

17. Summer School on Hadoop and Big Data



School of Computer Science and Engineering



5 Days Summer School on "Hadoop and Big Data"

A complete hands on course



About the course

Big Data is a set of unstructured and structured data that is complex in nature and is growing exponentially with each passing day. Organizations are facing a major challenge in storing and utilizing this enormous data. This problem spans across the world because of a serious dearth of skilled programmer. Hence, the most talked terms in the present-day internet community are – Big Data and Hadoop.

In this regard School of Computer Science and Engineering is conducting a summer school– Big Data Processing and Hadoop Ecosystem. The school aims at bringing a fundamental understanding of Big Data and how it will impact approaches in solving real world problems. It shall provide an opportunity for students to equip themselves with theoretical, practical and collaboration skills necessary for Big Data Processing using Hadoop. To ensure a high ratio between tutors and students the school will be limited to 30 participants.

Outcomes of the summer school: At the end of the course, participants will be able to:

1. Carryout data analysis using Python.
2. Install and employ Hadoop framework for storage and retrieval of big data.
3. Develop parallel and distributed applications using MapReduce for processing big data.
4. Import and analyze big data using Apache Hive and Pig.
5. Employ HBase on top of hadoop for processing structured and unstructured big data.

Pre-requisites

Knowledge of programming in C/C++ or Java or any other Object Oriented Programming language is preferred.

Schedule

Day	Topics Covered
1	Python Programming for Big Data
2	Introduction to Big Data, Hadoop Installation
3	Big Data and MapReduce Programming
4	Pig and Hive
5	Hbase and Spark

Contact		
Mr. Vijay H. Bhajantri Asst. Professor School of Computer Science and Engg. 8495905111	Mr. Praveen M. D Asst. Professor School of Computer Science and Engg. 9964266154	Ms. Deepa Mulimani Assistant Professor Dept. of Master in Computer Application 97398 23536

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Summer School on Hadoop and Big Data

(29 July-2 August 2019)

Course Outline

DAY - 1

Python for Big Data Analytics

Session 1

1. Basics of Python for Data Analysis
 - ✓ Why learn Python for data analysis?
 - ✓ Python 2.7 v/s 3.4
 - ✓ How to install Python?
 - ✓ Running a few simple programs in Python
2. Understanding Operators
3. Variables and Data Types
4. Conditional Statements
5. Looping Constructs
6. Functions
7. Data Structures
 - ✓ Lists
 - ✓ Strings
 - ✓ Tuples
 - ✓ Dictionaries

Session 2

8. Python libraries
 - ✓ NumPy
 - ✓ SciPy
 - ✓ Matplotlib
 - ✓ Pandas
 - ✓ Scikit Learn
 - ✓ Statsmodels
 - ✓ Blaze
 - ✓ Scrapy
9. Exploratory analysis in Python using Pandas
 - ✓ Introduction to series and Data Frames
 - ✓ Basic operations with Data Frames
 - ✓ Dataset- Loan Prediction Problem
 - ✓ Reading a CSV File in Python

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Session 3

10. Data Munging in Python using Pandas
 - ✓ Need for Data Munging
 - ✓ Check missing values in the dataset
 - ✓ Filling missing values in the dataset
 - ✓ Handling extreme values in data distribution
11. Building a Predictive Model in Python
 - ✓ Logistic Regression
 - ✓ Decision Tree
 - ✓ Random Forest

DAY - 2

Session-1: Introduction to Big Data (2 Hrs)

1. What is Big Data?
2. Types of Big Data
3. Big Data Platforms & tools
4. Big Data Storage – DFS , Sharding, Replication
5. Big Data Processing - Introduction to Map Reduce Programming

Session-2: Hadoop Installation (4 Hrs)

1. Hadoop Single Node Setup on Ubuntu
 - a. Prerequisites
 - b. Hadoop Installation
2. Hadoop Multi Node Setup on Ubuntu
 - a. Prerequisites
 - b. Hadoop Installation

Session-3: HDFS (2 Hrs)

1. Features and Goals of HDFS
2. HDFS Architecture
3. Working with HDFS
 - i. Starting HDFS
 - ii. Listing Files in HDFS
 - iii. Inserting Data into HDFS
 - iv. Retrieving Data from HDFS
 - v. Shutting Down HDFS
 - vi. Other HDFS commands

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DAY - 3

Session 1

- What is hadoop map-reduce?
- Map-reduce in nutshell.
- Two advantages of map-reduce.

