



### LESSON PLAN

Subject : <b>BIG DATA ANALYTICS</b>		
Year : IV B-Tech	Semester : I	Branch : IT
Faculty : <b>V.VIDYA SAGAR</b>	Reg : R16	Academic Year : <b>2020-21</b>

#### **COURSE OBJECTIVES:**

- Optimize business decisions and create competitive advantage with Big Data analytics
- Introducing Java concepts required for developing map reduce programs
- Derive business benefit from unstructured data
- Imparting the architectural concepts of Hadoop and introducing map reduce paradigm
- To introduce programming tools PIG & HIVE in Hadoop ecosystem.

#### **COURSE OUTCOMES:**

1	<b>Factual</b>	CO1 : Able to summarize data, query and analysis.
2	<b>Conceptual</b>	CO2 : Understanding the Hadoop Structure.
3	<b>Procedural</b>	CO3 : Able to Apply data modeling techniques to large data sets. CO4 : Able to Create applications for Big Data analytics
4	<b>Applied</b>	CO5 : Able to analyze large sets of data using PIG Latin and Hive CO6 : Able to Build a complete business data analytic solution

#### **TEXT BOOKS:**

1. Big Java 4th Edition, Cay Horstmann, Wiley John Wiley & Sons, INC
2. Hadoop: The Definitive Guide by Tom White, 3rd Edition, O'reilly
3. Hadoop in Action by Chuck Lam, MANNING Publ.
4. Hadoop for Dummies by Dirk deRoos, Paul C.Zikopoulos, Roman B.Melnyk, Bruce Brown, Rafael Coss

#### **REFERENCE BOOKS:**

1. Hadoop in Practice by Alex Holmes, MANNING Publ.
2. Hadoop Map Reduce Cookbook, Srinath Perera, Thilina Gunarathne

## SOFTWARE LINKS:

1. Hadoop: <http://hadoop.apache.org/>
2. Hive: <https://cwiki.apache.org/confluence/display/Hive/Home>
3. Pig Latin: <http://pig.apache.org/docs/r0.7.0/tutorial.html>

## UNIT – 1 : DATA STRUCTURES IN JAVA

[Total Classes : 12]

### Activity:

1	<b>Factual</b>	Reading Prerequisite concepts- data structures and Basic definitions, Videos of data structures, Referring the content on the Internet
2	<b>Conceptual</b>	Video Lectures related to data structures NPTEL Videos Links from the Internet Animations of data structures Explained Examples
3	<b>Procedural</b>	Refer to text book content and syntax Other Implementation of data structures Syntax with examples(simple to complex)
4	<b>Applied</b>	Solving Exercises Implementing Programs Assignments Quiz etc...

## Activity / Schedule of UNIT-1 :

Pre-Class : Videos, E-books, Web links, Case Studies etc...

In-Class : Explanation on concept, discussion, Poll, doubts clarification, PPT, Demo etc..

Post-Class : Discussion Forum, Review on topic, Assessment, Quiz, Notes etc....

CLASS SL NO	CONCEPT	OBJECTIVES	PRE-CLASS	IN-CLASS	POST-CLASS
1.	Introduction to Data Structures (revise)	To introduce data structures concept	<p>Video Link : <a href="https://www.youtube.com/watch?v=xLetJpcjHS0">https://www.youtube.com/watch?v=xLetJpcjHS0</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://www.studytonight.com/data-structures/introduction-to-data-structures">https://www.studytonight.com/data-structures/introduction-to-data-structures</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation (30 Min)</p> <p>Discussion or <b>Poll activity</b> (5 min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
2.	Linked List & Stack	To Understand the concept of LL and Stack	<p>Video Link : <a href="https://www.youtube.com/watch?v=SMlq13-FZSE">https://www.youtube.com/watch?v=SMlq13-FZSE</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://www.studytonight.com/data-structures/introduction-to-linked-list">https://www.studytonight.com/data-structures/introduction-to-linked-list</a></p>	<p>Revise previous class – (5 mins)</p> <p>Asking Questions on previous class randomly (5 Mins)</p> <p>PPT presentation (20 min)</p> <p>Example (10 min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
3.	Queues, Sets	To Understand the concept of Queues, Sets	<p>Video Link : <a href="https://www.youtube.com/watch?v=zp6pBNbUB2U">https://www.youtube.com/watch?v=zp6pBNbUB2U</a></p> <p><a href="https://www.youtube.com/watch?v=BeR8AcSu-OU">https://www.youtube.com/watch?v=BeR8AcSu-OU</a></p> <p>Text Book : Pdf (e-book) Upload</p>	<p>Revise previous class – (5 mins)</p> <p>Asking Questions on previous class randomly (5 Mins)</p> <p>PPT presentation</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material</p>

			<p>Web Link : <a href="https://www.tutorialspoint.com/data_structures_algorithms/dsa_queue.htm#:~:text=Queue%20is%20an%20abstract%20data,first%20will%20be%20accessed%20first.">https://www.tutorialspoint.com/data_structures_algorithms/dsa_queue.htm#:~:text=Queue%20is%20an%20abstract%20data,first%20will%20be%20accessed%20first.</a></p>	<p>(20 min) Example (15 min) Doubts clarification (10 min)</p>	on the topic
4.	<p>Map data structure / interface</p> <p>Introduction to Generics</p>	To Understand the concept of Map data structure and Generics	<p>Video Link : <a href="https://www.youtube.com/watch?v=oZ7LYmkbmiA">https://www.youtube.com/watch?v=oZ7LYmkbmiA</a></p> <p>Generics : <a href="https://www.youtube.com/watch?v=BuH-uOwDGjY">https://www.youtube.com/watch?v=BuH-uOwDGjY</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://www.tutorialspoint.com/java/java_generics.htm">https://www.tutorialspoint.com/java/java_generics.htm</a></p>	<p>Revise previous class – (5 mins)</p> <p>Asking Questions on previous class randomly (5 Mins)</p> <p>PPT presentation (20 min)</p> <p>Example (15 min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
5.	Generic Classes and Type Parameters	To Understand the concept of Generic Classes and Type Parameters	<p>Video Link : <a href="https://www.youtube.com/watch?v=5NOLuoG6fcQ&amp;list=PLsyebzWxl7oJj5BXYF088REBm-K4c_SR">https://www.youtube.com/watch?v=5NOLuoG6fcQ&amp;list=PLsyebzWxl7oJj5BXYF088REBm-K4c_SR</a></p> <p>Generics : <a href="https://www.youtube.com/watch?v=BuH-uOwDGjY">https://www.youtube.com/watch?v=BuH-uOwDGjY</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://www.tutorialspoint.com/java/java_generics.htm">https://www.tutorialspoint.com/java/java_generics.htm</a></p>	<p>Revise previous class – (5 mins)</p> <p>Asking Questions on previous class randomly (5 Mins)</p> <p>PPT presentation (20 min)</p> <p>Example (15 min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
6.	Implementing Generic Types	To Understand the concept of Implementing Generic Types	<p>Video Link : <a href="https://www.youtube.com/watch?v=5NOLuoG6fcQ&amp;list=PLsyebzWxl7oJj5BXYF088REBm-K4c_SR">https://www.youtube.com/watch?v=5NOLuoG6fcQ&amp;list=PLsyebzWxl7oJj5BXYF088REBm-K4c_SR</a></p> <p>Generics : <a href="https://www.youtube.com/watch?v=BuH-uOwDGjY">https://www.youtube.com/watch?v=BuH-uOwDGjY</a></p>	<p>Revise previous class – (5 mins)</p> <p>Asking Questions on previous class randomly (5 Mins)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p>

