

5. Briefly discuss the Domain Name Servers:

This is primarily used for mapping host and email destinations to IP address, but can also be used other purposes. DNS is defined in RFC, 1034 and 1035

working:

To map a name onto an IP address, an application program calls a library procedure called Resolver, passing it the name as a parameter.

The resolver send a UDP packet to a local DNS server which looks up the name and returns the IP address to the resolver, which then returns it to the caller.

* Armed with the IP address, the program can then establish a TCP connection with the destination, or send it UDP packets.

1. The DNS name space

2. Resource Records.

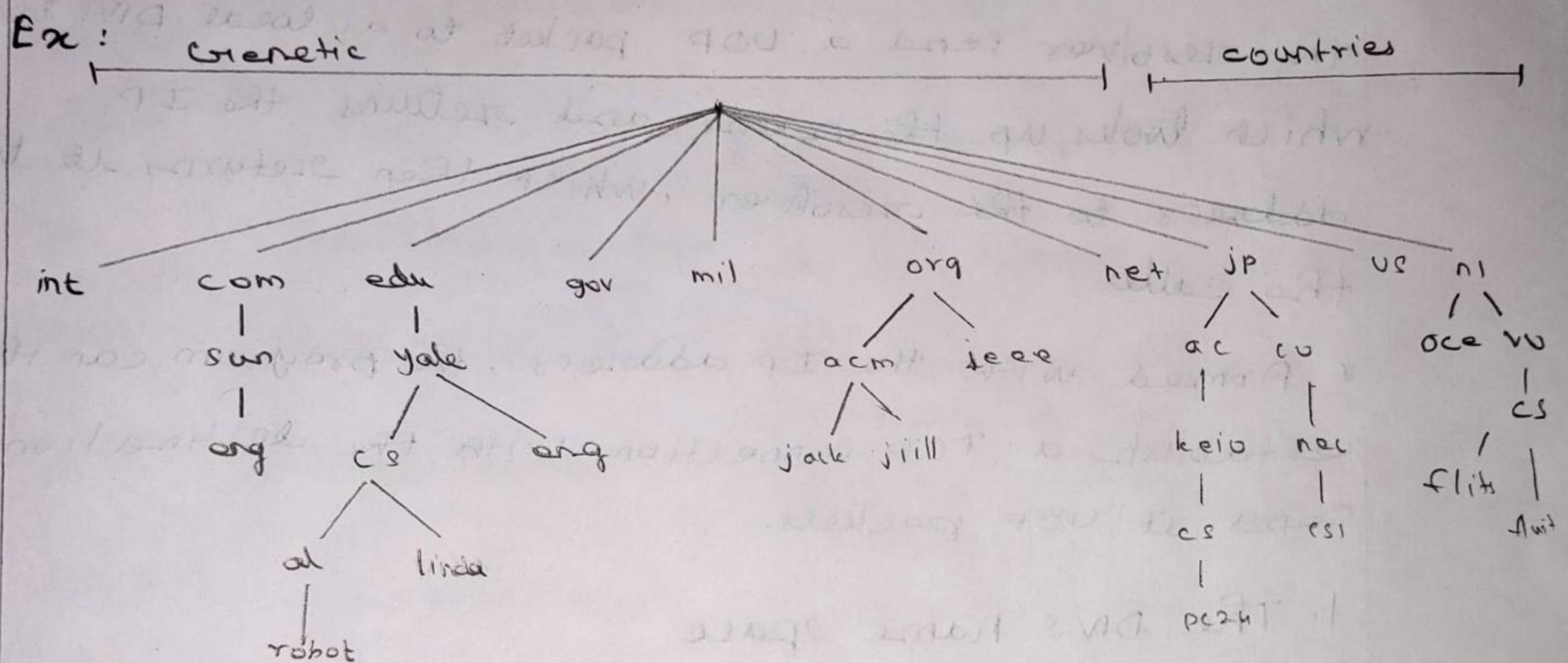
2. Name servers.

