15 November 2020 15:30

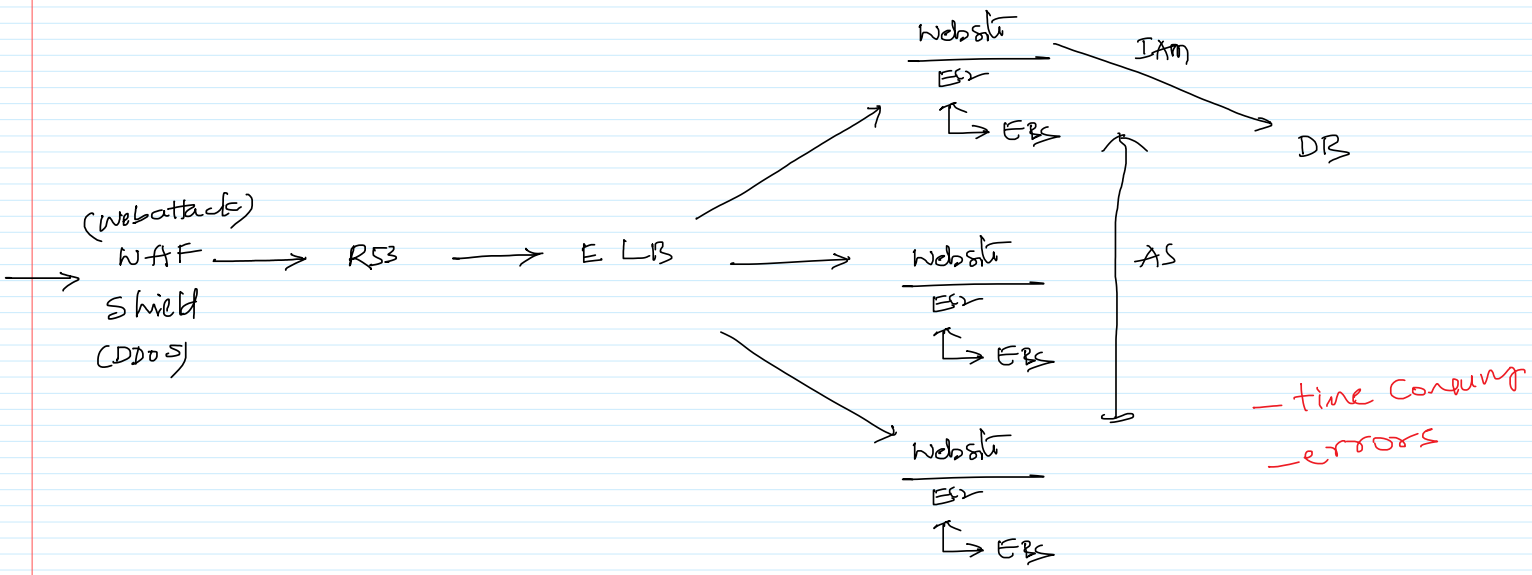
Agenda

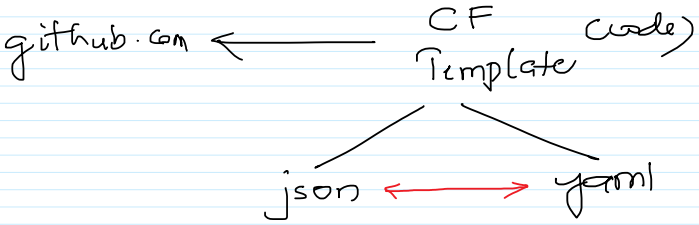
- ✓ — CloudFormation
- ✓ — DynamoDB (NoSQL) → λ → SES
- ✓ — Aurora (RDBMS) → λ → SNS
- — ~~*z***~~
- — Wordpress
- — Google

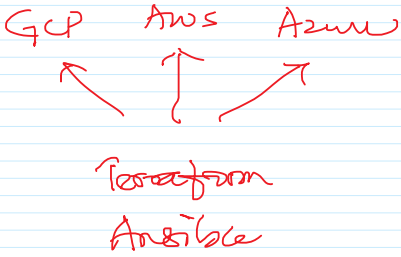
Cloud Formation

16 November 2020 09:36

└ IaC




github.com
CF
Template
code
json
yaml


GCP
AWS
Azure
Terraform
Ansible

16 November 2020 09:43

Prod = 10 EC2
Dev = 5 EC2
---
prod = 1 TB
dev = 500 GB

✓ resources
✓ properties
✓ connection

~~# 10~~

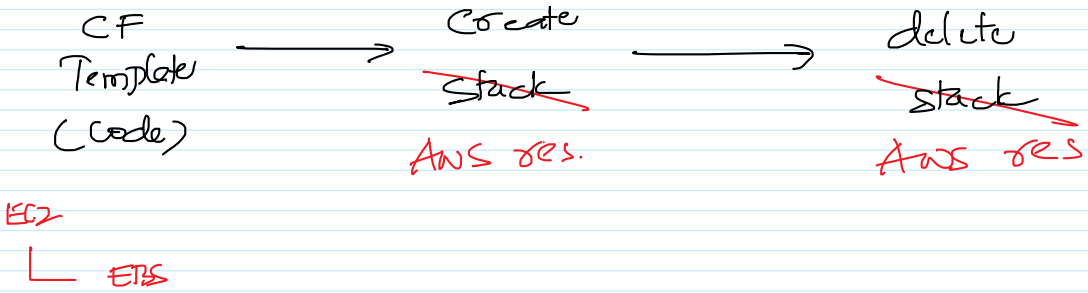
EC2 (t2.medium, OS, KP1, SG, ----)

EBS (1 TB, AZ1, R1, SSD --)

I/P
parameters
~~# of EC2~~ { Size of EBS
prod = 10 { prod = 1 TB
dev = 5 { dev = 500 GB