			<a href="https://www.youtube.com/watch?v=BuH-uOwDGjY">om/watch?v=BuH-uOwDGjY</a> Text Book : Pdf (e-book) Upload Web Link : <a href="https://www.tutorialspoint.com/java/java_generics.htm">https://www.tutorialspoint.com/java/java_generics.htm</a>	PPT presentation (20 min) Example (15 min) Doubts clarification (10 min)	Share material on the topic Exercises to solve
7.	Generic Methods	To Understand the concept of Generic Methods	Video Link : <a href="https://www.youtube.com/watch?v=5NOLuoG6fcQ&amp;list=PLsyebzWxl7oJj5BXYF088REBm-K4c_SR">https://www.youtube.com/watch?v=5NOLuoG6fcQ&amp;list=PLsyebzWxl7oJj5BXYF088REBm-K4c_SR</a> Generics : <a href="https://www.youtube.com/watch?v=BuH-uOwDGjY">https://www.youtube.com/watch?v=BuH-uOwDGjY</a> Text Book : Pdf (e-book) Upload Web Link : <a href="https://www.tutorialspoint.com/java/java_generics.htm">https://www.tutorialspoint.com/java/java_generics.htm</a>	Revise previous class – (5 mins) Asking Questions on previous class randomly (5 Mins) PPT presentation (20 min) Example (15 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic Exercises to solve
8.	Examples on Generic Methods	Able to solve Examples on Generic Methods	Video Link : <a href="https://www.youtube.com/watch?v=5NOLuoG6fcQ&amp;list=PLsyebzWxl7oJj5BXYF088REBm-K4c_SR">https://www.youtube.com/watch?v=5NOLuoG6fcQ&amp;list=PLsyebzWxl7oJj5BXYF088REBm-K4c_SR</a> Generics : <a href="https://www.youtube.com/watch?v=BuH-uOwDGjY">https://www.youtube.com/watch?v=BuH-uOwDGjY</a> Text Book : Pdf (e-book) Upload Web Link : <a href="https://www.tutorialspoint.com/java/java_generics.htm">https://www.tutorialspoint.com/java/java_generics.htm</a>	Revise previous class – (5 mins) Asking Questions on previous class randomly (5 Mins) PPT presentation (20 min) Example (15 min) Doubts clarification (10 min)	Discussion Forum on the topic in the group Review on the topic Share material on the topic Exercises to solve
9.	Wrapper Classes	To Understand the concept of Wrapper Classes	Video Link : <a href="https://www.youtube.com/watch?v=O6IkXdRVp6I">https://www.youtube.com/watch?v=O6IkXdRVp6I</a> Text Book : Pdf (e-book) Upload	Revise previous class – (5 mins) Asking Questions on previous class randomly (5	Discussion Forum on the topic in the group Review on the

			<p>Web Link :  <a href="https://www.geeksforgeeks.org/wrapper-classes-java/#:~:text=A%20Wrapper%20class%20is%20a,into%20a%20wrapper%20class%20object.">https://www.geeksforgeeks.org/wrapper-classes-java/#:~:text=A%20Wrapper%20class%20is%20a,into%20a%20wrapper%20class%20object.</a></p>	<p><b>Mins)</b></p> <p>PPT presentation (20 min)</p> <p>Example (15 min)</p> <p>Doubts clarification (10 min)</p>	<p>topic</p> <p>Share material on the topic</p> <p>Quiz</p>
10.	Concept of Serialization	To Understand the concept of Serialization	<p>Video Link :  <a href="https://www.youtube.com/watch?v=bIzfrvdt7qM&amp;list=PLd3UqWTnYXOI0LRB42B9uTIT3NEDhjhF2">https://www.youtube.com/watch?v=bIzfrvdt7qM&amp;list=PLd3UqWTnYXOI0LRB42B9uTIT3NEDhjhF2</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link :  <a href="https://www.geeksforgeeks.org/serialization-in-java/#:~:text=Serialization%20is%20a%20mechanism%20of,used%20to%20persist%20the%20object.">https://www.geeksforgeeks.org/serialization-in-java/#:~:text=Serialization%20is%20a%20mechanism%20of,used%20to%20persist%20the%20object.</a></p>	<p>Revise previous class – (5 mins)</p> <p>Asking Questions on previous class randomly (5 Mins)</p> <p>PPT presentation (20 min)</p> <p>Example (15 min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
11.	Concept of Serialization	To Understand the concept of Serialization	<p>Video Link :  <a href="https://www.youtube.com/watch?v=bIzfrvdt7qM&amp;list=PLd3UqWTnYXOI0LRB42B9uTIT3NEDhjhF2">https://www.youtube.com/watch?v=bIzfrvdt7qM&amp;list=PLd3UqWTnYXOI0LRB42B9uTIT3NEDhjhF2</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link :  <a href="https://www.geeksforgeeks.org/serialization-in-java/#:~:text=Serialization%20is%20a%20mechanism%20of,used%20to%20persist%20the%20object.">https://www.geeksforgeeks.org/serialization-in-java/#:~:text=Serialization%20is%20a%20mechanism%20of,used%20to%20persist%20the%20object.</a></p>	<p>Revise previous class – (5 mins)</p> <p>Asking Questions on previous class randomly (5 Mins)</p> <p>PPT presentation (20 min)</p> <p>Example (15 min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p> <p>Quiz</p>
12.	Revising the Concepts in unit-1 Completely	To Revise all the concepts of unit-1	Refer the previous Links of all the concepts in unit-1	<p>Revise previous class – (5 mins)</p> <p>Asking Questions on previous class</p>	<p>Discussion Forum on the topic in the group</p>

				randomely (5 Mins)	Review on the topic
				PPT presentation (20 min)	Share material on the topic
				Example (15 min)	Assignment - 1
				Doubts clarification (10 min)	

## UNIT – 2 : WORKING WITH BIG DATA

[Total Classes : 12]

### Activity:

1	<b>Factual</b>	Reading Prerequisite concepts- Big Data and Basic definitions, Videos related to Big data, Referring the content on the Internet
2	<b>Conceptual</b>	Video Lectures related to Big data NPTEL Videos Links from the Internet Animations of Big data analytics Explained Examples from Internet
3	<b>Procedural</b>	Refer to text book content and architectures Understanding the architectures Installation and Procedure Syntax with examples(simple to complex)
4	<b>Applied</b>	Installation demo / Video demo Implementing Programs, Configuration of files etc Assignments Quiz etc...