Session 2

- Hadoop map-reduce approach with an example
- Hadoop map-reduce/yarn components.

Session 3

- Yarn with map-reduce.
- Yarn application workflow

DAY -4

Apache Hive and Pig

Learn how to use the Apache Hive and Apache Pig languages to advance your basic understanding of Hadoop into competency with data analysis and transformation. KLE TU Big Data and Hadoop team , paves the way with its Apache Hive and Apache Pig training.

Hive makes Hadoop accessible to users who already know SQL; Pig is similar to popular scripting languages. This training will teach you how to process data by using filters, joins, user-defined functions and more. After a day training, you will be ready to import and analyze your own data with Apache Hive and Pig.

Session 1

- Introduction to Apache Hive
- Installing Hive
- Getting data Into Hive
- Hive's architecture
- Hive-HQL
- Query execution
- Partitioning and bucketing
- Programming Practices in Hive
- Troubleshooting
- Hands-On Exercise: Hive Programming

Session 2

- Introduction to Apache Pig
- Install Pig

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- Pig architecture
- Pig Latin - Reading and writing data using Pig
- Hands-On Exercise: Programming with pig, Load data, execute data processing statements
- Debugging

Session 3

- Best practices Hive
- Best Practices Pig
- Bringing it together

DAY - 5

Description

In this course you will learn HBase which is a NoSQL database runs on top of hadoop. HBase is used to develop applications, administrators who will manage HBase cluster, Software professionals, analytics Professionals and students who are willing to build their career in Big Data.

Towards the finish of this course, you will able to:

- Understand how NoSQL is different from RDBMS.
- Install, manage and monitor HBase Cluster.
- Understand HBase and HDFS work together.
- Perform DML and DDL on the data stored in HBase tables using shell.
- Connect HBase using the Java API.

1.1 Introduction

1.2 What you'll Learn

1.3 Prerequisites for HBase

1.4 HBase Use Cases

1.5 What is HBase

1.6 HBase history

1.7 Characteristics of Apache HBase

1.8 Comparison of HBase with HDFS

1.9 When to use HBase, where Not

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K.L.E. Technological University, Hubballi – 580 031
SCHOOL OF COMPUTER SCIENCE & ENGINEERING

Resource Person Details

Sl.No	Faculty Name	University / Institute	Domain/Area
1.	Dr. S G Totad totad@kletech.ac.in	School of Computer Science and Engineering. KLE Technological University, Hubli	Big Data Analytics
2.	Prof. Deepa Mulimani Deepa.m@kletech.ac.in	Master of Computer Application. KLE Technological University, Hubli	Python Programming for Big Data
3.	Prof. Praveen M Dhulavagol Praveen.md@kletech.ac.in	School of Computer Science and Engineering. KLE Technological University, Hubli	IIBase and Spark
4.	Prof. Vijay H Bjantri bjantri@kletech.ac.in	School of Computer Science and Engineering. KLE Technological University, Hubli	Pig and Hive

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School of Computer Science and Engineering