O/P
EC2 - IP
RDBMS - EP
ELB - dns

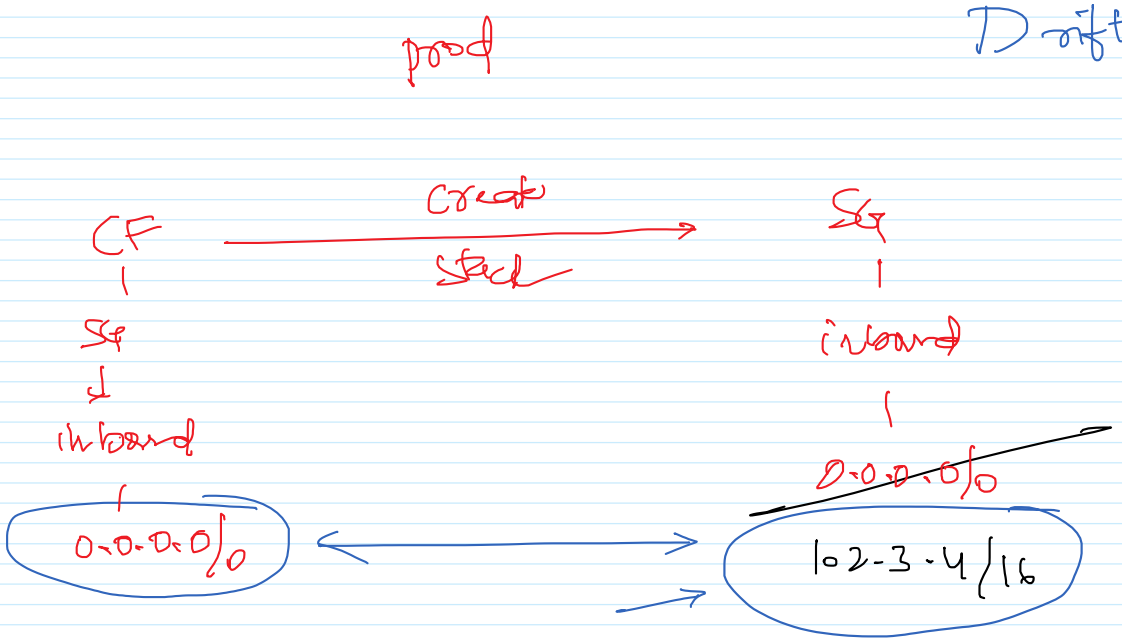
16 November 2020 09:49



EC2
└ EBS

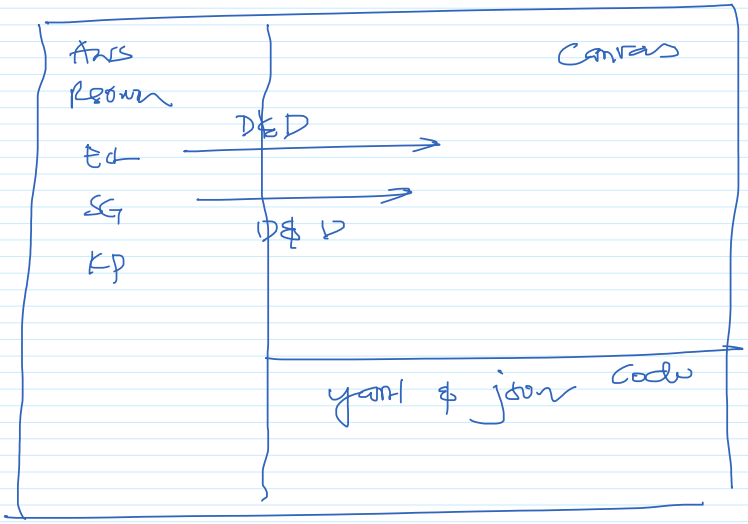
stack → collection of AWS res.

