

CLOUD APPLICATION DEVELOPMENT LABORATORY

VII Semester: CSE / IT																																								
Course Code	Category	Hours / Week			Credits	Maximum Marks																																		
ACS110	Core	L	T	P	C	CIA	SEE	Total																																
		-	-	3	2	30	70	100																																
Contact Classes: Nil		Tutorial Classes: Nil		Practical Classes: 45			Total Classes: 45																																	
<p>I. COURSE OVERVIEW: This Laboratory course provides a foundation for which we can access the applications as utilities over the internet. It allows us to create, configure, and customize the business applications online. a cloud application, or cloud app, is a software program where cloud-based and local components work together. This model relies on remote servers for processing logic that is accessed through a web browser with a continual internet connection. Hadoop is an open-source framework that allows to store and process big data in a distributed environment across clusters of computers using simple programming models. It is designed to scale up from single servers to thousands of machines, each offering local computation and storage.</p> <p>II. OBJECTIVES: The course should enable the students to:</p> <ul style="list-style-type: none"> I To run virtual machines of different configuration. II Big data application using Hadoop under cloud environment. III The developing web applications in cloud framework. <p>III. COURSE OUTCOMES: After successful completion of the course, students should be able to:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 15%;">CO 1</td> <td style="width: 70%;">Make use of Virtualization and parallel processing on guest and host OS for performing different tasks by installing virtual machines.</td> <td style="width: 15%; text-align: right;">Apply</td> </tr> <tr> <td>CO 2</td> <td>Develop Mapper and Reducer on simple applications by using Apache Hadoop on single node setup installation.</td> <td style="text-align: right;">Apply</td> </tr> <tr> <td>CO 3</td> <td>Construct simple applications on services rendered by Amazon WebService Cloud Service Provider.</td> <td style="text-align: right;">Apply</td> </tr> <tr> <td>CO 4</td> <td>Build simple applications on services rendered by Google ServiceProvider.</td> <td style="text-align: right;">Apply</td> </tr> <tr> <td>CO 5</td> <td>Utilize simple applications on services rendered by Microsoft Azurecloud Service Provider.</td> <td style="text-align: right;">Apply</td> </tr> <tr> <td>CO 6</td> <td>Develop web based App by using Yahoo! pipes.</td> <td style="text-align: right;">Apply</td> </tr> </table> <p>IV. SYLLABUS:</p> <table style="width: 100%; border: none;"> <tr> <th colspan="2" style="text-align: center; color: red; padding: 5px;">LIST OF EXPERIMENTS</th> </tr> <tr> <td style="width: 15%; color: blue; padding: 5px;">Week-1</td> <td style="color: blue; padding: 5px;">VIRTUALIZATION</td> </tr> <tr> <td colspan="2" style="padding: 5px;">Install Oracle Virtual box and create two VMs on your laptop.</td> </tr> <tr> <td style="color: blue; padding: 5px;">Week-2</td> <td style="color: blue; padding: 5px;">VIRTUALIZATION</td> </tr> <tr> <td colspan="2" style="padding: 5px;">Install Turbo C in guest OS and execute C program.</td> </tr> <tr> <td style="color: blue; padding: 5px;">Week-3</td> <td style="color: blue; padding: 5px;">VIRTUALIZATION</td> </tr> <tr> <td colspan="2" style="padding: 5px;">Test ping command to test the communication between the guest OS and Host OS.</td> </tr> </table>									CO 1	Make use of Virtualization and parallel processing on guest and host OS for performing different tasks by installing virtual machines.	Apply	CO 2	Develop Mapper and Reducer on simple applications by using Apache Hadoop on single node setup installation.	Apply	CO 3	Construct simple applications on services rendered by Amazon WebService Cloud Service Provider.	Apply	CO 4	Build simple applications on services rendered by Google ServiceProvider.	Apply	CO 5	Utilize simple applications on services rendered by Microsoft Azurecloud Service Provider.	Apply	CO 6	Develop web based App by using Yahoo! pipes.	Apply	LIST OF EXPERIMENTS		Week-1	VIRTUALIZATION	Install Oracle Virtual box and create two VMs on your laptop.		Week-2	VIRTUALIZATION	Install Turbo C in guest OS and execute C program.		Week-3	VIRTUALIZATION	Test ping command to test the communication between the guest OS and Host OS.	
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Week-4	HADOOP
Install Hadoop single node setup.	
Week-5	HADOOP
Develop a simple hadoop application called Word Count. It counts the number of occurrences of each word in a given input set.	
Week-6	HADOOP
Develop hadoop application to count no of characters, no of words and each character frequency.	
Week-7	HADOOP
Develop hadoop application to process given data and produce results such as finding the year of maximum usage, year of minimum usage.	
Week-8	HADOOP
Develop hadoop application to process given data and produce results such as how many female and male students in both schools the results should be in following format. GP-F #number GP-M #numbers MS-F #number MS-M #number	
Week-9	CLOUD PROGRAMMING
Establish an AWS account. Use the AWS Management Console to launch an EC2 instance and connect to it.	
Week-10	CLOUD PROGRAMMING
Design a protocol and use Simple Queue Service(SQS)to implement the barrier synchronization after the first phase.	
Week-11	CLOUD PROGRAMMING
Use the Zookeeper to implement the coordination model in Problem 10.	
Week-12	CLOUD PROGRAMMING
Develop a Hello World application using Google App Engine.	
Week-13	CLOUD PROGRAMMING
Develop a Guestbook Application using Google App Engine.	
Week-14	WINDOWS AZURE
Develop a Windows Azure Hello World application using.	
Week-15	PIPES
Create a Mashup using Yahoo! Pipes.	

Reference Books

1. Dan Marinescu, “Cloud Computing: Theory and Practice”, M K Publishers, 1st Edition, 2013.
2. Kai Hwang, Jack Dongarra, Geoffrey Fox, “Distributed and Cloud Computing, From Parallel Processing to the Internet of Things”, M K Publishers, 1st Edition, 2013.
3. Anthony T. Velte, Toby J. Velte, Robert Elsenpeter, “Cloud Computing: A Practical Approach”, McGraw-Hill, 1st Edition, 2009.
4. Arshdeep Bahga, Vijay Madisetti, “Cloud computing A Hands on Approach”, Universities Publications, 1st Edition, 2013.

Web References:

1. <http://www.howtogeek.com/196060/beginner-geek-how-to-create-and-use-virtual-machines/>
2. <http://www.tutorialspoint.com/hadoop/>
3. <https://aws.amazon.com/>
4. <http://www.tutorialspoint.com/zookeeper/>
5. <https://cloud.google.com/appengine/docs/java/gettingstarted/creating-guestbook>
6. https://www.google.co.in/?gfe_rd=cr&ei=SZIJWOnpIlanqugTDyrewCw&gws_rd=ssl#q=yahoo+pipes+mashup+tutorial.

Course Home Page:

SOFTWARE AND HARDWARE REQUIREMENTS FOR 36 STUDENTS:

HARDWARE: Desktop systems: 36 nos.

SOFTWARE: Globus Toolkit or equivalent Eucalyptus or Open Nebula.