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ICS2408 : SELECTED ADVANCED TOPICS IN IT.

ASSIGNMENT.

**Question.**

Discuss cloud computing and concurrent computing.

***Cloud Computing***

Simple of definition of cloud computing is the storing of data and applications in the remote servers and accessing them through the internet rather than storing them on the personal of office computer.

*Cloud Architecture.*

Comprise of two parts connected by the internet, **Front End** and **Back End.**

**Front End:** Represent the computer that the client see, interacts with. Gaining access to the cloud via the front end is through the internet using the browser.

**Back End:** Comprised of computers, servers and data storage systems.

*Cloud computing services.*

1. Software as a service(SaaS)

SaaS uses the web to deliver applications that are managed by a third-party vendor and whose interface is accessed on the clients’ side. Most SaaS applications can be run directly from a web browser without any downloads or installations required, although some require plugins.

2. Infrastructure as a service(IaaS)

Infrastructure as a Service (IaaS), are self-service models for accessing, monitoring, and managing remote datacenter infrastructures, such as compute (virtualized or bare metal), storage, networking, and networking services (e.g. firewalls).

3. Platform as a Service(PaaS)

Is used for applications, and other development, while providing cloud components to software. What developers gain with PaaS is a framework they can build upon to develop or customize applications. PaaS makes the development, testing, and deployment of applications quick, simple, and cost-effective.

*Essential Cloud Characteristics.*

1. On-demand self-service. Consumers use a web-based self service partal to viw serve catalog and request cloud services.

2. Broad network Access. Consumers access the cloud services from any end point or client device from anywhere over the network.

3. Resource pooling. Provides computing resources are pooled to serve multiple consumers.

4. Rapid elasticity

5. Measured service. Cloud systems automatically control and optimize resource use by leveraging a metering capability at some level of abstraction appropriate to the service type.

*Benefits of Cloud Computing.*

1. Business agility. Enables quick resource provisioning, facilitates innovations and reduces time to market just but to mention a few.

2. Reduces IT costs. Reduces up-front capital expenditure, energy and space consumption.

3. High availability. Ensures resource availability based on consumer’s requirements.

4. Business continuity. Reduces impact of downtime eg using the cloud-based backup.

5. Flexibility of access. Enables access of resources from anywhere, eliminating dependence on the specific end-point devices.

***Concurrent Computing.***

Is a form of computing in which several computations are executed during overlapping time periods concurrently instead of sequentially (one completing before the next starts). This is a property of a system—this may be an individual program, a computer, or a network—and there is a separate execution point or "thread of control" for each computation ("process")

*Advantages of cloud computing.*

* Increased program throughput—parallel execution of a concurrent program allows the number of tasks completed in a given time to increase.
* High responsiveness for input/output—input/output-intensive programs mostly wait for input or output operations to complete. Concurrent programming allows the time that would be spent waiting to be used for another task.
* More appropriate program structure—some problems and problem domains are well-suited to representation as concurrent tasks or processes.