Draft


pod
CF
Create
Stack
SG
inbound
0.0.0.0/0
SG
inbound
0.0.0.0/0
102.3.4/16

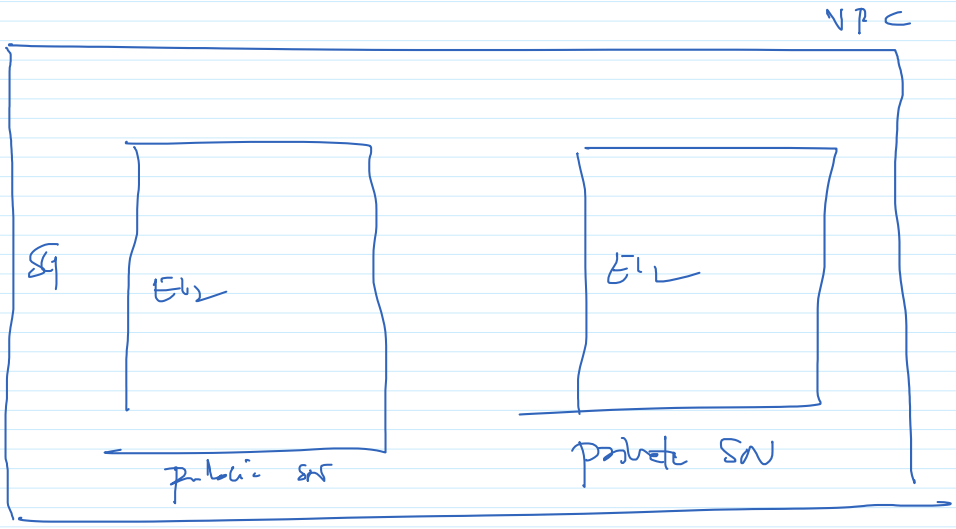
Designer

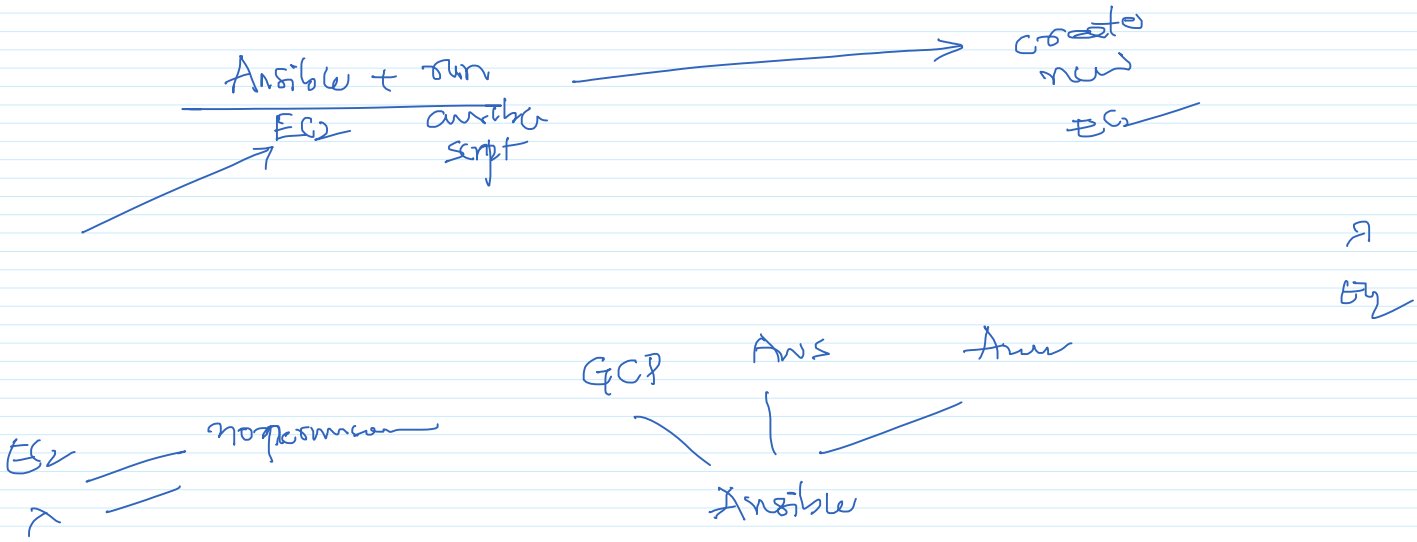
16 November 2021 10:36



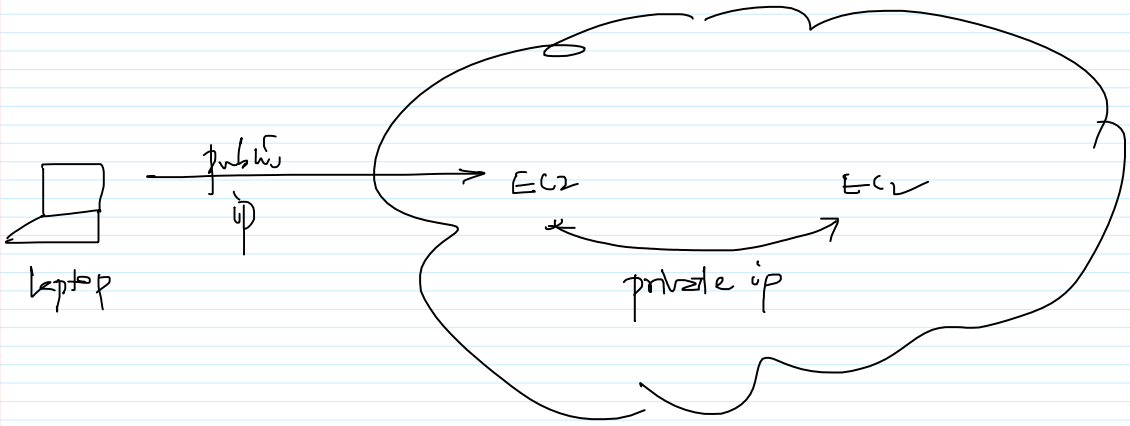
3 to 4 hr. guided

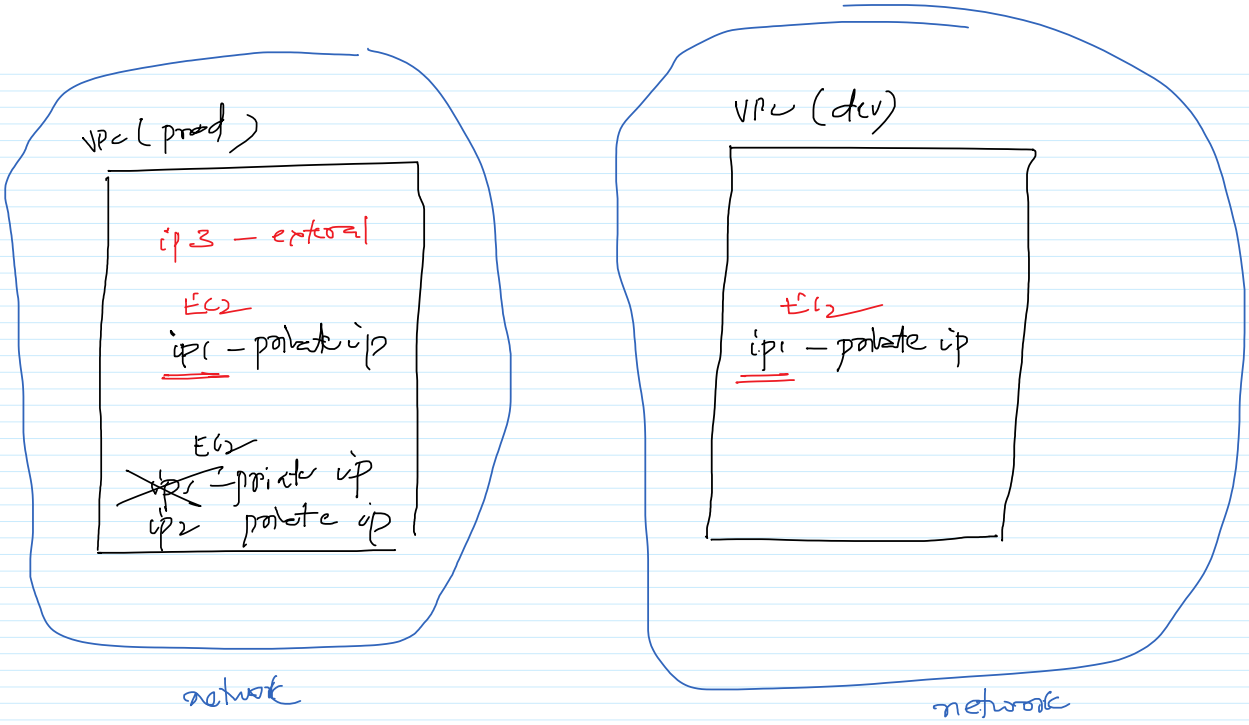
16 November 2020 10:37