## Activity / Schedule of UNIT-2 :

Pre-Class : Videos, E-books, Web links, Case Studies etc...

In-Class : Explanation on concept, discussion, Poll, doubts clarification, PPT, Demo etc..

Post-Class : Discussion Forum, Review on topic, Assessment, Quiz, Notes etc....

CLASS SL NO	CONCEPT	OBJECTIVES	PRE-CLASS	IN-CLASS	POST-CLASS
1.	Introduction to Big Data	To introduce The concept of Big data	<p>Video Link : <a href="https://www.youtube.com/watch?v=5P9T08lDXbE">https://www.youtube.com/watch?v=5P9T08lDXbE</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://en.wikipedia.org/wiki/Big_data">https://en.wikipedia.org/wiki/Big_data</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation (30 Min)</p> <p>Discussion or <b>Poll activity</b> (5 min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
2.	Introduction to Big Data (Continuation)	To enhance the understanding of The concept of Big data	<p>Video Link : <a href="https://www.youtube.com/watch?v=5P9T08lDXbE">https://www.youtube.com/watch?v=5P9T08lDXbE</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://en.wikipedia.org/wiki/Big_data">https://en.wikipedia.org/wiki/Big_data</a></p>	<p>Revise previous class – (5 mins)</p> <p>Asking Questions on previous class randomly (5 Mins)</p> <p>PPT presentation/class (30 min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
3.	Google File System	To understand the concept of Google File System	<p>Video Link : <a href="https://www.youtube.com/watch?v=5P9T08lDXbE">https://www.youtube.com/watch?v=5P9T08lDXbE</a></p> <p>Research Papers : <a href="https://static.googleusercontent.com/media/re">https://static.googleusercontent.com/media/re</a></p>	<p>Revise previous class – (5 mins)</p> <p>Asking Questions on previous class randomly (5</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p>



			<a href="http://search.google.com/en/archive/gfs-sosp2003.pdf">search.google.com/en/archive/gfs-sosp2003.pdf</a>  <a href="https://www.sciencedirect.com/topics/computer-science/google-file-system">https://www.sciencedirect.com/topics/computer-science/google-file-system</a>  Text Book : Pdf (e-book) Upload  Web Link : <a href="https://computer.howstuffworks.com/internet-basics/google-file-system.htm">https://computer.howstuffworks.com/internet-basics/google-file-system.htm</a>	<b>Mins)</b>  PPT presentation/class <b>(30 min)</b>  Doubts clarification <b>(10 min)</b>	Share material on the topic
4.	Hadoop Distributed File System [HDFS]	To understand the concept of Hadoop Distributed File System	Video Link : <a href="https://www.youtube.com/watch?v=Pq3OyQO-l3E">https://www.youtube.com/watch?v=Pq3OyQO-l3E</a>  Research Papers : <a href="https://www.sciencedirect.com/topics/computer-science/hadoop-distributed-file-system">https://www.sciencedirect.com/topics/computer-science/hadoop-distributed-file-system</a>  Text Book : Pdf (e-book) Upload	Revise previous class – <b>(5 mins)</b>  Asking Questions on previous class randomly <b>(5 Mins)</b>  PPT presentation/class <b>(30 min)</b>  Doubts clarification <b>(10 min)</b>	Discussion Forum on the topic in the group  Review on the topic  Share material on the topic
5.	HDFS Architecture	To understand the concept of HDFS Architecture	Video Link : <a href="https://www.youtube.com/watch?v=DLutRT6K2rM">https://www.youtube.com/watch?v=DLutRT6K2rM</a>  Text Book : Pdf (e-book) Upload  Web Link : <a href="https://www.edureka.co/blog/apache-hadoop-hdfs-architecture/#:~:text=Apache%20Hadoop%20HDFS%20Architecture%20follows,of%20machines%20that%20support%20Java.">https://www.edureka.co/blog/apache-hadoop-hdfs-architecture/#:~:text=Apache%20Hadoop%20HDFS%20Architecture%20follows,of%20machines%20that%20support%20Java.</a>	Revise previous class – <b>(5 mins)</b>  Asking Questions on previous class randomly <b>(5 Mins)</b>  PPT presentation/class <b>(30 min)</b>  Doubts clarification <b>(10 min)</b>	Discussion Forum on the topic in the group  Review on the topic  Share material on the topic

6.	Building Blocks of Hadoop	To understand the concept of Building Blocks of Hadoop	<p>Video Link :  <a href="https://www.youtube.com/watch?v=TGV5xoEF67g">https://www.youtube.com/watch?v=TGV5xoEF67g</a>  <a href="https://www.youtube.com/watch?v=Wju_0Sd_hcw">https://www.youtube.com/watch?v=Wju_0Sd_hcw</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link :  <a href="http://pramodgampa.blogspot.com/2013/06/the-building-blocks-of-hadoop.html">http://pramodgampa.blogspot.com/2013/06/the-building-blocks-of-hadoop.html</a></p>	<p>Revise previous class – (5 mins)</p> <p>Asking Questions on previous class randomly (5 Mins)</p> <p>PPT presentation/class (30 min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
7.	Building Blocks of Hadoop (Continuation)	To understand the concept of Building Blocks of Hadoop	<p>Video Link :  <a href="https://www.youtube.com/watch?v=TGV5xoEF67g">https://www.youtube.com/watch?v=TGV5xoEF67g</a>  <a href="https://www.youtube.com/watch?v=Wju_0Sd_hcw">https://www.youtube.com/watch?v=Wju_0Sd_hcw</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link :  <a href="http://pramodgampa.blogspot.com/2013/06/the-building-blocks-of-hadoop.html">http://pramodgampa.blogspot.com/2013/06/the-building-blocks-of-hadoop.html</a></p>	<p>Revise previous class – (5 mins)</p> <p>Asking Questions on previous class randomly (5 Mins)</p> <p>PPT presentation/class (30 min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
8.	Building Blocks of Hadoop (Continuation)	To understand the concept of Building Blocks of Hadoop	<p>Video Link :  <a href="https://www.youtube.com/watch?v=TGV5xoEF67g">https://www.youtube.com/watch?v=TGV5xoEF67g</a>  <a href="https://www.youtube.com/watch?v=Wju_0Sd_hcw">https://www.youtube.com/watch?v=Wju_0Sd_hcw</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link :  <a href="http://pramodgampa.blogspot.com/2013/06/the-building-blocks-of-hadoop.html">http://pramodgampa.blogspot.com/2013/06/the-building-blocks-of-hadoop.html</a></p>	<p>Revise previous class – (5 mins)</p> <p>Asking Questions on previous class randomly (5 Mins)</p> <p>PPT presentation/class (30 min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>

