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| **CORBA and XMP-RPC** | | | | |
| **Year** | **No.** | **Question** | **Marks** | **Answers** |
| 18/19  (Main) | 2 | Who owns and maintains CORBA [5 marks] and discuss today’s relevance of CORBA in distributed software systems [5 marks] | 10 | Object Management Group (OMG) is the owner of CORBRA. It is an international non-profit technology standards association. CORBA allows communication between computers running on different platforms, using software written in different programming languages. It was initially intended for software developers who wanted to create interoperable applications based on distributed interoperable objects. Due to the simple way in which CORBA integrates machines from different suppliers, with sizes ranging from mainframes, through thin clients and desktops, handhelds and integrated systems, it is the middleware of choice for large-scale companies. One of the most important and most common uses of CORBA is in servers that have to manage a large number of clients, with high success rates, with high reliability. Specialities for scalability and fault tolerance support these systems. CORBA is not only used for large applications; the specialized versions of CORBA run systems in real time and also small integrated systems.  **Object Management Group (OMG)**  The OMG is a non-profit consortium created in 1989 to promote the theory and practice of object technology for the development for distributed operating systems. The goal is to provide a common architectural framework for object-oriented applications based on widely available interface specifications. With a membership of over 800 members, representing large and small companies within the computer industry, OMG leads the specification development efforts of CORBA, OMG IDL, IIOP, OMA, UML, MOF, and CWM specifications.  The OMG does not produce software or implementation guidelines, only the specifications to which OMG members respond to in Request for Information (RFI) and Requests for Proposals (RFP). By managing these specifications, the OMG supports the adoption process for the member companies interested in advancing the uses and applications of distributed object-oriented computing. |
| 17/18  (Main) | 1 | You are asked to develop a distributed software solution and your employer wants you to decide between the two software standards ‘XML-RPC’ and ‘CORBA’. Explain who owns each of these standards [5 marks each] and formulate an opinion which of these two architectures you would prefer to use [10 marks] | 20 | CORBA – Common Object Request Broker Architecture which is owned by Object Management Group (OMG) and The XML-RPC was created in 1998 by Dave Winer of UserLand Software and Microsoft  XML-RPC is good with object referencing and Compile time. To compile a simple “Hello World”, CORBA takes more than a minute and XML-RPC takes less than a second. Also, when getting started with XML-RPC, user can do something useful within 30 minutes but for CORBA, user need a good knowledge. Therefore, my opinion is the XML-RPC should be used.  <http://wiki.c2.com/?XmlRpcVsCorba> |
| 16/17  (Main) | 1 | You are asked to develop a distributed software solution and your employer asks you to make a decision between the two software standards ‘XML-RPC’ and ‘CORBA’.  In order to facilitate an informed decision, explain in detail how changes of the architecture are managed for XML-RPC [6 marks] and CORBA [6 marks]. Then formulate and justify an opinion on which of these two software standards you would use [8 marks]. | 20 | XML-RPC  The Remote Procedural Call (RPC) which is a mechanism to call a procedure or a function available in a remote computer. XML-RPC is the simple web service that makes it easy to connect with remote computer. XML-RPC is used HTTP protocol to communicate and pass the information from client to server computers. It uses XML to describe the type of the request and responses.  CORBA  CORBA – Common Object Request Broker Architecture which is developed by Object Management Group. The CORBA consist of two basic objects. The service provider object which include functionalities and may be used by other objects and the other one is Client object which is requires the service from the other objects.  XML-RPC is good with object referencing and Compile time. To compile a simple “Hello World”, CORBA takes more than a minute and XML-RPC takes less than a second. Also, when getting started with XML-RPC, user can do something useful within 30 minutes but for CORBA, user need a good knowledge. Therefore, my opinion is the XML-RPC should be used. |