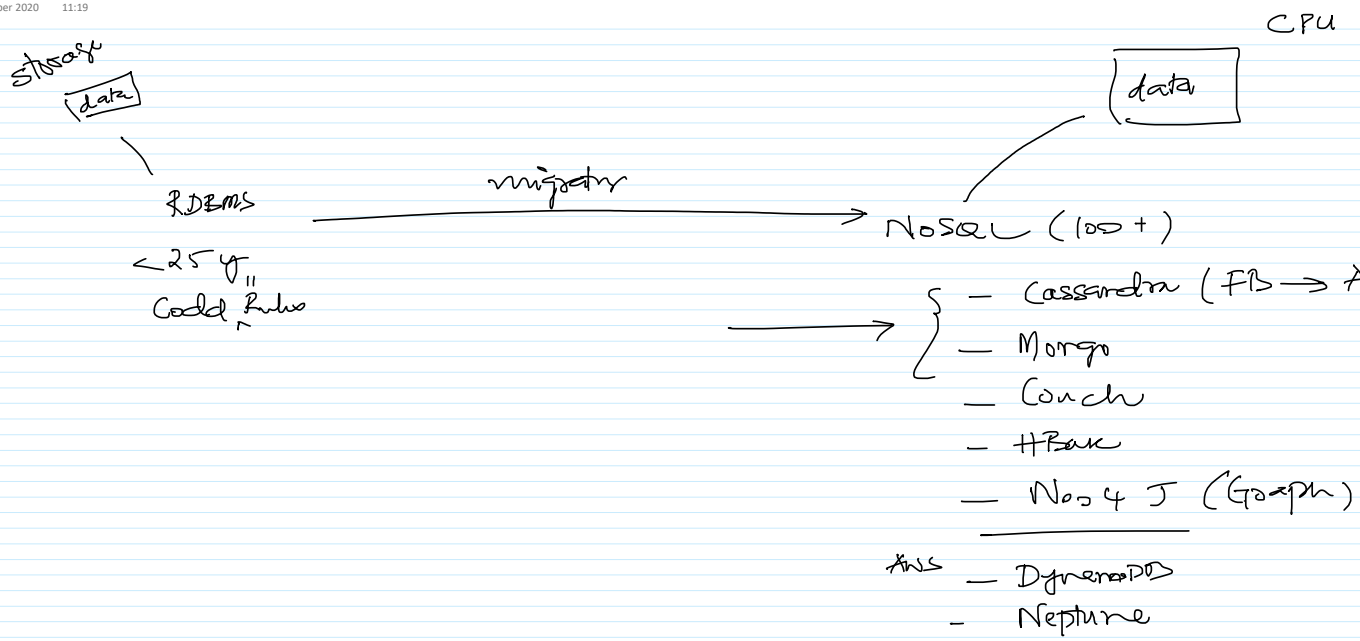



Ansible + run
EC2
ansible
script
create
new
EC2
GCP
AWS
Azure
Ansible

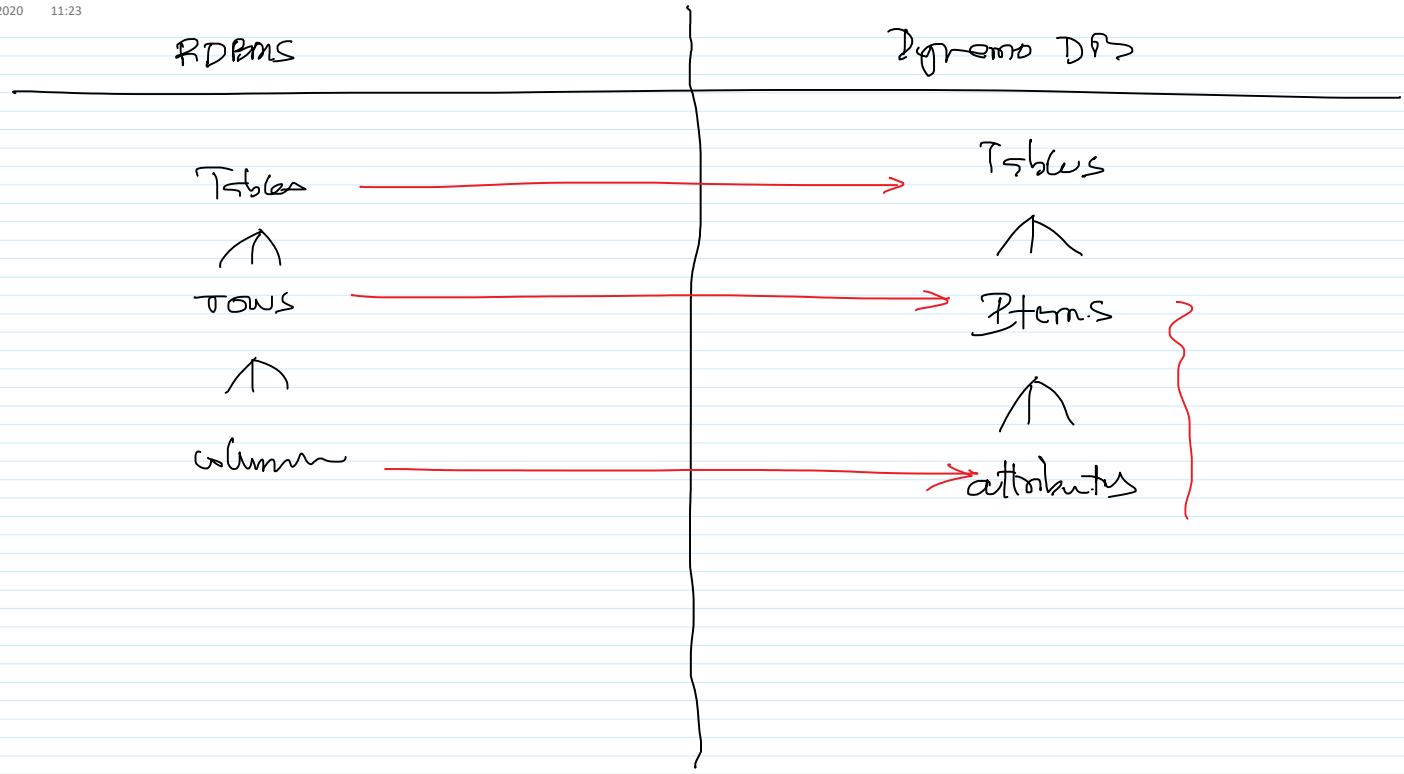
EC2 — public ip
— private ip

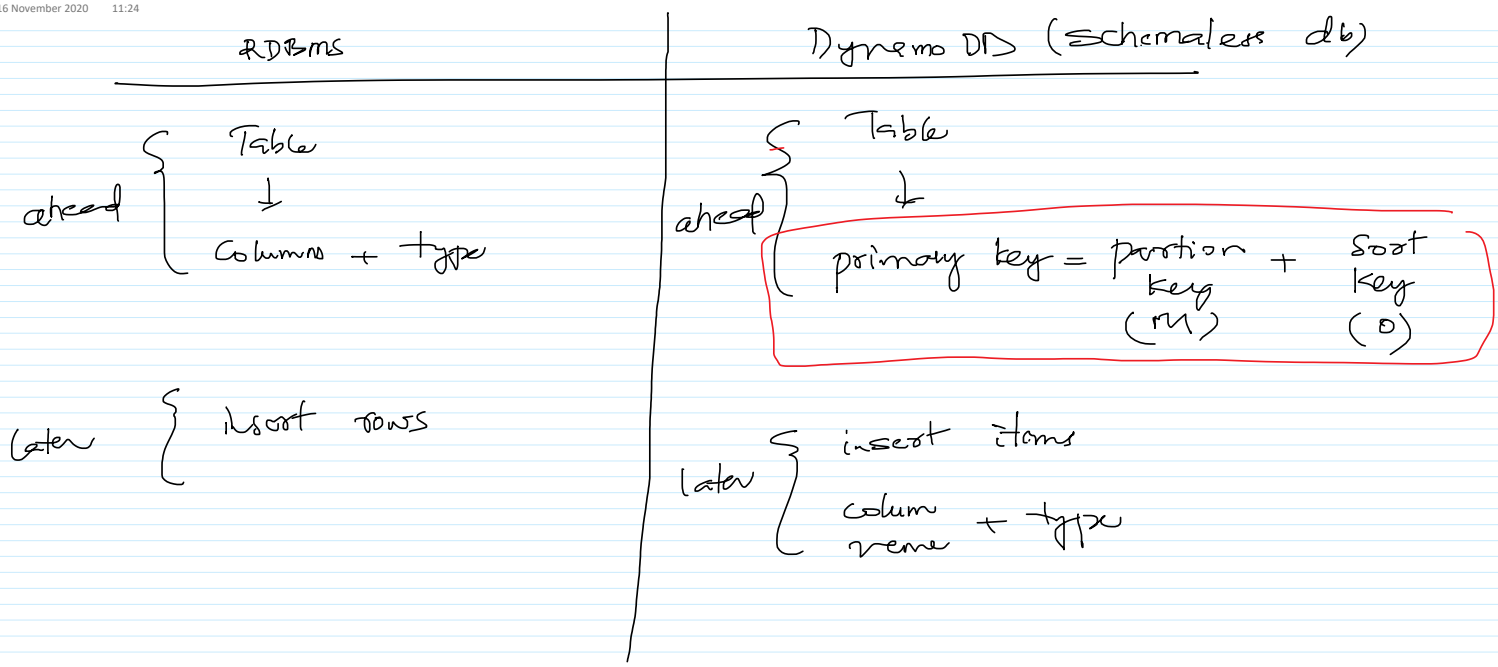



VPC (prod)
ip3 – external
EC2
ip1 – private ip
EC2
ip1 – private ip
ip2 private ip
network
VPC (dev)
EC2
ip1 – private ip
network