9.	Hadoop Cluster Introduction	To understand the concept of Hadoop Cluster	<p>Video Link : <a href="https://www.youtube.com/watch?v=xd9hLHQrjnM">https://www.youtube.com/watch?v=xd9hLHQrjnM</a></p> <p><a href="https://www.youtube.com/watch?v=eOPit2TD1d0">https://www.youtube.com/watch?v=eOPit2TD1d0</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://searchbusinessanalytics.techtarget.com/definition/Hadoop-cluster#:~:text=A%20Hadoop%20cluster%20is%20a,on%20low%20cost%20commodity%20computers.">https://searchbusinessanalytics.techtarget.com/definition/Hadoop-cluster#:~:text=A%20Hadoop%20cluster%20is%20a,on%20low%20cost%20commodity%20computers.</a></p>	<p>Revise previous class – (5 mins)</p> <p>Asking Questions on previous class randomly (5 Mins)</p> <p>PPT presentation/class (30 min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
10.	Hadoop Cluster Configuration	To understand the concept of Hadoop Cluster Configuration	<p>Video Link : <a href="https://www.youtube.com/watch?v=QXXMNIzFRDY">https://www.youtube.com/watch?v=QXXMNIzFRDY</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://searchbusinessanalytics.techtarget.com/definition/Hadoop-cluster#:~:text=A%20Hadoop%20cluster%20is%20a,on%20low%20cost%20commodity%20computers.">https://searchbusinessanalytics.techtarget.com/definition/Hadoop-cluster#:~:text=A%20Hadoop%20cluster%20is%20a,on%20low%20cost%20commodity%20computers.</a></p>	<p>Revise previous class – (5 mins)</p> <p>Asking Questions on previous class randomly (5 Mins)</p> <p>PPT presentation &amp; demo of cluster configuration (30 min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p> <p>Review Hadoop cluster configuration and try to configure.</p>
11.	Hadoop Cluster Configuration (Contd...)	To understand the concept of Hadoop Cluster Configuration	<p>Video Link : <a href="https://www.youtube.com/watch?v=QXXMNIzFRDY">https://www.youtube.com/watch?v=QXXMNIzFRDY</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://searchbusinessanalytics.techtarget.com/definition/Hadoop-">https://searchbusinessanalytics.techtarget.com/definition/Hadoop-</a></p>	<p>Revise previous class – (5 mins)</p> <p>Asking Questions on previous class randomly (5 Mins)</p> <p>PPT presentation/class</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>

			<a href="#">cluster#:~:text=A%20Hadoop%20cluster%20is%20a,on%20low%20cost%20commodity%20computers.</a>	(30 min) Doubts clarification (10 min)	Review Hadoop cluster configuration and try to configure.
12.	Configuring XML Files	To understand the concept of Configuring XML Files	Video Link : <a href="https://www.youtube.com/watch?v=qwPHQoCGEc8">https://www.youtube.com/watch?v=qwPHQoCGEc8</a> Text Book : Pdf (e-book) Upload  Web Link : <a href="https://hadoop.apache.org/docs/r1.2.1/cluster_setup.html">https://hadoop.apache.org/docs/r1.2.1/cluster_setup.html</a>	Revise previous class – (5 mins)  Asking Questions on previous class randomly (5 Mins)  PPT presentation & demo (30 min)  Doubts clarification (10 min)	Discussion Forum on the topic in the group  Review on the topic  Share material on the topic  Assignment-2  Quiz - 2

### UNIT – 3 : WRITING MAP REDUCE PROGRAMS

[Total Classes : 12]

#### Activity:

1	<b>Factual</b>	Reading Prerequisite concepts- Map Reduce Programs Videos & demo on MR, Referring the content on the Internet
2	<b>Conceptual</b>	Video Lectures On Map Reduce Programs NPTEL Videos Links from the Internet Solved Examples from Internet
3	<b>Procedural</b>	Refer to text book content and architectures Understanding the Map Reduce Paradigm Understanding the Environment & Procedure Syntax with examples(simple to complex)

4	<b>Applied</b>	Running and Executing MR Programs Implementing Programs on MR with different data sets Assignments Quiz etc...
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**Activity / Schedule of UNIT-3 :**

Pre-Class : Videos, E-books, Web links, Case Studies etc...

In-Class : Explanation on concept, discussion, Poll, doubts clarification, PPT, Demo etc..

Post-Class : Discussion Forum, Review on topic, Assessment, Quiz, Notes etc....

CLASS SL NO	CONCEPT	OBJECTIVES	PRE-CLASS	IN-CLASS	POST-CLASS
1.	Introduction to Map Reduce Programs	To introduce The concept of Map Reduce Programs	Video Link : <a href="https://www.youtube.com/watch?v=PhdRyrmBRYQ">https://www.youtube.com/watch?v=PhdRyrmBRYQ</a>  Text Book : Pdf (e-book) Upload  Pdf : <a href="https://hci.stanford.edu/courses/cs448g/a2/files/map_reduce_tutorial.pdf">https://hci.stanford.edu/courses/cs448g/a2/files/map_reduce_tutorial.pdf</a>  Web Link : <a href="https://www.tutorialspoint.com/map_reduce/map_reduce_introduction.htm">https://www.tutorialspoint.com/map_reduce/map_reduce_introduction.htm</a>	Discussion on pre-requisites (10 Min)  PPT presentation/Classes/demo (35 Min)  Summary (5min)  Doubts clarification (10 min)	Discussion Forum on the topic in the group  Review on the topic  Share material on the topic
2.	Introduction to Map Reduce Programs	To introduce The concept of Map Reduce Programs	Video Link : <a href="https://www.youtube.com/watch?v=PhdRyrmBRYQ">https://www.youtube.com/watch?v=PhdRyrmBRYQ</a>  Text Book : Pdf (e-book) Upload  Pdf : <a href="https://hci.stanford.edu/courses/cs448g/a2/files/map_reduce_tutorial.pdf">https://hci.stanford.edu/courses/cs448g/a2/files/map_reduce_tutorial.pdf</a>  Web Link : <a href="https://www.tutorialspoint.com/map_reduce/map_reduce_introduction.htm">https://www.tutorialspoint.com/map_reduce/map_reduce_introduction.htm</a>	Discussion on pre-requisites (10 Min)  PPT presentation/Classes/demo (35 Min)  Summary (5min)  Doubts clarification (10 min)	Discussion Forum on the topic in the group  Review on the topic  Share material on the topic

