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Question Paper Code : 21294

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2013.

Eighth Semester

Computer Science and Engineering

CS 2063/CS 810 — GRID COMPUTING

(Common to Seventh Semester Information Technology)

(Regulation 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

- ✓ 1. How is grid computing different from cluster and P2P computing?
- ✓ 2. What is the relationship between OGSA, OGIS and Web Services?
3. Specify whether OGIS/WSRF :
 - (a) Communication with service instances about service data *OGIS*
 - (b) Communication with service about resources and properties *WSRF*
 - (c) Extensibility through inheritance
 - (d) Explicitly differentiates between a stateless web service and stateful resources. *OGIS*
4. What is the goal of grid monitoring?
5. Which monitoring system will you prefer for the following :
 - (a) Federate clusters and aggregate their states
 - (b) Utilizes a relational system
 - (c) Provides information service for GT3
6. Suggest component of GSI for the following :
 - (a) Allows remote processes and resources to act on user's behalf
 - (b) Maintains a list of authorized users on server side

7. What are the job types supported by LSF?
8. What is a portlet?
9. List 2 usecases each for a datagrid and a computational grid.
10. List any two grid middleware and their functionalities

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the architecture of second generation grids with a neat diagram. (10)
- (ii) List out the advantages and disadvantages of the same. (6)

Or

- (b) What architecture of grid is open technology and service-based? Explain in detail its core platform component.
12. (a) (i) What is the purpose of a directory service in GMA? (6)
- (ii) What is GridICE? Describe its architecture. (10)

Or

- (b) (i) What is Network Weather service? Describe its architecture with the functionality of each component. (8)
- (ii) Evaluate the same for scalability, fault tolerance, monitoring, presentation, searching and security highlighting its pros and cons in comparison with other grid monitors. (8)
13. (a) (i) What type of scheduling is used for each of the following? Describe them (8)
- (1) GTS
- (2) Cluster environment.
- (ii) Describe Job lifecycle in Condor. (8)

Or

- (b) (i) Consider two jobs – J1 and J2. Job J1 requires a resource to be atleast 80% effective and J2 requires a resource to be atleast 50% effective.

Consider 3 resources R1, R2 and R3 whose Resource information matrix details is provided in the table below. Let CPU weight be 6 and RAM weight be 4. The minimum CPU speed is 1 GHz and the minimum RAM size is 256 MB

	CPU speed (GHz)	CPU load (%)	RAM size (MB)	RAM usage (%)
R1	1.8	50	256	50
R2	2.6	70	512	60
R3	1.2	40	512	30

Identify the resource best suited for J1 and J2. (8)

(ii) What are the QoS that NimrodG supports? What are the components to offer these? (8)

14. (a) (i) Give the architecture of first generation of portals. What are the limitations of the same? (8)

(ii) Describe the classes of data oriented services (8)

Or

(b) (i) Describe how the grid resources can be accessed via grid portlets, with a figure. (8)

(ii) What extra services is needed in grid environment to manage data. Discuss data management and information services in GT3. (8)

15. (a) Describe in detail the architecture of GT3. Write the core services supported by the same.

Or

(b) What is gLite? Describe its architecture with the functionality of various components.