CPU
Storage
data
data
RDBMS
migration
NoSQL (100+)
<25 y
Codd Rules
- Cassandra (FB → Apple)
- Mongo
- Couch
- HBase
- Neo4J (Graph)
AWS
- DynamoDB
- Neptune

16 November 2020 11:23



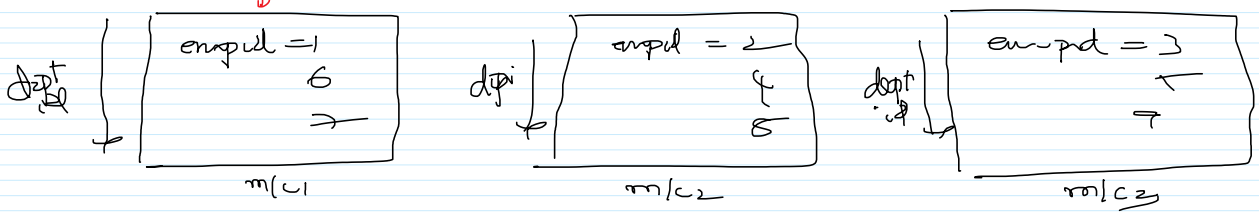

RDBMS
Dynamo DB (schemaless db)
ahead
Table
Columns + type
later
insert rows
ahead
Table
primary key = partion key (M) + Sort key (O)
later
insert items
column name + type

primary key = partition key + sort key
(unique) (m) (o)
{ where the data is } { sorted on each mk }

→ Employee Table
└ empId → part. key
└ dept → sort. key

get (empId = 1)
empId = 1 → mlc1
empId = 2 → mlc2
empId = 3 → mlc3

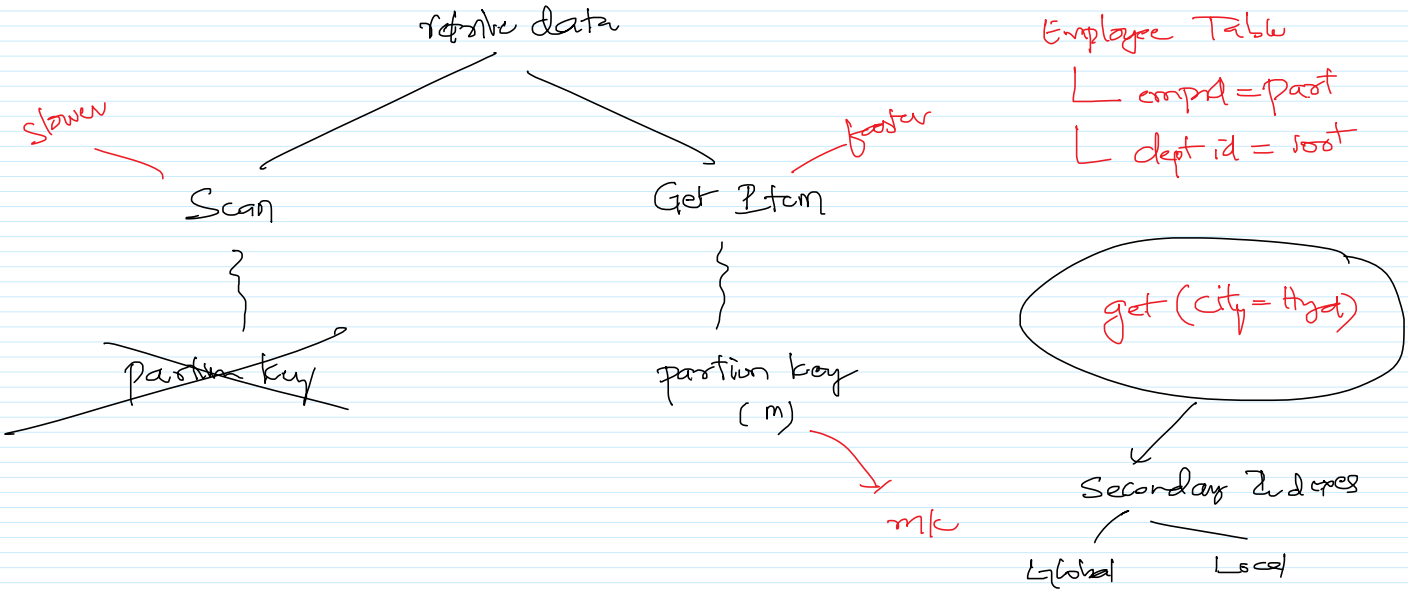
→ get (city = Hyderabad)
secondary indexes