			<a href="#">ion.htm</a>		
3.	<p>Introduction to Map Reduce Programs (contd...)</p> <p>Understanding Hadoop API for MapReduce Framework (Old and New)</p>	To introduce The concept of Map Reduce Programs	<p>Video Link : <a href="https://www.youtube.com/watch?v=PhdRyrbRYQ">https://www.youtube.com/watch?v=PhdRyrbRYQ</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Pdf : <a href="https://hci.stanford.edu/courses/cs448g/a2/files/map_reduce_tutorial.pdf">https://hci.stanford.edu/courses/cs448g/a2/files/map_reduce_tutorial.pdf</a></p> <p>Web Link : <a href="https://www.tutorialspoint.com/map_reduce/map_reduce_introduction.htm">https://www.tutorialspoint.com/map_reduce/map_reduce_introduction.htm</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Classes/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
4.	<p>Introduction to Basic Map Reduce Programs</p> <ol style="list-style-type: none"> <li>Mapper Code</li> <li>Reducer Code</li> </ol>	To introduce the concept of Basic Map Reduce Programs	<p>Video Link : <a href="https://www.youtube.com/watch?v=Ui-C9MQ_-Ww">https://www.youtube.com/watch?v=Ui-C9MQ_-Ww</a></p> <p><a href="https://www.youtube.com/watch?v=VpXhLFYffCw">https://www.youtube.com/watch?v=VpXhLFYffCw</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://www.edureka.co/blog/mapreduce-tutorial/#:~:text=Mapper%20code%3A&amp;text=We%20define%20the%20data%20types,in%20the%20text%20file%3A%20LongWritable">https://www.edureka.co/blog/mapreduce-tutorial/#:~:text=Mapper%20code%3A&amp;text=We%20define%20the%20data%20types,in%20the%20text%20file%3A%20LongWritable</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Classes/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
5.	<p>Introduction to Basic Map Reduce Programs</p> <p>Driver Code</p>	To introduce the concept of Basic Map Reduce Programs	<p>Video Link : <a href="https://www.youtube.com/watch?v=_pkWwhaeODY">https://www.youtube.com/watch?v=_pkWwhaeODY</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://www.edureka.co/blog/mapreduce-tutorial/#:~:text=Mapper%20code%3A&amp;text=We%20define%20the%20data%20types,in%20the%20text%20file">https://www.edureka.co/blog/mapreduce-tutorial/#:~:text=Mapper%20code%3A&amp;text=We%20define%20the%20data%20types,in%20the%20text%20file</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Classes/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>

			<a href="#">e%3A%20LongWritab le</a>		
6.	Basic Word Count Example (Map Reduce Program)	To demonstrate Basic Word Count Example (Map Reduce Program)	<p>Video Link : <a href="https://www.youtube.com/watch?v=3LQAaAh4wM8">https://www.youtube.com/watch?v=3LQAaAh4wM8</a></p> <p>Execution : <a href="https://www.youtube.com/watch?v=GdiLuVEidAs">https://www.youtube.com/watch?v=GdiLuVEidAs</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://www.geeksforgeeks.org/how-to-execute-wordcount-program-in-mapreduce-using-cloudera-distribution-hadoop-cdh/">https://www.geeksforgeeks.org/how-to-execute-wordcount-program-in-mapreduce-using-cloudera-distribution-hadoop-cdh/</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Classes/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
7.	Basic Word Count Example (Map Reduce Program) (Contd...)	To demonstrate Basic Word Count Example (Map Reduce Program)	<p>Video Link : <a href="https://www.youtube.com/watch?v=3LQAaAh4wM8">https://www.youtube.com/watch?v=3LQAaAh4wM8</a></p> <p>Execution : <a href="https://www.youtube.com/watch?v=GdiLuVEidAs">https://www.youtube.com/watch?v=GdiLuVEidAs</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://www.geeksforgeeks.org/how-to-execute-wordcount-program-in-mapreduce-using-cloudera-distribution-hadoop-cdh/">https://www.geeksforgeeks.org/how-to-execute-wordcount-program-in-mapreduce-using-cloudera-distribution-hadoop-cdh/</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Classes/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
8.	Weather Data set Example (Map Reduce Program)	To demonstrate Weather Data set Example (Map Reduce Program)	<p>Video Link : <a href="https://www.youtube.com/watch?v=zimNAPQHMuE">https://www.youtube.com/watch?v=zimNAPQHMuE</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://blog.eduonix.com/bigdata-and-hadoop/hadoop-">https://blog.eduonix.com/bigdata-and-hadoop/hadoop-</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Classes/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clari-</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>

			<a href="https://www.youtube.com/watch?v=zimNAPQHMuE">project-on-ncdc-national-climate-data-center-noaa-dataset/</a>	fication (10 min)	
9.	Weather Data set Example (Map Reduce Program) (Contd...)	To demonstrate Weather Data set Example (Map Reduce Program)	<p>Video Link : <a href="https://www.youtube.com/watch?v=zimNAPQHMuE">https://www.youtube.com/watch?v=zimNAPQHMuE</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://blog.eduonix.com/bigdata-and-hadoop/hadoop-project-on-ncdc-national-climate-data-center-noaa-dataset/">https://blog.eduonix.com/bigdata-and-hadoop/hadoop-project-on-ncdc-national-climate-data-center-noaa-dataset/</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Class/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
10.	Combiner Partitioner & Record Reader	To Introduce the concept of Combiner Partitioner & Record Reader	<p>Video Link : <a href="https://www.youtube.com/watch?v=7bOw9N34cJM">https://www.youtube.com/watch?v=7bOw9N34cJM</a></p> <p><a href="https://www.youtube.com/watch?v=u8HarSx7glE">https://www.youtube.com/watch?v=u8HarSx7glE</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://www.tutorialspoint.com/map_reduce/map_reduce_combiners.htm#:~:text=A%20Combiner%2C%20also%20known%20as,records%20with%20the%20same%20key.">https://www.tutorialspoint.com/map_reduce/map_reduce_combiners.htm#:~:text=A%20Combiner%2C%20also%20known%20as,records%20with%20the%20same%20key.</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Class/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
11.	Combiner Partitioner & Record Reader (Contd...)	To Introduce the concept of Combiner Partitioner & Record Reader	<p>Video Link : <a href="https://www.youtube.com/watch?v=7bOw9N34cJM">https://www.youtube.com/watch?v=7bOw9N34cJM</a></p> <p><a href="https://www.youtube.com/watch?v=u8HarSx7glE">https://www.youtube.com/watch?v=u8HarSx7glE</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://www.tutorialspoint.com/map_reduce/map_reduce_combiners.htm#:~:text=A%20Combiner%2C%20also%20known%20as,records%20with%20the%20same%20key.">https://www.tutorialspoint.com/map_reduce/map_reduce_combiners.htm#:~:text=A%20Combiner%2C%20also%20known%20as,records%20with%20the%20same%20key.</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Class/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>



			<a href="#">rds%20with%20the%20same%20key.</a>		
<b>12.</b>	Revision of all the concepts in Unit-3	Revising all the concepts	<b>Refer above Links for data</b>	Revising the concepts discussed so far  Any topic to Repeat asked by students.	Assignment-3  Quiz-3

## **UNIT – 4 : HADOOP I/O [ INPUT / OUTPUT ]**

**[Total Classes : 10]**

### **Activity:**

1	<b>Factual</b>	Reading Prerequisite concepts- Hadoop I/O Videos & demo on, Hadoop I/O Referring the content on the Internet
2	<b>Conceptual</b>	Video Lectures On Hadoop I/O NPTEL Videos Links from the Internet Solved Examples from Internet
3	<b>Procedural</b>	Refer to text book content and Examples, Notations Understanding the Hadoop I/O Syntax with examples(simple to complex)
4	<b>Applied</b>	Running and Executing Hadoop I/O sample codes Implementing Programs on Hadoop I/O Assignments Quiz etc...

