, value-based education and industry collaboration.

Mission of the Department

To establish learning ambience for ushering in computer engineering professionals in core and multidisciplinary area by developing Problem-solving skills through emerging technologies.

Session 2025-2026

Vision: To harness the power of artificial intelligence and data science to solve real-world problems and enhance human potential.	**Mission:** To acquire skills through coursework, projects, and internships, while actively engaging in research and collaboration with peers to innovate and apply AI solutions.

Program Educational Objectives of the program (PEO): (broad statements that describe the professional and career accomplishments)

PEO1	**Preparation**	**P: Preparation**	**Pep-CL abbreviation pronounce as Pep-si-lL easy to recall**
PEO2	**Core Competence**	**E: Environment (Learning Environment)**	
PEO3	**Breadth**	**P: Professionalism**	
PEO4	**Professionalism**	**C: Core Competence**	
PEO5	**Learning Environment**	**L: Breadth (Learning in diverse areas)**	

Program Outcomes (PO): (statements that describe what a student should be able to do and know by the end of a program)

Keywords of POs:
Engineering knowledge, Problem analysis, Design/development of solutions, Conduct Investigations of Complex Problems, Engineering Tool Usage, The Engineer and The World, Ethics, Individual and Collaborative Team work, Communication, Project Management and Finance, Life-Long Learning

PSO Keywords: Cutting edge technologies, Research

"I am an engineer, and I know how to apply engineering knowledge to investigate, analyse and design solutions to complex problems using tools for entire world following all ethics in a collaborative way with proper management skills throughout my life." *to contribute to the development of cutting-edge technologies and Research*.

Integrity: I will adhere to the Laboratory Code of Conduct and ethics in its entirety.

Prerana Bijekar 30 October 2025
Name and Signature of Student and Date
(Signature and Date in Handwritten)

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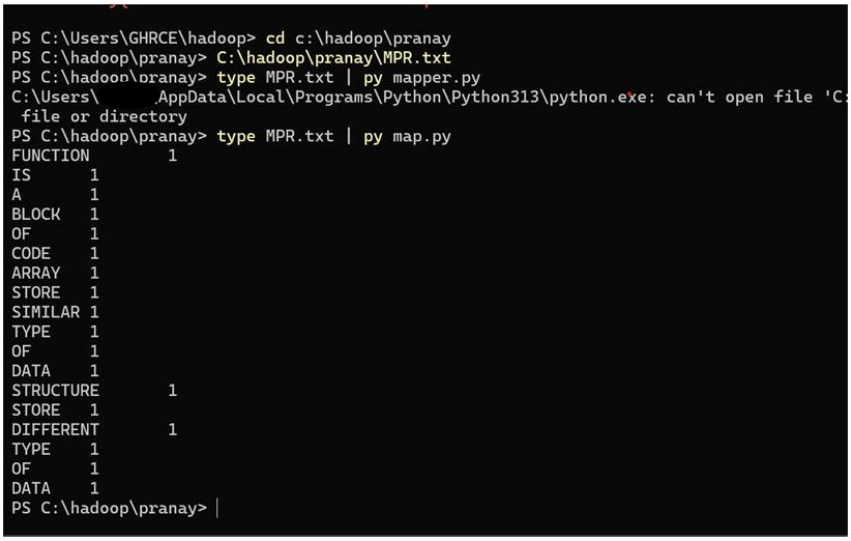
Session	2025-26 (ODD)	**Course Name**	BDH Lab
Semester	7	**Course Code**	22ADS704
Roll No	11	**Name of Student**	Prerana Bijekar

Practical Number	3
Course Outcome	**CO1:** Understand big data analytics and its business applications. **CO2:** Analyze the HADOOP and Map Reduce technologies associated with big data analytics. **CO3:** Apply Big Data Analytics Using Pig and Hive.
Aim	Write a MapReduce Program to Calculate Frequency of Words from Datasets.
Theory (100 words)	MapReduce is a programming model in Hadoop used to process large datasets in parallel. It works in two main phases: the Mapper and the Reducer. In a word frequency program, the Mapper reads text input and emits each word as a key with a count of one. The Reducer then aggregates these counts for each unique word, producing the total frequency of each word in the dataset. This approach efficiently distributes processing tasks across multiple nodes, enabling fast and scalable text analysis on big data stored in HDFS.
Procedure and Execution (100 Words)	Steps of implementation: • Prepare input text files and store them in HDFS. • Create Mapper class – split lines into words and emit (word, 1). • Create Reducer class – sum counts for each word. • Set up the Driver program to configure and run the job. • Compile and run the program on Hadoop. • View the output file in HDFS to see word frequencies.
	Code: 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 WordCount {
   public static class TokenizerMapper extends Mapper<Object, Text,
Text, IntWritable> {
      private final static IntWritable one = new IntWritable(1);
      private Text word = new Text();
      public void map(Object key, Text value, Context context) throws
IOException, InterruptedException {
         StringTokenizer itr = new StringTokenizer(value.toString());
         while (itr.hasMoreTokens()) {
            word.set(itr.nextToken());
            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, "word count");
      job.setJarByClass(WordCount.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);
   }
}
```

	Output: 
Output Analysis	The output displays each unique word from the dataset followed by its frequency count. For example: Hadoop 3, Big 2, Data 5. This confirms that the MapReduce program successfully reads, processes, and counts words in parallel across the cluster.
Github Link	https://github.com/Prerana-Bijekar/BDH
Conclusion	The MapReduce word frequency program demonstrates Hadoop's capability to perform distributed data processing. By splitting and aggregating data across nodes, it efficiently computes word occurrences in large datasets, showcasing Hadoop's strength in handling scalable and parallel data analysis tasks.

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Plag Report (Similarity index < 12%)	
Date	30 October 2025