**JKUAT**

**ICS 2208: OPERATING SYSTEMS II ASSIGNMENT (10 MARKS) DATE: 21/03/2024**

**From the Chapter on Distributed File Systems**

**Exercises – not to be submitted back to me**

1. In the design of a distributed file system (DFS), high availability and high scalability are mutually related problems. Discuss.

2. In the design of a DFS, high performance and high reliability are conflicting properties, discuss.

3. In your opinion, where (in server memory, in client disk, or in client memory) should a cache for caching data be located in the following types of DFS (give reasons for your answer)

1. One that supports diskless workstations.
2. One that uses the file-level transfer model as a unit of data access
3. One that uses session semantics
4. One that is designed to occasionally to support disconnected operation
5. One in which the ratio of number of clients to number of file servers is very large
6. One that has to handle fairly large files
7. One that supports UNIX-like file-sharing semantics

If more than one location is suitable for a particular case, which one will you prefer to use and why.

4. Distinguish between citing their advantages and disadvantages:

1. Mutable and immutable file systems
2. Structured and unstructured file systems

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**From the Chapter on Remote Procedure Calls**

**TASK: (this is what should be submitted back for marking by Wednesday 27/03/2024 @ 12pm through the class representative)**

1. Differentiate between IPC (inter process communication) and RPC (remote procedure calls). (3 marks)
2. What was the primary motivation behind the development of the RPC facility? How does an RPC facility make the job of distributed application programmes simpler? (7 marks)

**Exercises (not to be submitted back to me)**

1. Differentiate between the stateful and stateless servers. Why do some distributed applications use stateless servers in spite of the fact that stateful servers provide an easier programming paradigm and are typically more efficient than stateless servers?
2. A server is to be shared by multiple clients. Describe a scheme for designing the remote procedures offered by the server so that interleaved or concurrent requests from different clients do not interfere with each other.