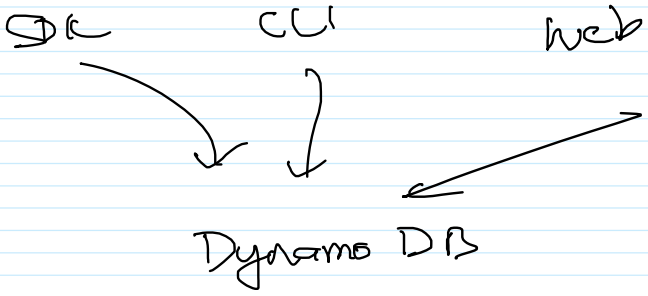
16 November 2020 11:48

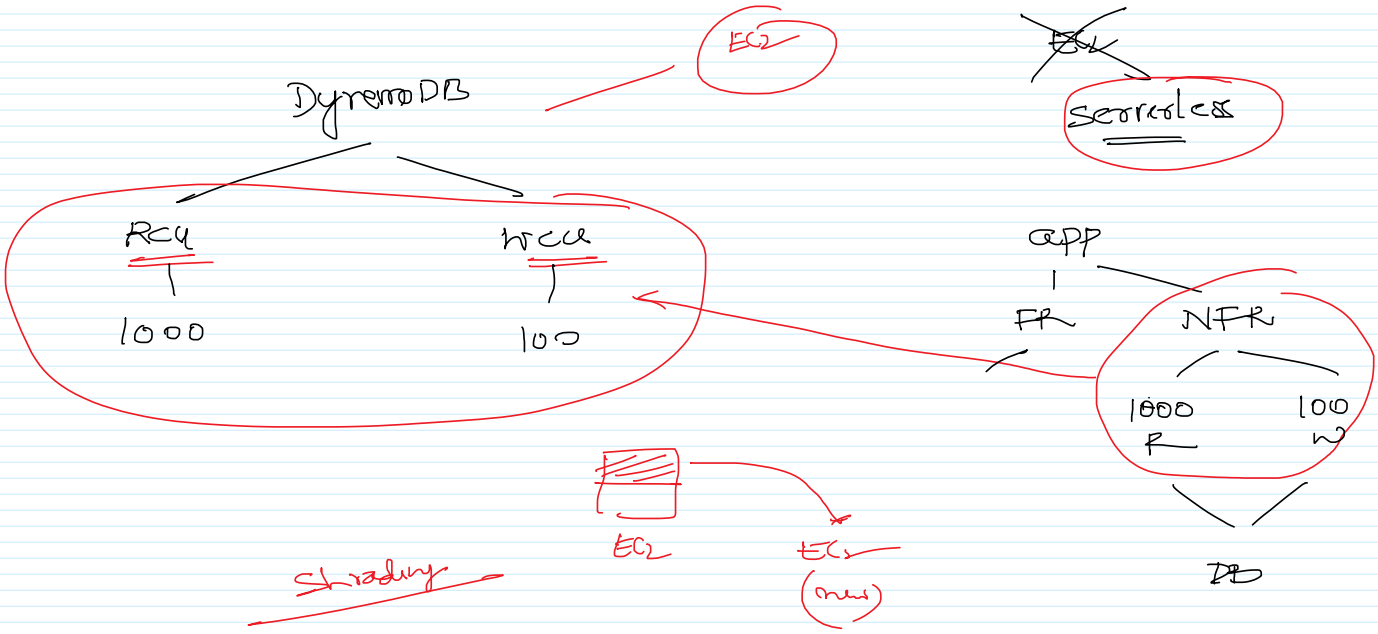
RDBMS	Dynamo DB
– SQL – join – SQL (SQL) nested – group by – . . .	– put → – get } Batch – Scan } Batch
– complicated – slow	– simple – ~~fast~~ faster

(DWH)
join (app)
↑
↑ to Dy. DB


retrieve data
slower
Scan
faster
Get Item
partition key
partition key
(m)
mk
Employee Table
emp id = part
dept id = sort
get (city = Hyd)
Secondary Indexes
Global
Local

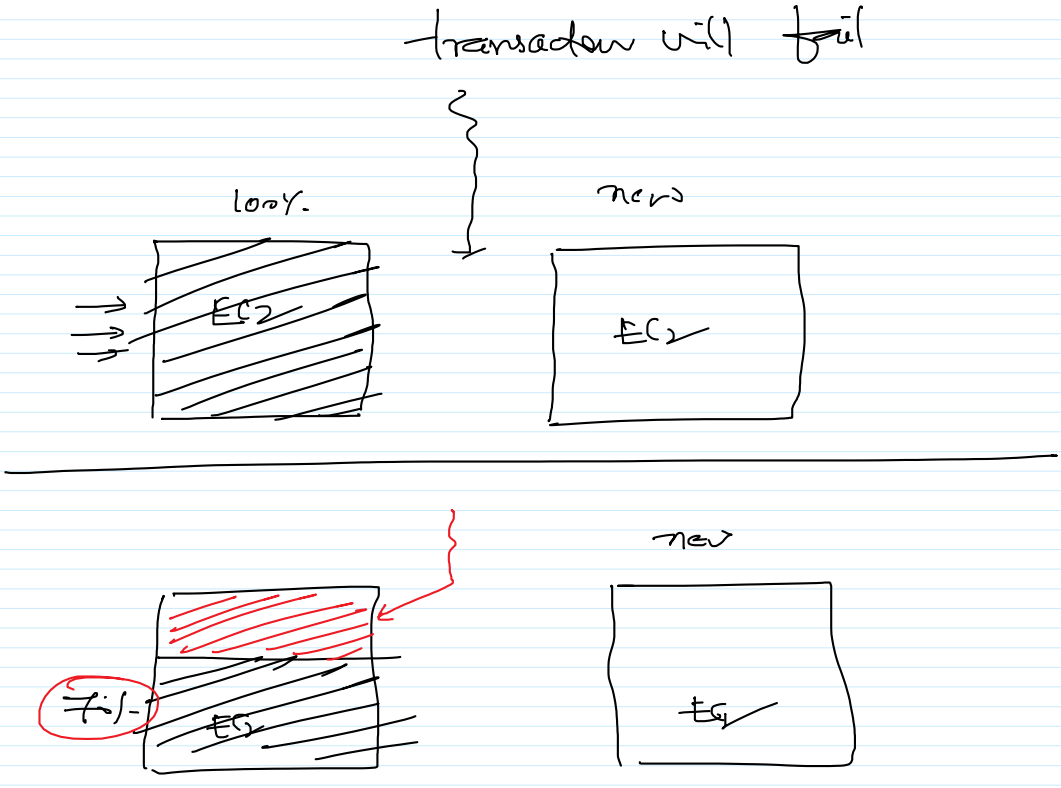
16 November 2020 12:02

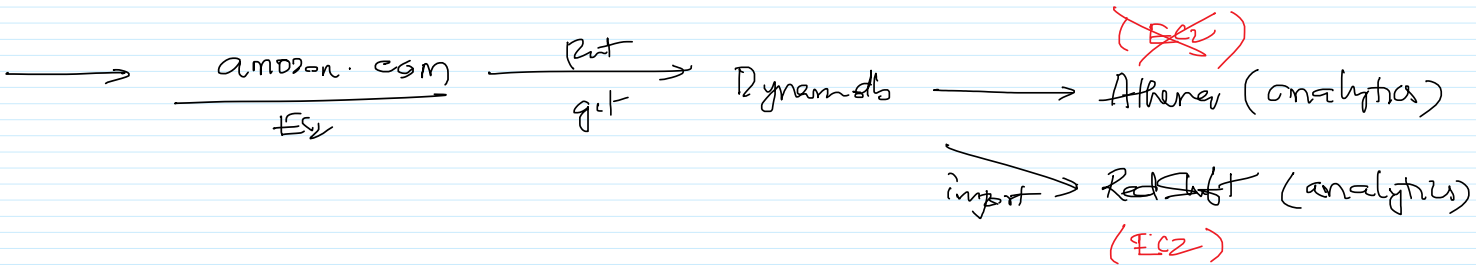


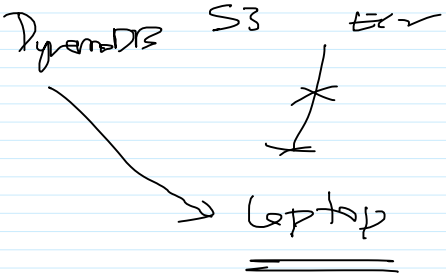

EC2
DynamoDB
RCU
1000
WCU
100
EC2
(new)
Sharding
App
FR
NFR
1000
R
100
W
DB
Serverless

Target Utilization = 70%.