### **Activity / Schedule of UNIT-4 :**

Pre-Class : Videos, E-books, Web links, Case Studies etc...

In-Class : Explanation on concept, discussion, Poll, doubts clarification, PPT, Demo etc..

Post-Class : Discussion Forum, Review on topic, Assessment, Quiz, Notes etc....

CLASS SL NO	CONCEPT	OBJECTIVES	PRE-CLASS	IN-CLASS	POST-CLASS
1.	The Writable Interface	To introduce The concept of the Writable Interface	<p>Video Link : <a href="https://www.youtube.com/watch?v=zSITC2Kc-Tk">https://www.youtube.com/watch?v=zSITC2Kc-Tk</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://beyondcorner.com/learn-apache-hadoop/writable-writablecomparable-interfaces/">https://beyondcorner.com/learn-apache-hadoop/writable-writablecomparable-interfaces/</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Classes/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
2.	WritableComparable and comparators	To Introduce the concept of WritableComparable and comparators	<p>Video Link : <a href="https://www.youtube.com/watch?v=E8NaqgB3nac">https://www.youtube.com/watch?v=E8NaqgB3nac</a></p> <p><a href="https://www.youtube.com/watch?v=YfJrMPHFnwo">https://www.youtube.com/watch?v=YfJrMPHFnwo</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://hadoop.apache.org/docs/r2.6.1/api/org/apache/hadoop/io/WritableComparable.html">https://hadoop.apache.org/docs/r2.6.1/api/org/apache/hadoop/io/WritableComparable.html</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Classes/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
3.	Writable Classes: Writable wrappers for Java primitives	To Introduce the concept of Writable Classes: Writable wrappers for Java primitives	<p>Video Link : <a href="https://www.youtube.com/watch?v=XKEBjp1k8cQ">https://www.youtube.com/watch?v=XKEBjp1k8cQ</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://www.cs.rit.edu/~rlaz/cs2-20082/slides/WrapperClasses.pdf">https://www.cs.rit.edu/~rlaz/cs2-20082/slides/WrapperClasses.pdf</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Classes/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>

4.	Text, BytesWritable, NullWritable	To Introduce the concept of Text, BytesWritable, NullWritable	<p>Video Link : <a href="https://www.youtube.com/watch?v=2Qgp_Cv_4V8">https://www.youtube.com/watch?v=2Qgp_Cv_4V8</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://www.cs.rit.edu/~rlaz/cs2-20082/slides/WrapperClasses.pdf">https://www.cs.rit.edu/~rlaz/cs2-20082/slides/WrapperClasses.pdf</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Class/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
5.	ObjectWritable and GenericWritable	To Introduce the concept of ObjectWritable and GenericWritable	<p>Video Link : <a href="https://www.youtube.com/watch?v=2Qgp_Cv_4V8">https://www.youtube.com/watch?v=2Qgp_Cv_4V8</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://www.cs.rit.edu/~rlaz/cs2-20082/slides/WrapperClasses.pdf">https://www.cs.rit.edu/~rlaz/cs2-20082/slides/WrapperClasses.pdf</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Class/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
6.	ObjectWritable and GenericWritable	To Introduce the concept of ObjectWritable and GenericWritable	<p>Video Link : <a href="https://www.youtube.com/watch?v=2Qgp_Cv_4V8">https://www.youtube.com/watch?v=2Qgp_Cv_4V8</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://www.cs.rit.edu/~rlaz/cs2-20082/slides/WrapperClasses.pdf">https://www.cs.rit.edu/~rlaz/cs2-20082/slides/WrapperClasses.pdf</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Class/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>

7.	Writable collections	To Introduce the concept of Writable collections	<p>Video Link : <a href="https://www.youtube.com/watch?v=CvH22-Eh1iA">https://www.youtube.com/watch?v=CvH22-Eh1iA</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://app.writable.com/explore/writable?type=Collection&amp;grades=Elementary&amp;genres=-">https://app.writable.com/explore/writable?type=Collection&amp;grades=Elementary&amp;genres=-</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Classes/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
8.	Writable collections	To Introduce the concept of Writable collections	<p>Video Link : <a href="https://www.youtube.com/watch?v=CvH22-Eh1iA">https://www.youtube.com/watch?v=CvH22-Eh1iA</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://app.writable.com/explore/writable?type=Collection&amp;grades=Elementary&amp;genres=-">https://app.writable.com/explore/writable?type=Collection&amp;grades=Elementary&amp;genres=-</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Classes/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
9.	Implementing a Custom Writable: Implementing a RawComparator for speed	To Introduce the concept of Implementing a Custom Writable: Implementing a RawComparator for speed	<p>Video Link : <a href="https://www.youtube.com/watch?v=fSeBIOOTd04">https://www.youtube.com/watch?v=fSeBIOOTd04</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://app.writable.com/explore/writable?type=Collection&amp;grades=Elementary&amp;genres=-">https://app.writable.com/explore/writable?type=Collection&amp;grades=Elementary&amp;genres=-</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Classes/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>

10.	Custom comparators	To Introduce the concept of Custom comparators	<p>Video Link : <a href="https://www.youtube.com/watch?v=fSeBIOOTd04">https://www.youtube.com/watch?v=fSeBIOOTd04</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://app.writable.com/explore/writable?type=Collection&amp;grades=Elementary&amp;genres=">https://app.writable.com/explore/writable?type=Collection&amp;grades=Elementary&amp;genres=</a></p> <p>–</p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Classes/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p> <p>Assignment-4</p> <p>Quiz – 4</p>
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## UNIT – 5 : PIG LATIN SCRIPT

[Total Classes : 10]

### Activity:

1	<b>Factual</b>	<p>Reading Prerequisite concepts- PIG Latin</p> <p>Videos &amp; demo on, PIG Latin</p> <p>Referring the content on the Internet</p>
2	<b>Conceptual</b>	<p>Video Lectures On PIG Latin</p> <p>NPTEL Videos</p> <p>Links from the Internet</p> <p>Solved Prog Examples from Internet</p>
3	<b>Procedural</b>	<p>Refer to text book content and Examples, Notations</p> <p>Understanding the PIG Latin</p> <p>Syntax with examples(simple to complex)</p>
4	<b>Applied</b>	<p>Running and Executing PIG Latin sample codes</p> <p>Implementing Programs on PIG Latin</p> <p>Assignments</p> <p>Quiz etc...</p>

## Activity / Schedule of UNIT- 4 :

Pre-Class : Videos, E-books, Web links, Case Studies etc...