| 15/16  (Main) | 1 | On the XML-RPC homepage www.xmlrpc.com the question ‘What is XML-RPC?’ is answered as follows:  “It's a spec and a set of implementations that allow software running on disparate operating systems, running in different environments to make procedure calls over the Internet.  Its remote procedure calling using HTTP as the transport and XML as the encoding. XML-RPC is designed to be as simple as possible, while allowing complex data structures to be transmitted, processed and returned.”  Discuss who maintains this ‘spec’ [7 marks] and who provides a ‘set of implementations’ [7 marks]. What is the advantage of using HTTP and XML as protocols [5 marks] and why is it an advantage that “XML-RPC is designed to be as simple as possible”? [6 marks] | 25 | This specification documents the XML-RPC protocol implemented in [UserLand Frontier](http://frontier.userland.com/) 5.1.  For a non-technical explanation, see [XML-RPC for Newbies](http://davenet.userland.com/1998/07/14/xmlRpcForNewbies).  The XML-RPC standard specifies using XML, of course, but in this implementation, as an experiment, you can also use JSON.  <http://xmlrpc.com/> |
| 15/16 | 1 | Standards play an important role to define software architectures as they facilitate interoperability between different software solutions.  a. Discuss in detail how the XML-RPC standard can facilitate interoperability between a Java and a C++ program. [10 marks].  b. Why would RMI not provide a solution for this problem? [5 marks]  c. Describe the necessary steps to write a simple Client / Server application using XML-RPC and Java. [10 marks] | 25 |  |
| 13/14 | 2 | Standards play an important role in software development as they facilitate interoperability between different software solutions. Using the two examples „XML-RPC‟ and „CORBA‟ identify and explain in detail who „owns‟ and maintains these architectures and how changes of the architecture are managed (8 marks each). Formulate and justify an opinion about which of the two architectures you would prefer to use. (9 marks) | 25 |  |
| 12/13 | 2 | Name four programming languages that provide an implementation of the XML-RPC protocol. | 4 | It can be used with Perl, Java, Python, C, C++, PHP  <http://www.iitk.ac.in/LDP/HOWTO/XML-RPC-HOWTO/xmlrpc-howto-intro.html> |
| 10/11 | 11 | On the XML-RPC homepage www.xmlrpc.com the question „What is XML-RPC?‟ is answered as follows: “It's a spec and a set of implementations that allow software running on disparate operating systems, running in different environments to make procedure calls over the Internet. It's remote procedure calling using HTTP as the transport and XML as the encoding. XML-RPC is designed to be as simple as possible, while allowing complex data structures to be transmitted, processed and returned.” Explain what is meant by „spec‟ and a „set of implementations‟ in this particular context (4 marks each) and justify why „as simple as possible‟ is an advantage for a distributed architecture (5 marks). In addition, provide examples of „complex data structures‟ that can be transmitted processed and returned within XML-RPC (5 marks), and name at least one data structure that cannot be transmitted (2 marks). | 20 |  |
| 09/10 | 11 | Describe the difference between synchronous and asynchronous communication in middleware (6 marks) and illustrate this difference by referring to the two example architectures “Message Oriented Middleware” and “XMLRPC”. (3 marks each). Justify the relevance of both synchronous and asynchronous communication by discussing a possible application for each of these architectures (4 marks each). | 20 | Asynchronous communication makes it possible for people to respond on their own terms. Through the asynchronous communication we can focus on our work without constantly interrupted and we can decide when we have to check the messages and when we have to respond.  MOM one of the specific class of the middleware. In the distributed application environment, it’ll supports to exchange general-purpose messages. MOM exchanged messages by supporting of both synchronous and asynchronous interactions and it is identifying asynchronous messages by queuing. The asynchronous interaction model used to retain processing control. Asynchronous interaction model allows the caller to begin the processing independently of the processing state of the called procedure, function and method. In this method the code which is called by the caller may not execute straight away. The advantage of this model is that the server doesn’t need to be available to send the message, server can retrieve it at any time. |
| 09/10 | 5 | SOAP is based on which markup language? | 2 | XML - Extensible Markup Language |