The DNS name space: The Internet is divided into several hundred top level Domains, where each domain covers many hosts. Each domain is partitioned into sub domains, and these are further partitioned as so on. All these domains can be represented by a tree, in which the leaves represent domains that have no sub domains. A leaf domain may contain a single host, or it may represent a company and contain thousand of hosts.

The Top domain comes in 2 Flavours :-

* Hieretic : com (commercial), edu (education instructions), mil (the U.S. armed forces, government), int (certain international organizations).

* Country : Include 1 entry for every country. Domain names can be either absolute or relative. Domain names are case sensitive and the component names can be up to 63 characters long and full path names must not exceed 255 characters.



2 Resource Records :

Every domain can have a sort of resource record associated with it. For a single host, the most common resource record is just its IP address. When a resolver gives a domain name to DNS, it gets both the resource records associated with that name.

Domain	name	Time to live	Type	class	value
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Domain_name : Tells the domain to which this record applies.

Time to - line : Give an identification of how stable the record is (High stable = 86400 i.e no. of sec/day)

Type : Tells what kind of record this is.

Class : It is IN for the internet information and Codes for non internet information.

Value : This field can be a number a domain name or an ASCII string.

Type	Meaning	Value
SOA	Start of Authority	parameters for this zone
A	IP address of host	32-bit integer
MX	Mail Exchange	priority, domain willing to accept e-mail
NS	Name server	name of server for this domain
CNAME	Canonical name	domain name
PTR	Pointer	Alias for an IP address
HINFO	Host description	cpu and os in ASCII
TXT	Text	uninterpreted ASCII text

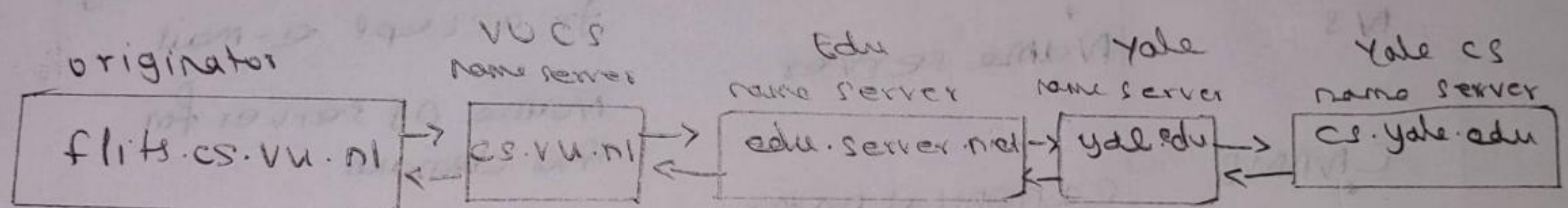
2. Name Server : It contain the entire database and responds to all queries about it. DNS name space is divided up into non-overlapping zones, in which each zone contain some part of the tree and also contain name server holding the authoritative information about that zone

When a resolver has a query about a domain name, it passes the query to one of the local name servers:

1. If the domain being sought falls under the jurisdiction of name server, it returns the authoritative resource record.

2. If the domain is remote and no information about the requested domain is available locally the name server sends a query message to the top level name server for the domain requested.

E.g: A resolver of flits.cs.vu.nl wants to know the IP address of host Linda.cs.yale.edu



Step 1: Resolver send a query containing domain name sought the type and the class to local name server, cs.vu.nl.

Step 2: Suppose local name server known nothing about it, it asks few others nearby name servers. If none of them know, it sends a udp packet to the server for edu-server.net.

Step 3: This server knows nothing about Linda.cs.yale.edu or cs.yale.edu and so it forwards the request to the name server for yale.edu

step 4 : This one forwards the request to `cs.yale.edu` which must have authoritative resource records.

Step 5 to 8 : The resource record requested work its way back in steps 5-8 this query method is known as Recursive Query.

When a query cannot be satisfied locally, the query fails but the name of the next server along the line to try is returned.