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Student Registration

Sl.No	USN	Name of Student	Branch, sem	Signature
1	01FE17BEE086	Sandesh V. Hegde	EEE, V	Sandesh
2	01FE17BCS184	Shashank V. Nirmath	CSE, 7	Shashank
3	01FE18BCS007	Alkhimalya Chowdhury	CSE, III	Alkhimalya
4	01FE17BCS218	Srushti N. Kodli	CSE, V	Srushti
5	01FE17BCS232	Tejaswini Sarvadalli	CSE, V	Tejaswini
6	01FE17BCS217	Spoorthy S. Kamanalli	CSE, V	Spoorthy
7	01FE17BCS101	Laxmi B. Suvadi	CSE, V	Laxmi
8	01FE17BLS084	Tanus Jagar	CSE, V	Tanus
9	01FE17BCS248	Nannata Nijamagouda	CSE, V	Nannata
10	01FE17BLS174	Sanjana S. Ashtrapure	CSE, V	Sanjana
11	01FE17BCS090	K. Kuthika	CSE, V	K. Kuthika
12	01FE18BEC097	Pawan Kumari Riegh	ECE, III	Pawan
13	01FE17BCS022	Akhila A.G.	CSE, V	Akhila
14	01FE17BCS178	Satish M. Beladavar	CSE, V	Satish
15	01FE17BCS132	Prajwal P. Kubihal	CSE, V	Prajwal
16	01FE17BCS149	Rahul JE	CSE, V	Rahul
17	01FE17BCS162	Sadaf T. Mulla	CSE, V	Sadaf
18	01FE17BCS053	Ayesha A. Sotakanal	CSE, V	Ayesha
19	01FE17BCS062	Bilzi Ayesha Darugar	CSE, V	Bilzi
20	01FE17BCS064	Chaitanya Mehra	CSE, V	Chaitanya
21	01FE17BLS016	Aishwarya G. Mensinkai	CSE, V	Aishwarya
22	01FM17MCA034	Praveen B. Sinner	MCA, V	Praveen
23	01PM17MCA022	MURAGESH K. NAO	MCA, V	Muragesh
24	01FM17MCA049	Subramanya K.	MCA, V	Subramanya
25	01FM17MCA043	Sampada S.H.	MCA, V	Sampada
26	01FM17MCA042	Sagarika M. Nark	MCA, V	Sagarika
27	01FE18BCS137	Nishant Raj	CSE, III	Nishant
28	01FE17BCS191	Shivaraj Chattannavar	CSE, V	Shivaraj
29	01FE17BCS078	Harshit S. Talisatgi	CSE, V	Harshit

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Attendance Sheet:

Date: 29-07-2019

Sl.No	USN	Name of Student	Session 1 9.30-11.00	Session 2 11.15-12.45	Session 3 1.45-03.15	Session 4 03.30-05.00
1	01FE17BEE086	Sandesh V H	Subi	Subi	Subi	Subi
2	01FE16BCS184	Shashank V H	- ABSENT -		- AB -	- AB -
3	01FE18BCS007	Abhimalya C	Abi C	Abi C	Abi C	Abi C
2	01FE17BCS218	Srushti N K	Subi	Subi	Subi	Subi
5	01FE17BCS232	Tejaswini S	Tej S	Tej S	Tej S	Tej S
6	01FE17BCS217	Spoorthy S K	Subi	Subi	Subi	Subi
7	01FE17BCS101	Laxmi B S	Subi	Subi	Subi	Subi
8	01FE17BCS084	Ishu Sagar	Subi	Subi	Subi	Subi
9	01FE17BCS284	Namrata N	Subi	Subi	- AB -	- AB -
10	01FE17BCS174	Sanjana S A	Subi	Subi	- AB -	- AB -
11	01FE17BCS090	K Kruthika	Subi	Subi	- AB -	- AB -
12	01FE18BEC097	Pwan Kumar R	Subi	Subi	Subi	Subi
13	01FE17BCS022	Akhila A G	Subi	Subi	Subi	Subi
14	01FE17BCS178	S M Belaldavar	Subi	Subi	Subi	Subi
15	01FE17BCS132	Prajwal P K	Subi	Subi	Subi	Subi
16	01FE17BCS149	Rahul J E	Subi	Subi	Subi	Subi
17	01FE17BCS162	Sadaf I M	Subi	Subi	Subi	Subi
18	01FE17BCS053	Ayesha A S	Subi	Subi	Subi	Subi
19	01FE17BCS062	Bibi Ayeesha D	Subi	Subi	Subi	Subi
20	01FE17BCS064	Chaitanya M	Subi	Subi	Subi	Subi
21	01FE17BCS016	Aishwarya G.M	- AB -	- AB -	Subi	Subi
22	01FE17BCS018	Harshit S.J.			Subi	Subi