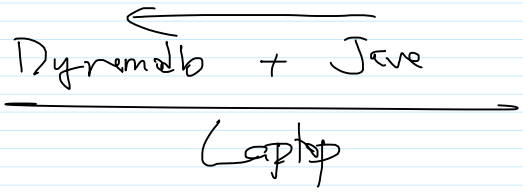
16 November 2020 12:10

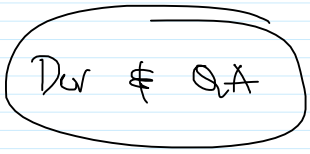



amazon.com
ES
Put
git
Dynamodb
(EC2)
Athena (analytics)
import
Redshift (analytics)
(EC2)



- free
- offline



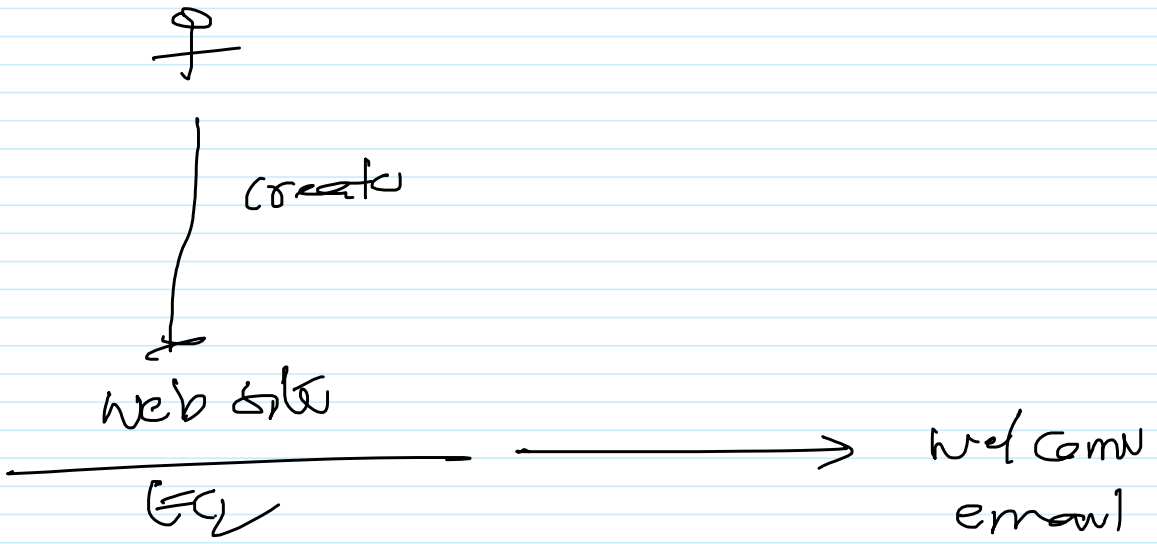


MySQL
Workbench

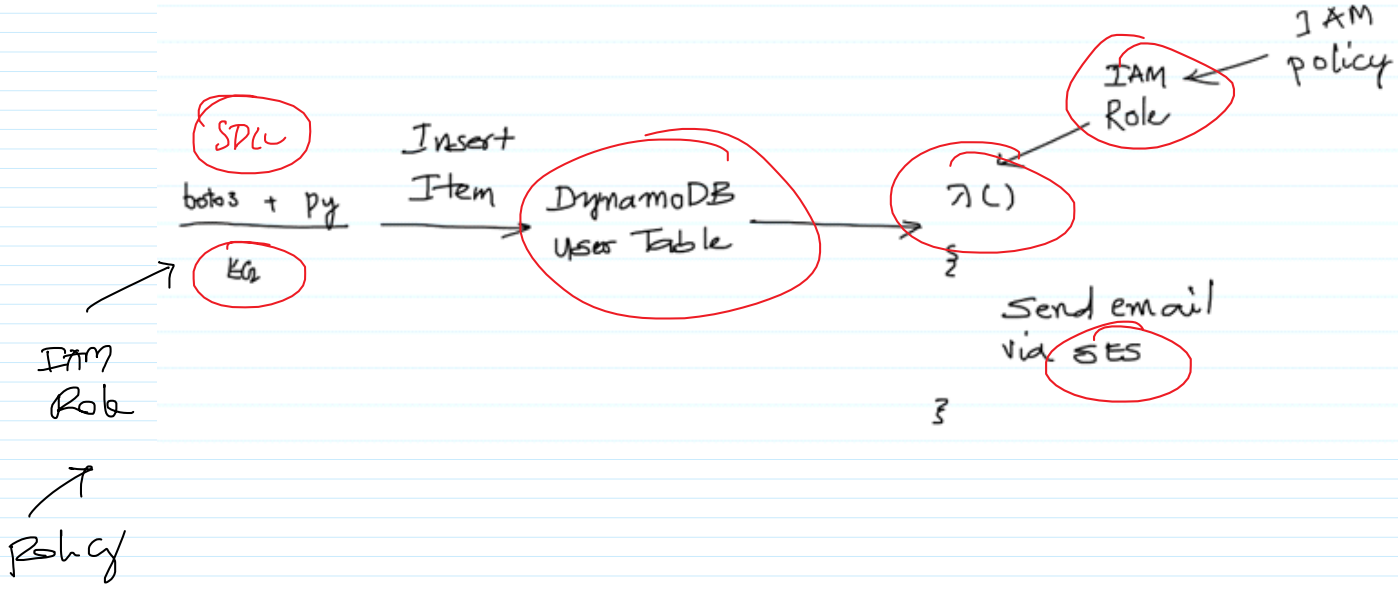
HeidiSQL ⟶ MySQL

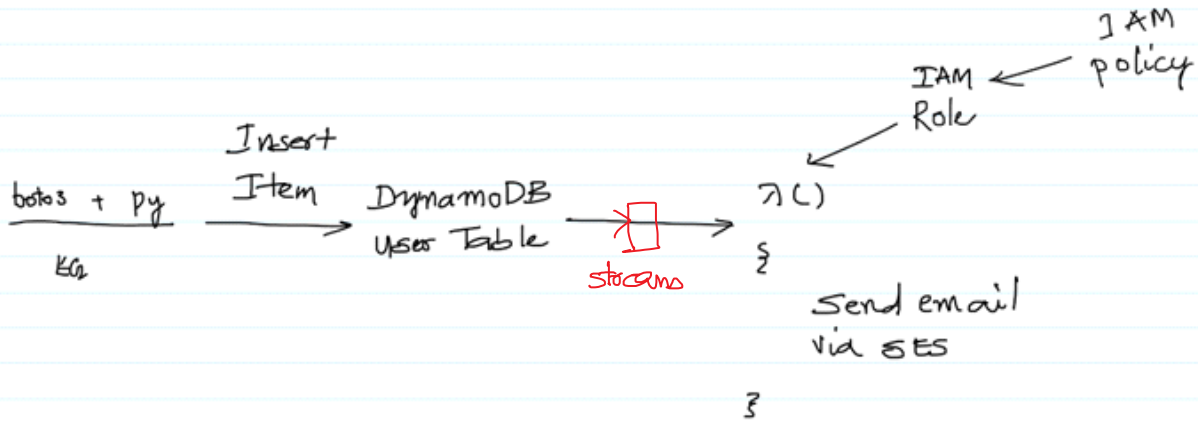
