 During the boot process, a computer copies specific operating system programs, such as the kernel and init or systemd, and data from the hard drive into RAM, where it is accessed directly by the computer’s processor, the CPU.

Computer processor cannot directly access the programs in the hard drive so in order to CPU accessing the programs we first need to load the programs from the harddisk to main memory that is CPU.

Swap space is to substitute disk space for RAM memory when real RAM fills up and more space is needed.

For example, assume you have a computer system with 8GB of RAM. If you start up programs that don’t fill that RAM, everything is fine and no swapping is required. But suppose the spreadsheet you are working on grows when you add more rows, and that, plus everything else that's running, now fills all of RAM. Without swap space available, you would have to stop working on the spreadsheet until you could free up some of your limited RAM by closing down some other programs.

The kernel uses a memory management program that detects blocks, aka pages, of memory in which the contents have not been used recently.

The memory management program swaps enough of these relatively infrequently used pages of memory out to a special partition on the hard drive specifically designated for “paging,” or swapping

 Those pages of memory swapped out to the hard drive are tracked by the kernel’s memory management code and can be paged back into RAM if they are needed.

The total amount of memory in a Linux computer is the RAM plus swap space and is referred to as virtual memory.

We can also create our own swap file.

Thrashing:-

Occur when total virtual memory both RAM and swap space is full and system spends much of its time in swap out and swap in.The system becomes slow and CPU utilization increases.

We can install SAR(System activity report) data which can show these systoms.

Swimlanes:-

Workflow, flowchart which contains who does what in the process flowcharts.

CDN:-

1. Imagine you host your website in your region and it is working fine now, now you are getting traffic from different region like from US and there is a latency since it is way to far for them so what you did you will use CDN. What CDN does it will copy your website in the edge server in that region so that latency will be lesser.

VPC:-

1.vpc is a logical data center in AWS and will have gateways, route tables,Network Access Control subnets ans security groups.

* Each subnet exists within 1 availability zone.
* Security groups are stateful, ACL’s are stateless
* VPC’s can be peered within the same account and across AWS accounts
* Transitive peering is not allowed, meaning you cant hop from one VPC to another, via another VPC. You must have direct access.

VPC is basically used to lock your instanc and secure it from attacks from the outside world so that it is safe from attacks. VPC restricts what sorts of traffic can access it.

And what users can access your instances.

Not all the services require access to the internet. So those can be locked away safely within a private network.

NAT is used to provide the internet access to private instance

S3

It is Amazon’s object based storage service for uploading data files. It is not suitable for installing an OS for example. It’s used for applications like Dropbox that allows users to store files of all different types in a Cloud based filesystem.

*When you upload a new file to S3, it has***Read after Write consistency***.*

*However, if you are updating or deleting a file, S3 has***Eventual consistency*.***

This means that it can take some time for the update or delete to appear, so depending on the region you may or may not see the changes instantly. This is because if you’re S3 file is cached on an edge location for example, then it may take time for the update or delete to propagate through to each of these locations.

Data stored in S3 can be held in one of 4 Storage Classes.

1. Standard S3 — This is the most durable storage class and should be used for frequently accessed files that require quick access.
2. S3 Infrequently Accessed — As the name suggests, this is for files that are accessed less frequently but you still need available to you.
3. S3 Redundancy Storage — should be used for data that can be reproduced (no big issue if it is lost) such as thumbnails or auto generated docs.
4. Glacier — This is the data archive capability. You can hold your data here super cheaply, however can wait up to 3–5 hours for data access.

Files are stored with the following attributes:

* Key — the filename
* Value — the file data
* Version ID — if versioning is turned on, you can keep track of the current version. Versioning will store all versions of an object (even if you delete) so can be useful for backups and can be used in conjunction with MFA.
* Metadata — data about upload times, last accessed etc.