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2	01FE17BCS218	Srushti N K	Sub	Sub	Sub	Sub
5	01FE17BCS232	Tejaswini S	Sub	Sub	Sub	Sub
6	01FE17BCS217	Spoorthy S K	Sub	Sub	Sub	Sub
7	01FE17BCS101	Laxmi B S	Sub	Sub	Sub	Sub
8	01FE17BCS084	Ishu Sagar	Sub	Sub	Sub	Sub
9	01FE17BCS284	Namrata N				
10	01FE17BCS174	Sanjana S A	Sub	Sub	Sub	Sub
11	01FE17BCS090	K Kruthika	Sub	Sub	Sub	Sub
12	01FE18BEC097	Pavan Kumar R	Sub	Sub	Sub	Sub
13	01FE17BCS022	Akhila A G	Sub	Sub	Sub	Sub
14	01FE17BCS178	S M Belaldavar	Sub	Sub	Sub	Sub
15	01FE17BCS132	Prajwal P K	Sub	Sub	Sub	Sub
16	01FE17BCS149	Rahul J E				
17	01FE17BCS162	Sadaf I M	Sub	Sub	Sub	Sub
18	01FE17BCS053	Ayesha A S	Sub	Sub	Sub	Sub
19	01FE17BCS062	Bibi Ayesha D	Sub	Sub	Sub	Sub
20	01FE17BCS064	Chaitanya M	Sub	Sub	Sub	Sub
21	01FE17BCS191	Shivaraj C	Sub	Sub	Sub	Sub
22	01FE17BCS078	Harshit J.	Sub	Sub	Sub	Sub
23	01FE17BCS016	Aishwarya G M	Sub	Sub	Sub	Sub
24	01FE16BCS124	Shashank				
24	01FM17MCA019	Subramanya	Sub	Sub	Sub	Sub
25	02FM17MCA022	MURAGESH.N	Sub	Sub	Sub	Sub
26	02FM17MCA054	Praveen Simur	Sub	Sub	Sub	Sub
27	01FM17MCA043	Sampada. S.H	Sub	Sub	Sub	Sub
28	01FM17MCA042	Sagarika	Sub	Sub	Sub	Sub
29	01FE18BCS137	Nishant	Sub	Sub	Sub	Sub

