BCA 507: Grid and Cloud Computing

Teaching Scheme	Examination Scheme
Lectures: 3 hrs/Week Tutorials: 1 hr/Week Credits: 4	Class Test -12Marks Teachers Assessment - 6Marks Attendance – 12 Marks End Semester Exam – 70 marks

Prerequisite: - BCA 205 Introduction to Operating Systems, BCA 304 Computer Networking.

Course Objectives:

1. To describe grid and cloud computing as an emerging technologies.
2. To understand the importance of grid and cloud computing along with various security issues.
3. To identify the differences between various types of computing techniques, Cloud deployment models and service models.
4. To understand the implementation of cloud security and mobile cloud computing concepts..
5. To analyze various virtualization and scheduling techniques.
6. To study the design approaches used by various cloud service providers.

Detailed Syllabus

Unit-1

Recent trends in computing, Introduction to Grid Computing: Motivation, Definition of Grid Computing, Evolution of Grid, Examples and Usages, Research Possibilities, Benefits of Grid Computing.

Unit-2

Grid Basics: Grid Architecture and its relationship to other distributed technologies, Grid Application Areas. **Security Issues in Grids:** Kerberos, GSI and Grid Security Framework. Migrating to Cloud.

Unit-3

Cloud Computing Basics- Cloud Computing Overview, Characteristics, Applications, Components, Benefits, Limitations, Challenges. First Movers in Cloud.

Cloud Computing Technology: Hardware and Infrastructure, Clients, Security, Network, Services.

Unit-4

Cloud Deployment Models: Private Cloud; Public Cloud; Community Cloud; Hybrid Cloud.
Cloud Computing Service Models: Infrastructure as a Service; Platform as a Service; Software as a Service. **Accessing the Cloud:** Web Applications, Web API's, and Web Browsers.

Unit-5

Cloud Storage and Security: Overview, Advantages, Storage as a Service, Security, Reliability, Advantages, Cautions, Theft, Cloud Storage Providers. **Standards:** Applications, Client, Infrastructure, Services.

UNIT-6

Virtualization Technologies: Types of Virtualization, Benefits of Virtualization, Hypervisor.
Scheduling: Overview of Scheduling problem, Different types of scheduling, Scheduling Algorithms. Case Study of Amazon S3. Major Cloud Service providers.

Text and Reference Books

1- The Grid- Blueprint for a New Computing Infrastructure, Ian Foster, Carl Kesselman, 2nd Edition, Morgan Kaufmann Publications,2003.

2- Grid Computing: Making the Global Infrastructure a Reality, Francine Berman, Geoffrey Fox, Tony Hey, John Wiley & Sons, 2003.

3- Cloud Computing: Principles and Paradigms, Rajkumar Buyya and James Broberg, John Wiley & Sons, 2011.

4- Cloud Computing, A Practical Approach, Anthony T Velte, Mc Graw Hill, 2010.

Course Outcomes:

Students will able to:

1. Define Cloud Computing and memorize the different Cloud service and deployment models.
2. Describe importance of virtualization along with their technologies.
3. Use and Examine different cloud computing services.
4. Analyze the components of open stack & Google Cloud platform and understand Mobile Cloud Computing.
5. Describe the key components of Amazon web Service.
6. Design & develop backup strategies for cloud data based on features.