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18DCS007 # Cloud Computing Assignment

Ans-1. On the basis of the services cloud offers, we can count on following cloud delivery models.

* **SaaS :-**
  - Cloud application services
  - Use of software that run on cloud.
  - No need to install, manage or upgrade anything locally.
  - Disadvantage - vendor lock in, lack of control & customization etc.
  - eg. Google workspace, Dropbox, webEx.

* **Paas :-**
  - framework or platform where developers can create application.
  - simple, cost effective, highly available.
  - virtualization, easy-scaling.
  - Disadvantage - security, runtime issues.
  - eg. AWS elastic beanstalk, Azure, Heroku etc.

* **Iaas :-**
  - configurable, scalable & automated compute resources.
  - servers, networks, OS, storage etc. through virtualization.
  - flexible, large set of resources, high control.
  - eg. digital Ocean, linode, Rockspace, Google Compute Engine.

Ans-2. On-demand self-services :-
It doesn't require human administrator. users are able to provision, monitor & manage computing resources. eg. In case of virtualization, if less storage or memory is allocated, we can switch the process in more resourceful machine.

* Broad network access :-
- The computing services are generally provided over standard networks & heterogeneous devices.

eg. a cloud application can be accessed from desktop as well as mobile.

* Rapid Elasticity :
→ Services should have IT resources that are able to scale out and in quickly and on as needed basis.

eg. whenever the user requires services, it is provided to them and it is scale out as soon as its requirement gets over.

* Resource pooling -
IT resources eg. storage, applications ch. present are shared accross multiple applications & occupant in an uncommitted manner.

* Measured service :
→ Resource utilization is tracked for each application & occupant. It is done for various reasons like monitoring billing & effective use of resource.

Ans-3. Cloud enabling technology is the use of computing resources that are delivered to customers with help of internet.

* BroadBand network & Internet architecture -
- All cloud must be connected to a network.

- Internet's largest backbone networks, established and deployed by ISPs are interconnected by core routers.
- And models like OSI were introduced.

★ Data Center Technology.
- A data center is facility used to house computer systems & associated components such as telecommunications & storage systems, virtualization, standarization & modularity etc.

★ Virtualization Technology.
virtualization is a process of converting a physical IT resource into a virtual IT resource.
eg. server, storage, network etc.

* Web Technology -
cloud computing relies on internet & web. Tech is generally used as both, the implementation medium & management interface for cloud services.

Ans-4. Virtualization is the process of creating a virtual environment on an existing server to run your desired program.

★ Hardware Virtualization :-
- It runs on concept that individual independent segment of hardware or a physical server maybe made up multiple smaller hardware segments or servers, essentially consolidating multiple physical servers into virtual servers that run on single primary physical server,

★ Software Virtualization -

→ It involves creation of multiple virtual environment on host machine.

★ Memory virtualization -

- physical memory across different servers is aggregated into single virtualized memory pool which provides benefit of an enlarged continuous working memory.

★ Storage Virtualization -

- multiple storage devices are grouped together which appear as a single storage device.

★ Data virtualization -

Data is presented as an abstract layer completely independent of data structure & database systems.

