Total No. of Questions : 10]

SEAT No. :

P2361

[Total No. of Pages : 3

[5254] - 694
B.E. (I.T.) (Semester - II)
DISTRIBUTED SYSTEM
(2012 Pattern)

Time :2½ hours] *[Max. Marks :70*

Instructions to the candidates:

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Assume suitable data, if necessary.***

Q1) a) Explain the concept of Heterogeneity in Distributed system in detail. How it deals with Heterogeneity. **[6]**

b) The INFO service manages a potentially very large set of resources, each of which can be accessed by users throughout the Internet by means of a key (a string name). Discuss an approach to the design of the names of the resources that achieves the minimum loss of performance as the number of resources in the service increases. Suggest how the INFO service can be implemented so as to avoid performance bottlenecks when the number of users becomes very large. **[4]**

OR

Q2) a) List the three main software components that may fail when a client process invokes a method in a server object, giving an example of a failure in each case. To what extent are these failures independent of one another? Suggest how the components can be made of tolerate one another's failures. **[6]**

b) Give examples of applications where the use of mobile code is beneficial. **[4]**

Q3) a) Assume a client calls an asynchronous RPC to a server, and subsequently waits until the server returns a result using another asynchronous RPC. Is this approach the same as letting the client execute a normal RPC? What if we replace the asynchronous RPCs with asynchronous RPCs? **[4]**

P.T.O.

b) What is Interprocess communication? What are the characteristics of inter - process communication. Discuss about Java API for Internet addresses. **[6]**

OR

Q4) a) What is Socket? Explain the general pattern followed by a client and server for connection - oriented communication using sockets with neat diagram. **[4]**

b) Explain RMI software with respect to: **[6]**

i) Proxy

ii) Dispatcher

iii) Skeleton

Q5) a) What are three alternative approaches to external data representation and marshalling. Explain CORBA's Common Data Representation (CDR). **[8]**

b) What are two most important styles of middleware in use today? Discuss the issues with Object-oriented middleware. **[8]**

OR

Q6) a) What are Web Services? What are the Features of Web Services? Explain in brief, the various components of Web Service. **[8]**

b) What do you understand by logical time and logical clocks? Explain Lamport's contribution for it. **[8]**

Q7) a) With a neat labeled diagram of architecture explain communication in NFS. **[8]**

b) Explain the concept of Scaling and Filtering in Stream Adaptation. **[8]**

OR

Q8) a) Explain the QoS Manager's subtasks and Responsibilities in the form of flowchart. **[8]**

b) How does the client side caching is used in NFS? Discuss the role of RPC in NFS. **[8]**

Q9) a) Explain process architecture of KERBEROS with security objects namely tickets, authentication and session key. **[9]**

b) Explain the following three important design issues that need to be taken into account when implementing general - purpose security services. **[9]**

i) Focus of control

ii) Layering of security mechanisms

iii) Simplicity

OR

Q10)a) What do you meant by public - key Cryptography? Explain Digital signatures with public keys. **[8]**

b) What are the Distributed File System requirements and potential pitfalls in the design of distributed services of distributed file systems. **[10]**