In-Class : Explanation on concept, discussion, Poll, doubts clarification, PPT, Demo etc..

Post-Class : Discussion Forum, Review on topic, Assessment, Quiz, Notes etc....

CLASS SL NO	CONCEPT	OBJECTIVES	PRE-CLASS	IN-CLASS	POST-CLASS
1.	Hadoop Programming Made Easier-Intro	To introduce The concept of PIG-Latin	<p>Video Link : <a href="https://www.youtube.com/watch?v=ugOsf5bKQ2U">https://www.youtube.com/watch?v=ugOsf5bKQ2U</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://www.geeksforgeeks.org/introduction-to-apache-pig/#:~:text=Pig%20is%20a%20high%2Dlevel.develop%20the%20data%20analysis%20codes.">https://www.geeksforgeeks.org/introduction-to-apache-pig/#:~:text=Pig%20is%20a%20high%2Dlevel.develop%20the%20data%20analysis%20codes.</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Class/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
2.	Admiring the Pig Architecture	To introduce The concept of Admiring the Pig Architecture	<p>Video Link : <a href="https://www.youtube.com/watch?v=ugOsf5bKQ2U">https://www.youtube.com/watch?v=ugOsf5bKQ2U</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://www.tutorialspoint.com/apache_pig/apache_pig_architecture.htm">https://www.tutorialspoint.com/apache_pig/apache_pig_architecture.htm</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Class/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>

3.	Going with the Pig Latin Application Flow	To introduce The concept of Going with the Pig Latin Application Flow	<p>Video Link : <a href="https://www.youtube.com/watch?v=ugOsf5bKQ2U">https://www.youtube.com/watch?v=ugOsf5bKQ2U</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://www.tutorialspoint.com/apache_pig/apache_pig_architecture.htm">https://www.tutorialspoint.com/apache_pig/apache_pig_architecture.htm</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Class/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
4.	Going with the Pig Latin Application Flow  (Contd...)	To introduce The concept of Going with the Pig Latin Application Flow	<p>Video Link : <a href="https://www.youtube.com/watch?v=ugOsf5bKQ2U">https://www.youtube.com/watch?v=ugOsf5bKQ2U</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://www.tutorialspoint.com/apache_pig/apache_pig_architecture.htm">https://www.tutorialspoint.com/apache_pig/apache_pig_architecture.htm</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Class/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
5.	Working through the ABCs of Pig Latin	To introduce The concept of Working through the ABCs of Pig Latin	<p>Video Link : <a href="https://www.youtube.com/watch?v=6GLLdpM92rA">https://www.youtube.com/watch?v=6GLLdpM92rA</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://www.tutorialspoint.com/apache_pig/apache_pig_architecture.htm">https://www.tutorialspoint.com/apache_pig/apache_pig_architecture.htm</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Class/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>

6.	Evaluating Local and Distributed Modes of Running Pig Scripts	To introduce The concept of Evaluating Local and Distributed Modes of Running Pig Scripts	<p>Video Link : <a href="https://www.youtube.com/watch?v=XkgdbwjwkfY">https://www.youtube.com/watch?v=XkgdbwjwkfY</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://www.dummies.com/programming/big-data/hadoop/local-and-distributed-modes-of-running-pig-scripts-in-hadoop/">https://www.dummies.com/programming/big-data/hadoop/local-and-distributed-modes-of-running-pig-scripts-in-hadoop/</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Classes/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
7.	Evaluating Local and Distributed Modes of Running Pig Scripts (Contd..) Examples	To introduce The concept of Evaluating Local and Distributed Modes of Running Pig Scripts	<p>Video Link : <a href="https://www.youtube.com/watch?v=XkgdbwjwkfY">https://www.youtube.com/watch?v=XkgdbwjwkfY</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://www.dummies.com/programming/big-data/hadoop/local-and-distributed-modes-of-running-pig-scripts-in-hadoop/">https://www.dummies.com/programming/big-data/hadoop/local-and-distributed-modes-of-running-pig-scripts-in-hadoop/</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Classes/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
8.	Checking out the Pig Script Interfaces	To introduce The concept of Checking out the Pig Script Interfaces	<p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://www.dummies.com/programming/big-data/hadoop/pig-script-interfaces-in-hadoop/">https://www.dummies.com/programming/big-data/hadoop/pig-script-interfaces-in-hadoop/</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Classes/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>



9.	Scripting with Pig Latin	To introduce The concept of Scripting with Pig Latin	<p>Video Link : <a href="https://www.youtube.com/watch?v=bPqC2nsxwZE">https://www.youtube.com/watch?v=bPqC2nsxwZE</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://www.dummies.com/programming/big-data/hadoop/pig-script-interfaces-in-hadoop/">https://www.dummies.com/programming/big-data/hadoop/pig-script-interfaces-in-hadoop/</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Class/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
10.	<p>Scripting with Pig Latin</p> <p>(Contd...)</p> <p>Revision of all topics</p>	To introduce The concept of Scripting with Pig Latin	<p>Video Link : <a href="https://www.youtube.com/watch?v=bPqC2nsxwZE">https://www.youtube.com/watch?v=bPqC2nsxwZE</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://www.dummies.com/programming/big-data/hadoop/pig-script-interfaces-in-hadoop/">https://www.dummies.com/programming/big-data/hadoop/pig-script-interfaces-in-hadoop/</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Class/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p> <p>Assignment-5</p> <p>Quiz -5</p>

**UNIT – 6 : APPLYING STRUCTURE TO HADOOP DATA WITH HIVE [Total Classes : 13]**

**Activity:**

1	<b>Factual</b>	<p>Reading Prerequisite concepts- Hive Videos &amp; demo on, Hive</p> <p>Referring the content on the Internet</p>
2	<b>Conceptual</b>	<p>Video Lectures On Hive</p> <p>NPTEL Videos</p> <p>Links from the Internet</p> <p>Solved Prog Examples from Internet</p>
3	<b>Procedural</b>	<p>Refer to text book content and Examples, Notations</p>

		Understanding the Hive Syntax with examples(simple to complex)
4	<b>Applied</b>	Running and Executing Hive sample codes Implementing Programs on Hive Assignments Quiz etc...

#### Activity / Schedule of UNIT- 4 :

Pre-Class : Videos, E-books, Web links, Case Studies etc...

In-Class : Explanation on concept, discussion, Poll, doubts clarification, PPT, Demo etc..

Post-Class : Discussion Forum, Review on topic, Assessment, Quiz, Notes etc....

