BRAINWARE UNIVERSITY

Term End Examination 2023
Programme – B.Tech.(CSE)-2018/B.Tech.(CSE)-2019/B.Tech.(CSE)-2020
Course Name – Distributed Systems
Course Code - PEC-601B
(Semester VI)

Full Marks : 60   **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)   1 x 15=15

1.   *Choose the correct alternative from the following :*

(i)   Choose the following is not a method for ensuring fault tolerance in a distributed system?

   a) Replication   b) Check pointing
   c) Redundancy   d) Resource allocation

(ii)   Classify the distributed mutual exclusion algorithm, the request messages are timestamped?

   a) Time-based   b) Resource-based
   c) Event-based   d) None of the above

(iii)   Choose the option below that Message passing concept can be assemble in

   a) monolithic kernel   b) microkernel
   c) Both monolithic kernel and microkernel   d) None of these

(iv)   Classify the distributed mutual exclusion algorithm, the request messages are sent to all other processes in the system?

   a) Time-based   b) Event-based
   c) Broadcast-based   d) None of the above

(v)   Choose the below option from the following. Machine that places the request to access the data is generally tell as _____.

   a) Server Machine   b) Client Machine
   c) Request Machine   d) Response machine

(vi)   Choose the option below that In distributed systems , link and site failure is detected by applying _____

   a) polling   b) handshaking
   c) token passing   d) none of these

(vii)   Choose the following is a communication protocol used in distributed systems?

   a) FTP (File Transfer Protocol)   b) HTTP (Hypertext Transfer Protocol)

c) TCP/IP (Transmission Control Protocol/Internet Protocol)   d) All of the above

(viii) Identify the following is a testing technique used to evaluate the reliability of distributed systems?

a) Fault injection testing   b) White-box testing
c) Gray-box testing   d) Boundary value analysis

(ix) Choose the following is a technique used to ensure fault tolerance in distributed operating systems?

a) Redundancy   b) Load balancing
c) Resource allocation   d) None of the above

(x) State Which amongst the following is not an advantage of Distributed systems?

a) Resource sharing   b) Incremental growth
c) Reliability   d) Process to Process Communication

(xi) Identify the following is an ethical consideration related to the use of distributed operating systems?

a) System reliability   b) User satisfaction
c) Privacy and security   d) All of the above

(xii) Choose one of the primary causes of Deadlock in real-life scenarios:

a) Inefficient use of resources   b) Lack of proper communication between processes
c) High CPU utilization   d) Insufficient memory allocation

(xiii) Choose the option from below the following. A web-based computing system, the computer used are normally _____?

a) Servers   b) Tablets
c) Personal computers   d) Network computers

(xiv) Identify _____ of the distributed file system are dispersed among various machines of distributed system.

a) Clients   b) Servers
c) Storage devices   d) All of the mentioned

(xv) Apply which distributed file system is designed for large-scale data storage and processing, and is widely used in big data applications?

a) NFS   b) HDFS
c) CIFS   d) AFS

Group-B
(Short Answer Type Questions)   3 x 5=15

2. Define some of the features of the CODA file system, and how do they enhance its performance in a distributed system?   (3)
3. Define the principles of distributed systems.   (3)
4. Explain what is a message-passing system, and how does it work in inter-process communication?   (3)
5. Explain the banker's algorithm work for deadlock avoidance in resource allocation?   (3)
6. Explain Remote Procedure Call (RPC) and how does it enable communication between processes in a distributed system?   (3)

OR

Explain shared memory in IPC?   (3)

Group-C
(Long Answer Type Questions)   5 x 6=30

7. Define distributed system.   (5)
8. Explain about virtual machine.   (5)

9. Define Access Matrix model of security. (5)
10. Explain the concept of data security and discuss why it is important in real-life situations. (5)
11. Explain distributed file system and how does it differ from a traditional file system? (5)
12. Explain the concept of symmetric and asymmetric encryption and discuss the advantages (5) and disadvantages of each approach.

OR

Explain deadlock in the context of distributed systems, and how does it occur? (5)

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