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1	01FE17BEE086	Sandesh V H	Sub	Sub	Sub	Sub
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3	01FE18BCS007	Abhimalya C	Sub	Sub	Sub	Sub
2	01FE17BCS218	Srushti N K	Sub	Sub	Sub	Sub
5	01FE17BCS232	Tejaswini S	Sub	Sub	Sub	Sub
6	01FE17BCS217	Spoorthy S K	Sub	Sub	Sub	Sub
7	01FE17BCS101	Laxmi B S	Sub	Sub	Sub	Sub
8	01FE17BCS084	Ishu Sagar	Sub	Sub	Sub	Sub
9	01FE17BCS284	Namrata N				
10	01FE17BCS174	Saujana S A	Sub	Sub	Sub	Sub
11	01FE17BCS090	K Kruthika				
12	01FE18BEC097	Ravan Kumar R	Sub	Sub	Sub	
13	01FE17BCS022	Akhila A G	Sub	Sub	Sub	Sub
14	01FE17BCS178	S M Belaldavar	Sub	Sub	Sub	Sub
15	01FE17BCS132	Prajwal P K	Sub	Sub	Sub	Sub
16	01FE17BCS149	Rahul J E				
17	01FE17BCS162	Sadaf I M	Sub	Sub	Sub	Sub
18	01FE17BCS053	Ayesha A S	Sub	Sub	Sub	Sub
19	01FE17BCS062	Bibi Ayeesha D	Sub	Sub	Sub	Sub
20	01FE17BCS064	Chaitanya M	Sub	Sub	Sub	Sub
21	01FM17MCA043	Sampada S.H.	Sub	Sub	Sub	Sub
22	01FM17MCA054	Vaishali R.K.	Sub	Sub	Sub	Sub
23	01FM18MCA045	Shubhangini	Sub	Sub	Sub	Sub
24	01FM18MCA010	Abhyhele	Sub	Sub	Sub	Sub
25	01FM18MCA034	Halesh N.K	Sub	Sub	Sub	Sub
26	01FM17MCA042	Sagarika M.N	Sub	Sub	Sub	Sub
27	01FM17MCA049	Subramanya K.	Sub	Sub	Sub	Sub
28	01FM17MCA034	Praveen S.	Sub	Sub	Sub	Sub
29	01FE18BCS137	Nishant Raj W.Raj	Sub	Sub	Sub	Sub
30	01FE17BCS016	Aishwarya G. Mensinkai	Sub	Sub	Sub	Sub
31	01FE17BCS078	Harshit S.J.	Sub	Sub	Sub	Sub

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Attendance Sheet:

Date: 01/08/19

Sl.No	USN	Name of Student	Session 1 9.30-11.00	Session 2 11.15-12.45	Session 3 1.45-03.15	Session 4 03.30-05.00
1	01FE17BEE086	Sandesh V H	Sub	Sub	Sub	Sub
2	01FE16BCS184	Shashank V H			Sub	Sub
3	01FE18BCS007	Abhimalya C	Sub	Sub	Sub	Sub
2	01FE17BCS218	Srushti N K	Sub	Sub	Sub	Sub
5	01FE17BCS232	Tejaswini S	Sub	Sub	Sub	Sub
6	01FE17BCS217	Spoorthy S K	Sub	Sub	Sub	Sub
7	01FE17BCS101	Laximi B S	Sub	Sub	Sub	Sub
8	01FE17BCS084	Ishu Sagar	Sub	Sub	Sub	Sub
9	01FE17BCS284	Namrata N				
10	01FE17BCS174	Sanjana S A	Sub	Sub	Sub	Sub
11	01FE17BCS090	K Kruthika				
12	01FE18BEC097	Rwan Kumar R	Sub	Sub	Sub	Sub
13	01FE17BCS022	Akhila A G	Sub	Sub	Sub	Sub
14	01FE17BCS178	S M Belaldavar	Sub	Sub	Sub	Sub
15	01FE17BCS132	Prajwal P K	Sub	Sub	Sub	Sub
16	01FE17BCS149	Rahul J E				
17	01FE17BCS162	Sadaf I M	Sub	Sub	Sub	Sub
18	01FE17BCS053	Ayesha A S	Sub	Sub	Sub	Sub
19	01FE17BCS062	Bibi Ayeesha D	Sub	Sub	Sub	Sub
20	01FE17BCS064	Chaitanya M	Sub	Sub	Sub	Sub
21	01FM11MCA024	Halesh	Sub	Sub	Sub	Sub
22	01FM10MCA010	Abhishek	Sub	Sub	Sub	Sub
23	01FM11MCA045	Shubhangini	Sub	Sub	Sub	Sub
24	01FM18MCA042	Shrutal S. Akk	Sub	Sub	Sub	Sub
25	01FE17BCS137	Nishant Rai	Sub	Sub	Sub	Sub
26	01FE17BCS078	Harshit S.J	Sub	Sub	Sub	Sub
27	01FE17BCS016	Aishwarya G. Menshi	Sub	Sub	Sub	Sub
28	01FM17MCA022	MURAGESH .k.NAD	Sub	Sub	Sub	Sub
29	01FM17MCA034	Praveen Srinivas	Sub	Sub	Sub	Sub