CLASS SL NO	CONCEPT	OBJECTIVES	PRE-CLASS	IN-CLASS	POST-CLASS
1.	Saying Hello to Hive	To introduce The concept of Saying Hello to Hive	Video Link : <a href="https://www.youtube.com/watch?v=cMzivIiYt28">https://www.youtube.com/watch?v=cMzivIiYt28</a>  Text Book : Pdf (e-book) Upload  Web Link : <a href="https://www.tutorialspoint.com/hive/hive_introduction.htm">https://www.tutorialspoint.com/hive/hive_introduction.htm</a>	Discussion on pre-requisites (10 Min)  PPT presentation/Class/demo (35 Min)  Summary (5min)  Doubts clarification (10 min)	Discussion Forum on the topic in the group  Review on the topic  Share material on the topic
2.	Seeing How the Hive is Put Together	To introduce The concept of Seeing How the Hive is Put Together	Video Link : <a href="https://www.youtube.com/watch?v=W1XnmXv8Wpo">https://www.youtube.com/watch?v=W1XnmXv8Wpo</a>  Text Book : Pdf (e-book) Upload  Web Link : <a href="https://www.tutorialspoint.com/hive/hive_introduction.htm">https://www.tutorialspoint.com/hive/hive_introduction.htm</a>	Discussion on pre-requisites (10 Min)  PPT presentation/Class/demo (35 Min)  Summary (5min)  Doubts clarification (10 min)	Discussion Forum on the topic in the group  Review on the topic  Share material on the topic

3.	Getting Started with Apache Hive	To introduce The concept of Getting Started with Apache Hive	Text Book : Pdf (e-book) Upload  Web Link : <a href="https://www.tutorialspoint.com/hive/hive_introduction.htm">https://www.tutorialspoint.com/hive/hive_introduction.htm</a>	Discussion on pre-requisites (10 Min)  PPT presentation/Classes/demo (35 Min)  Summary (5min)  Doubts clarification (10 min)	Discussion Forum on the topic in the group  Review on the topic  Share material on the topic
4.	Examining the Hive Clients	To introduce The concept of Examining the Hive Clients	Text Book : Pdf (e-book) Upload  Web Link : <a href="https://cwiki.apache.org/confluence/display/Hive/HiveClient">https://cwiki.apache.org/confluence/display/Hive/HiveClient</a>	Discussion on pre-requisites (10 Min)  PPT presentation/Classes/demo (35 Min)  Summary (5min)  Doubts clarification (10 min)	Discussion Forum on the topic in the group  Review on the topic  Share material on the topic
5.	Working with Hive Data Types	To introduce The concept of Examining the Hive Clients	Text Book : Pdf (e-book) Upload  Web Link : <a href="https://www.tutorialspoint.com/hive/hive_data_types.htm">https://www.tutorialspoint.com/hive/hive_data_types.htm</a>	Discussion on pre-requisites (10 Min)  PPT presentation/Classes/demo (35 Min)  Summary (5min)  Doubts clarification (10 min)	Discussion Forum on the topic in the group  Review on the topic  Share material on the topic

6.	Creating and Managing Databases and Tables	To introduce The concept of Creating and Managing Databases and Tables	<p>Video Link : <a href="https://www.youtube.com/watch?v=kEUYpCmW2qo">https://www.youtube.com/watch?v=kEUYpCmW2qo</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://www.tutorialspoint.com/hive/hive_create_database.htm">https://www.tutorialspoint.com/hive/hive_create_database.htm</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Classes/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
7.	Creating and Managing Databases and Tables (Contd....)	To introduce The concept of Creating and Managing Databases and Tables	<p>Video Link : <a href="https://www.youtube.com/watch?v=kEUYpCmW2qo">https://www.youtube.com/watch?v=kEUYpCmW2qo</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://www.tutorialspoint.com/hive/hive_create_database.htm">https://www.tutorialspoint.com/hive/hive_create_database.htm</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Classes/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
8.	Creating and Managing Databases and Tables (Contd....)	To introduce The concept of Creating and Managing Databases and Tables	<p>Video Link : <a href="https://www.youtube.com/watch?v=kEUYpCmW2qo">https://www.youtube.com/watch?v=kEUYpCmW2qo</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://www.tutorialspoint.com/hive/hive_create_database.htm">https://www.tutorialspoint.com/hive/hive_create_database.htm</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Classes/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>

<p><b>9.</b></p>	<p>Seeing How the Hive Data Manipulation Language Works</p>	<p>To introduce The concept of Seeing How the Hive Data Manipulation Language Works</p>	<p>Video Link : <a href="https://www.youtube.com/watch?v=IHhUq5scfHo">https://www.youtube.com/watch?v=IHhUq5scfHo</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://data-flair.training/blogs/hive-dml-commands/">https://data-flair.training/blogs/hive-dml-commands/</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Classes/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
<p><b>10.</b></p>	<p>Seeing How the Hive Data Manipulation Language Works</p>	<p>To introduce The concept of Seeing How the Hive Data Manipulation Language Works</p>	<p>Video Link : <a href="https://www.youtube.com/watch?v=IHhUq5scfHo">https://www.youtube.com/watch?v=IHhUq5scfHo</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://data-flair.training/blogs/hive-dml-commands/">https://data-flair.training/blogs/hive-dml-commands/</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Classes/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
<p><b>11.</b></p>	<p>Seeing How the Hive Data Manipulation Language Works (Contd...)</p>	<p>To introduce The concept of Seeing How the Hive Data Manipulation Language Works</p>	<p>Video Link : <a href="https://www.youtube.com/watch?v=IHhUq5scfHo">https://www.youtube.com/watch?v=IHhUq5scfHo</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://data-flair.training/blogs/hive-dml-commands/">https://data-flair.training/blogs/hive-dml-commands/</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Classes/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>

12.	Querying and Analyzing Data	To introduce The concept of Querying and Analyzing Data	<p>Video Link : <a href="https://www.youtube.com/watch?v=UY9cYG7ghGs">https://www.youtube.com/watch?v=UY9cYG7ghGs</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://docs.wso2.com/display/BAM230/Creating+Hive+Queries+to+Analyze+Data">https://docs.wso2.com/display/BAM230/Creating+Hive+Queries+to+Analyze+Data</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Classes/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>
13.	Querying and Analyzing Data (Contd.....)	To introduce The concept of Querying and Analyzing Data	<p>Video Link : <a href="https://www.youtube.com/watch?v=UY9cYG7ghGs">https://www.youtube.com/watch?v=UY9cYG7ghGs</a></p> <p>Text Book : Pdf (e-book) Upload</p> <p>Web Link : <a href="https://docs.wso2.com/display/BAM230/Creating+Hive+Queries+to+Analyze+Data">https://docs.wso2.com/display/BAM230/Creating+Hive+Queries+to+Analyze+Data</a></p>	<p>Discussion on pre-requisites (10 Min)</p> <p>PPT presentation/Classes/demo (35 Min)</p> <p>Summary (5min)</p> <p>Doubts clarification (10 min)</p>	<p>Discussion Forum on the topic in the group</p> <p>Review on the topic</p> <p>Share material on the topic</p>

**TOTAL CLASSES : 69**

**Faculty Signature**

**HOD**