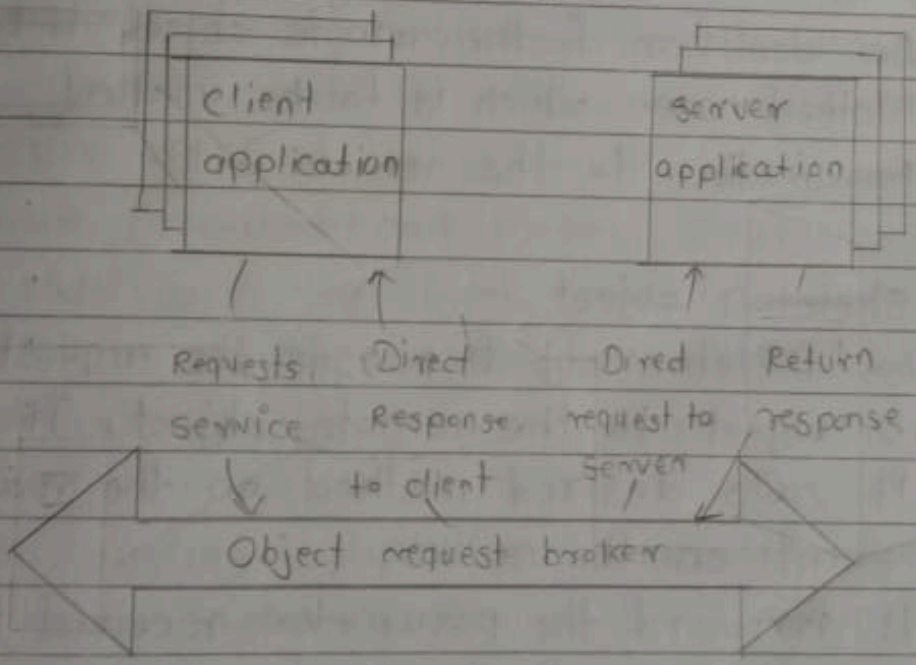
Assignment – 3

2) Corba (common object Request Broker Architecture)

→ - Written in C, ++ in java & integrated throw ideal binding.
- Develop by the object management group.
- " A collection of system level service for handling low level application services life cycle presistice transaction naming security"
- It consist of two system.
  1) Client
  2) object implemention (server)



3) Javarim – (Remote Method Invocation)

→ As the name specifies java invented RMI APIs for communicating method on any machine remotely.
This is pure java solution for handling distributed communication.
Through RMI object running on a client computer can invoke methods on an object present on server.

Working of RMI

There are two special objects designed to establish communication between client & server.

1) stub object (client side)
2) skeleton object (server side)

1) stub object

The stub object on the client machine builds an information block & sends this information to the server.

The block consists of

a) An identifier of the remote object to be used.
b) Method name which is to be invoked.
c) Parameters to the remote JVM.

2) Skeleton object

The skeleton object passes the request from the stub object to the remote object. It works as :

a) It calls desired method on the real object present on the server.
b) It forwarad the parameter received from the stub object to the method.

steps to Implement Interface

1) Defining a remote interface.
ii) Implementing the remote interface.
iii) Creating stub & skeleton objects from the implementation class using rmic (rmi compiler)
iv) Strat start the rmiregistery.
v) Create & excute the server application program.
vi) Create & execute the client application program.

11) Microsoft Decom

→ (Distributed Component object model)
It is a remote protocol designed by Microsoft to invoke RPC's. It consists of a set of extensions layered on the Microsoft Remote procedure call extensions.

Higher-level application/protocol
Decom
RPC

(DCOM protocol stack): Higher level applications use use the DCOM client to obtain object references or make ORPC calls on the object. The DCOM client uses the Remote procedure call protocol Extensions, to communicate with the object server. The object server constitute an object resolver service & one or more object exporters. objects are contained in object exporters.

DCOM is language & platform independent.
DCOM is binary standard.
DCOM provides the ability to use & reuse components dynamically, without recompiling as platform & language neutal principle.
However DCOM do not have any absolute way of addressing an object instance- everything done through object interface.

Marshalling
Marshalling helps to pass dataform one com object instance to another on different computer.

The steps in Dcom communicating

i) The client computer requests the remote computer to create an object by its CLSID or PROGID. If the client passes the APPID, the remote comp. looks up the CLSID using the PROGID.

ii) The remote machine checks the APPID & verifies the client has permission to create the object.

iii) DCOMLunch.exe (if an exe) or DLLHOST.exe (if a dll) will create an instance of the class the client computer requested.

iv) The communication gets established.

v) The client can now access all functions in the class on the remote computer.

5) What is the role of J2EE in Distributed computing?

→ Sun microsystem provides specifications for a comprehensive suite of technologies to solve large scale distributed system problems.

This suite is the Java 2 Enterprise Edition commonly known as J2EE.

In this discussion we will discuss the architecture of J2EE & how it can be used to develop distributed multi-tiered applications.

The emergence of the Internet has helped enterprise applications to be easily accesible over the web without having specific client-side software installations. In the Internet based enterprise application model,

The focus was to move the complex business processing toward centralized servers in the back end. The 1st generation of Internet servers was based upon web servers that hosted static web pages & provided content to the client via HTTP. HTTP is a stateless protocol that connects web browsers to web servers, enabling the transportation of HTML content to the user.

The evolution lead to the specification of J2EE architecture, which promoted a much more efficient platform for hosting web-based applications.

J2EE provides a programming model based upon web & business components that are managed by the J2EE application server.