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Attendance Sheet:

Date: 02/08/19

Sl.No	USN	Name of Student	Session 1 9.30-11.00	Session 2 11.15-12.45	Session 3 1.45-03.15	Session 4 03.30-05.00
1	01FE17BEE086	Sandesh V H	Sub:	Sub:	Sub:	Sub:
2	01FE16BCS184	Shashank V H	Sub:	Sub:	Sub:	Sub:
3	01FE18BCS007	Abhimalya C	Sub:	Sub:	Sub:	Sub:
2	01FE17BCS218	Srushti N K	Sub:	Sub:	Sub:	Sub:
5	01FE17BCS232	Tejaswini S	Sub:	Sub:	Sub:	Sub:
6	01FE17BCS217	Spoorthy S K	Sub:	Sub:	Sub:	Sub:
7	01FE17BCS101	Laxmi B S	Sub:	Sub:	Sub:	Sub:
8	01FE17BCS084	Ishu Sagar	Sub:	Sub:	Sub:	Sub:
9	01FE17BCS284	Namrata N				
10	01FE17BCS174	Sanjana S A	Sub:	Sub:	Sub:	Sub:
11	01FE17BCS090	K Kruthika				
12	01FE18BEC097	Pwan Kumar R	Sub:	Sub:	Sub:	Sub:
13	01FE17BCS022	Akhila A G	Sub:	Sub:	Sub:	Sub:
14	01FE17BCS178	S M Belaldavar	Sub:	Sub:	Sub:	Sub:
15	01FE17BCS132	Prajwal P K	Sub:	Sub:	Sub:	Sub:
16	01FE17BCS149	Rahul J E				
17	01FE17BCS162	Sadaf I M	Sub:	Sub:	Sub:	Sub:
18	01FE17BCS053	Ayesha A S	Sub:	Sub:	Sub:	Sub:
19	01FE17BCS062	Bibi Ayesha D	Sub:	Sub:	Sub:	Sub:
20	01FE17BCS064	Chaitanya M	Sub:	Sub:	Sub:	Sub:
21	01FM17MCA049	Subramanya X.	Sub:	Sub:	Sub:	Sub:
22	01FM17MCA042	Sagarika M N	Sub:	Sub:	Sub:	Sub:
23	01FM17MCA054	Vaishali R.K	Sub:	Sub:	Sub:	Sub:
24	01FE17BCS078	Harshit S.T.	Sub:	Sub:	Sub:	Sub:
25	01FE17BCS016	Aishwarya G.M	Sub:	Sub:	Sub:	Sub:
26	01FM16MCA045	Shubhanga	Sub:	Sub:	Sub:	Sub:
27	01FM18MCA042	Sheetal S. Akki	Sub:	Sub:	Sub:	Sub:
28	01FM18MCA010	Akshaya M	Sub:	Sub:	Sub:	Sub:
29	01FM18MCA034	Hitesh	Sub:	Sub:	Sub:	Sub:
30	01FE17BCS178					

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Feedback Form
5 Days Summer School on
Hadoop and Big Data
29-07-2019 to 02-08-2019

For each of the following areas, please indicate your reaction:

Content	Excellent	Good	Needs Improvement	Not Applicable
Covered Useful Material	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Practical to My Needs and Interests	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Well Organized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Presented at the Right Level	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Effective Activities	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Presentation	Excellent	Good	Needs Improvement	Not Applicable
Faculty members' Knowledge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Faculty members' Presentation Style	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Faculty members Covered Material Clearly	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Faculty members responded Well to Questions	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How could this workshop be improved?
By providing more Hands-on session, Installation of Softwares efficiently

Any other comments or suggestions?
This workshop helped us a lot to enhance our knowledge. Thank you for the all faculties.

Overall, how would you evaluate this workshop training session?

Excellent	Good	Fair	Poor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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