Ex No :1 Study on Different Computing Paradigms

**Date : 04.03.22 and Web Service Components**

# Aim

**Theory**

1. To study on Different Computing Paradigms
2. To study on Web Service Components
3. Study of Microservices

# Different Computing Paradigms

# C:\Users\Welcome\Downloads\ex 1 mindmap.jpg

* + 1. **Distributed Computing :**

Distributed computing is defined as a type of computing where multiple computer systems work on a single problem. Here all the computer systems are linked together and the problem is divided into sub-problems where each part is solved by different computer systems.

The goal of distributed computing is to increase the performance and efficiency of the system and ensure fault tolerance.

# Parallel Computing :

Parallel computing is defined as a type of computing where multiple computer systems are used simultaneously. Here a problem is broken into sub-problems and then further broken down into instructions. These instructions from each sub-problem are executed concurrently on different processors.

The goal of parallel computing is to save time and provide concurrency.

# Cluster Computing :

A cluster is a group of independent computers that work together to perform the tasks given.

Cluster computing is defined as a type of computing that consists of two or more independent computers, referred to as nodes, that work together to execute tasks as a single machine.

The goal of cluster computing is to increase the performance, scalability and simplicity of the system.

# Grid Computing :

Grid computing is defined as a type of computing where it is constitutes a network of computers that work together to perform tasks that may be difficult for a single machine to handle. All the computers on that network work under the same umbrella and are termed as a virtual super computer.

The tasks they work on is of either high computing power and consist of large data sets.All communication

between the computer systems in grid computing is done on the “data grid”.

The goal of grid computing is to solve more high computational problems in less time and improve productivity.

# Utility Computing :

Utility computing is defined as the type of computing where the service provider provides the needed resources and services to the customer and charges them depending on the usage of these resources as per requirement and demand, but not of a fixed rate.

Utility computing involves the renting of resources such as hardware, software, etc. depending on the demand and the requirement.

The goal of utility computing is to increase the usage of resources and be more cost-efficient.

# Edge Computing :

Edge computing is defined as the type of computing that is focused on decreasing the long distance communication between the client and the server. This is done by running fewer processes in the cloud and moving these processes onto a user’s computer, IoT device or edge device/server.

The goal of edge computing is to bring computation to the network’s edge which in turn builds less gap and

results in better and closer interaction.

# Fog Computing :

Fog computing is defined as the type of computing that acts a computational structure between the cloud

and the data producing devices. It is also called as “fogging”.

This structure enables users to allocate resources, data, applications in locations at a closer range within each other.

The goal of fog computing is to improve the overall network efficiency and performance.

# Cloud Computing :

Cloud is defined as the usage of someone else’s server to host, process or store data.

Cloud computing is defined as the type of computing where it is the delivery of on-demand computing services over the internet on a pay-as-you-go basis. It is widely distributed, network-based and used for storage.

There type of cloud are public, private, hybrid and community and some cloud providers are Google cloud, AWS, Microsoft Azure and IBM cloud.

# Web Service Components

1. **XML-RPC**

This is the simplest XML-based protocol for exchanging information between computers.

* XML-RPC is a simple protocol that uses XML messages to perform RPCs.
* Requests are encoded in XML and sent via HTTP POST.
* XML responses are embedded in the body of the HTTP response.
* XML-RPC is platform-independent.
* 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 communication 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 and extensible.
* SOAP allows you to get around firewalls.
* SOAP will be developed as a W3C standard.

# WSDL

WSDL is an XML-based language for describing web services and how to access them.

* WSDL stands for Web Services Description Language.
* WSDL was developed jointly by Microsoft and IBM.
* WSDL is an XML based protocol for information exchange in decentralized and distributed environments.
* WSDL is the standard format for describing a web service.
* WSDL definition describes how to access a web service and what operations it will perform.
* WSDL is a language for describing how to interface with XML-based services.
* WSDL is an integral part of UDDI, an XML-based worldwide business registry.
* WSDL is the language that UDDI uses.
* WSDL is pronounced as 'wiz-dull' and spelled out as 'W-S-D-L'.

# UDDI

UDDI is an XML-based standard for describing, publishing, and finding web services.

* UDDI stands for Universal Description, Discovery, and Integration.
* UDDI is a specification for a distributed registry of web services.
* UDDI is platform independent, open framework.
* UDDI can communicate via SOAP, CORBA, and Java RMI Protocol.
* UDDI uses WSDL to describe interfaces to web services.
* UDDI is seen with SOAP and WSDL as one of the three foundation standards of web services.
* UDDI is an open industry initiative enabling businesses to discover each other and define how they interact over the Internet.

# Study of Micro Services:

# Microservices are an architectural and organizational approach to software development where software is composed of small independent services that communicate over well-defined APIs. These services are owned by small, self-contained teams.

# Microservices architectures make applications easier to scale and faster to develop, enabling innovation and accelerating time-to-market for new features.

# Result:

Different Computing Paradigms, Web service components and Microservices are studied and explained in this document.