J2EE also provides excellent client connectively capbilities, ranging from PDA to web browsers to Rich clients (Applets, CORBA applications, & standard Java application) various components of the J2EE architecture.

A Typical J2EE architecture, is physically divided in to three logical tiers, which enables clear seperation of the various application components with defined roles & responsibilities. The following is a breakdown of functionabilities of those logical tiers.

i) Presentation tier
ii) Application tier
iii) Integration tier

6) Explain the use of XML in distributed computing.

→ XML is pure data description, no tied to any programming language, operating system or transport protocol. In the grand scheme of distributed computing this is radical idea. The implication is that

we don't require lock-in to programmatic infrastructure to make data available to web-connected platform.

In this first of a new series of the XML based revolution in distributed computing, Frank Coyle looks at XML-RPC as an alternative to code-entric distributed computing models.

XML is a specification for adding semantic meaning to data by allowing users to define their own vocabularies in the form of descriptive tags. The combination of tags & content comprise an XML document. For example, Listing 1 illustrates the use of XML to describe invoice data.

7) What is service oriented architecture. Explain Key characteristics of SOA (service oriented architecture)

→ Service-oriented architecture (SOA) is a method of software development that uses software components called services to create business applications. Each service provides a business capability & services can also communicate with each other across platforms & languages. Developers use SOA to reuse services in different systems or combine several independant service to perform complex tasks.

characteristics

- It supports loose coupling everywhere in the project.
- SOA supports interoperability

- It increases the quality of service.
- It supports vendor diversity.
- It promotes discovery & federation
- It is location-transparent
- It is still maturing & achievable ided.

8) What is stateless & statefull services explain withe example.

→ Stateless.

A Stateless architecture or application is a type of Internet protocol where the state of the previous transaction is neither stored no refferenced in subsequent transactions. Each request is send between the sender & receiver can be interpreted & does not need either requests for its execution. This is a protocol where a client & server requests & response are made in a current state. In addition, the status of the current session is not retained or carried over the next transaction.

stateless applications manage short term requests using print servers & a content Delivery Network (CDN).

An excellent example or stateless protocol work is in the sending of an sms

ex. HTTP, DNS

WSDL - standard for interface definition

UDDI - The web service regisitry.

i) SOAP (Soap Object Access protocol)

It is an xML-based communication protocol is exchange information between computers.

Different applications can communicate using the protocol.

It Frames format for sending messages.
It is platform as well as language independant protocol.

ii) UDDI (Univarsel Description, Discovery & Integration)

UDDI presents specification for a distributed registry of web services.
It is platform independant, open framework.
UDDI uses SOAP. CORBA & Java RMI protocol for its communication.
UDDI uses WSDL to describe interface to web services.
It is an open industry initiative that enables businesses to discover each other & define how they interact using the internet.

iii) WSDL (Web services Description Language)
WSDL is joint development of microsoft & IBM.
It is an XML based protocol to exchange information in decentralized & distributed environment. It is the standard format for describing a web service.
It describes how to access a web services & what operations it performs.
Using the language one can understand how to interface with XML-based services.
It is an integral part of UDDI, an XML-based worldwide business registry.
WSDL is the language that UDDI uses.

9) Explain any one web technology in detail used for implementing web services.

→ HTTP - The de facto standard for the Internet.
XML - The de facto standard for data message interpretation.
SOAP - Chosen standard for XML massaging.

HTTP (Hyper Text Transfer Protocol)
Currenty, HTTP is the most popular option for service transport. HTTP is simple, stable, & widely deployed. Furthermore, most firewalls allow HTTP traffic. This allows XMLRPC for or SOAP messages to masquerade as HTTP messages. This is good if you want to integrate remote applications, but it does raise a number of security concerns. ise a no. of security concerns

XML - RPC
This is the simplest XML-based protocol for exchanging information bet^n computers.

- XML-RPC is a simple protocol that uses XML messages to perform RPCs.
- Requests are encoded in XML & sent via HTTP POST.
- XML responses are embedded in the body of the HTTP response.
- XML-RPC is platform-independant.
- XML-RPC allows diverse applications to communicate.
- A Java client can speak XML-RPC to a Perl server.
- XML-RPC is the easiest way to get started with web services.

SOAP

SOAP is an XML-based protocol for exchanging information between computers.

- SOAP is a communicating protocol.
- SOAP is for communication between applications.
- SOAP is a format for sending messages.
- SOAP is designed to communicate via internet.
- SOAP is platform independent.
- SOAP is language independent.
- SOAP is simple & extensible.
- SOAP allows you to get around firewalls.
- SOAP will be developed as a W3C standard.

10) What are RPC

→ RPC (Remote procedure call) is a software communication protocol that one program can use to request a service from a program located in another computer on a network without having to understand the networks details. RPC is used to call other processes on the remote systems like a local system. A procedure call is also sometimes known as a function call or a ~~strr~~ subroutine call. RPC uses the client-server model. The requesting program is a client & the service providing program is the server. Like a local procedure call, an RPC is a synchronous operations requiring the requesting program to be suspended until the the results of the remote procedure are returned. However, the use of lightweight processes or threads that share the same address space enables multiple RPCs to be performed concurrently.

11) What are the features of SOAP?

→ - Simple object Access protocol
- SOAP has the following features
- Protocol independance, Language Pindependance.
- platform & operating system independance.
- It is used to broadcast a message over the network.
- It is used to call remote procedures & exchange documents.
- It is uses the XML format to send message over the HTTP protocol.