★ Network virtualization -

multiple sub-networks can be created on same physical networks which may or may not be authorized to communicate with each other.
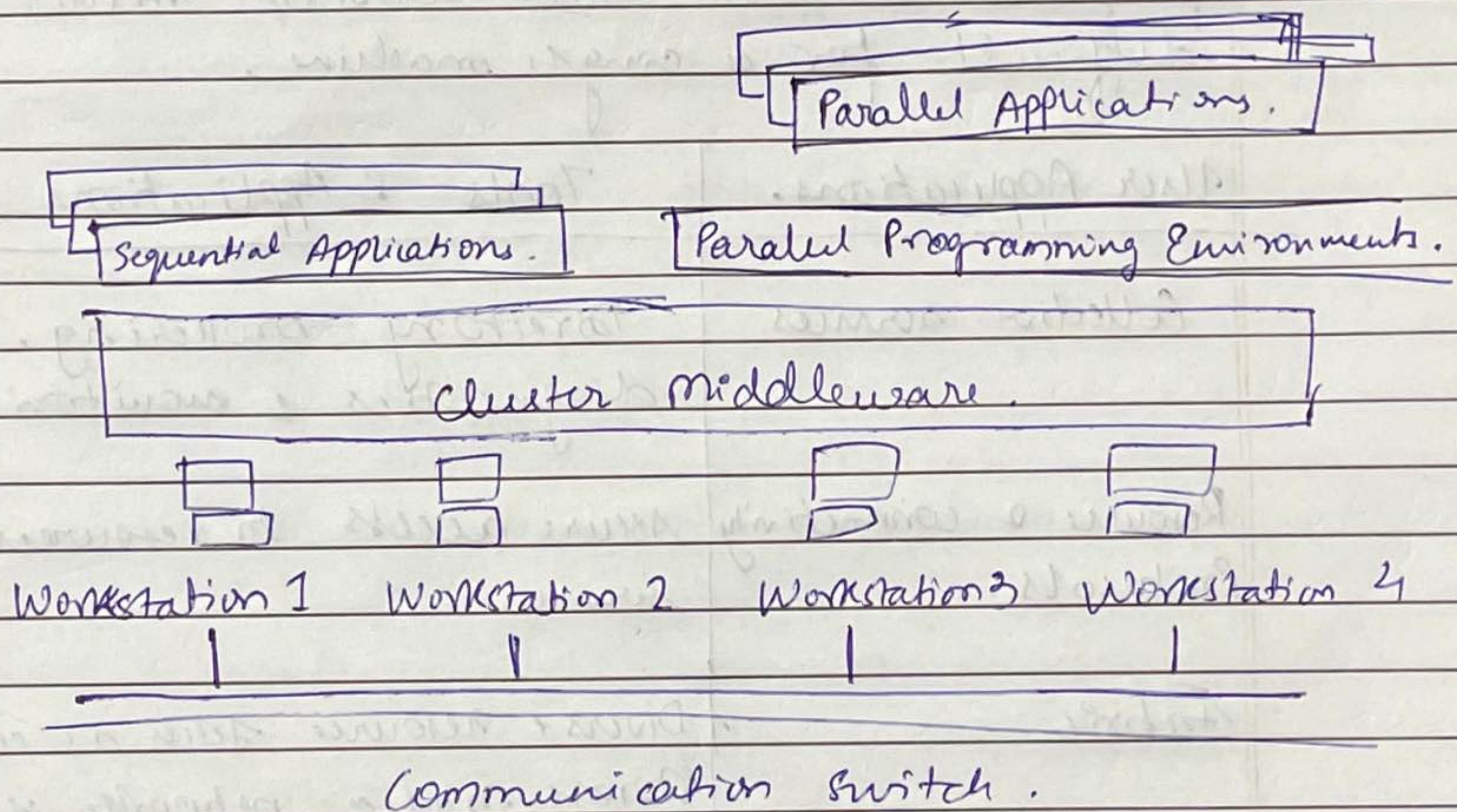
★ Desktop virtualization -

- most commonly used since user's desktop is stored on remote server to access from any device.

Ans-5. Cluster computing refers that many of the computers connected on a network and they perform like a single entity.

→ A cluster is a kind of parallel/distributed processing network designed with array of computers as single system.

A node is either a single or multiprocessor network having memory, input & output functions and an OS.

Parallel Applications.

Sequential Applications.   Parallel Programming Environments.

Cluster Middleware.

Workstation 1   Workstation 2   Workstation 3   Workstation 4

Communication Switch.

→ Clusters can be classified into 3 categories.

1. Cluster - load balancing -
   - nodes stay as cohisive with all instance where entire node objects are completely attrative of requests in the network.

2. High Availability Clusters -
   - Redundant computers are utilized in situation of any component malfunction.

3. High performance clusters
   - Utilizes super computer to resolve complex computational problems.

Ans-6. Grid computing can be defined as a network of computers working together to perform a task that would rather be difficult for a single machine.

User Applications.	Tools & Applications.
Collective services	Directory brokering, diagnostics & monitoring.
Resource & connectivity Protocols.	Secure access to resources & services.
Fabric	Diverse resource such as computers storage media, networks & sensors.

→ It's known as hour-glass model of grid-architecture.
→ Thin center = few standards.
→ Wide top = many high level behaviour can be mapped.
→ Wide bottom → many underlying technologies. & systems.