DynamoDB ⟶ DynamoDB
Workbench

16 November 2020 12:26



16 November 2020 12:26

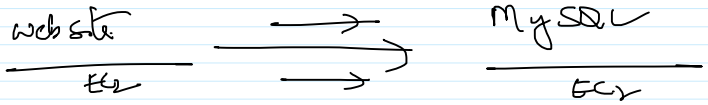



IAM policy
IAM Role
Insert Item
boto3 + py
DynamoDB User Table
streams
λ()
{
Send email via SES
}

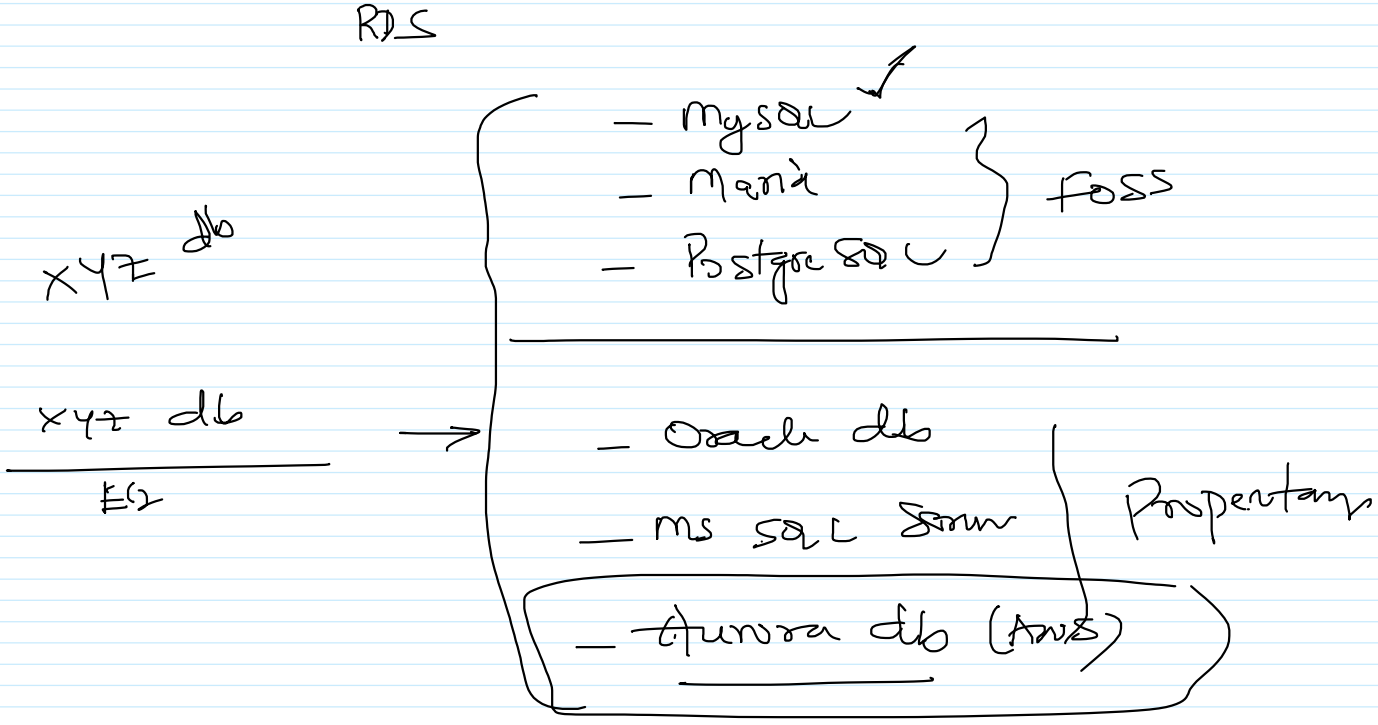
16 November 2020 14:11

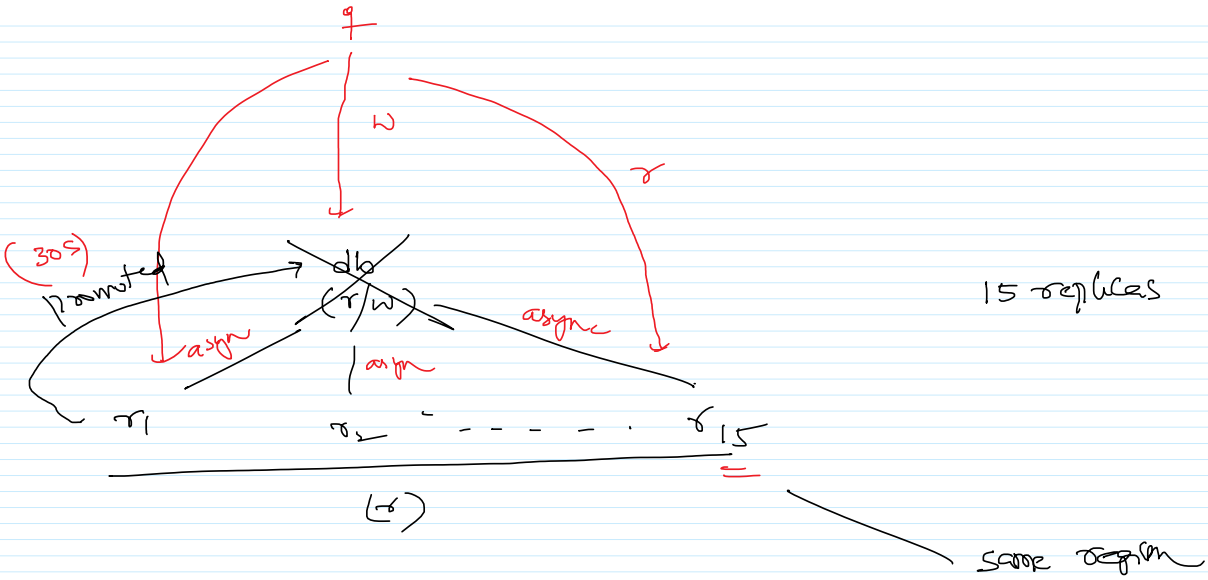
RDS (Relational DB Service)

- Managed Service



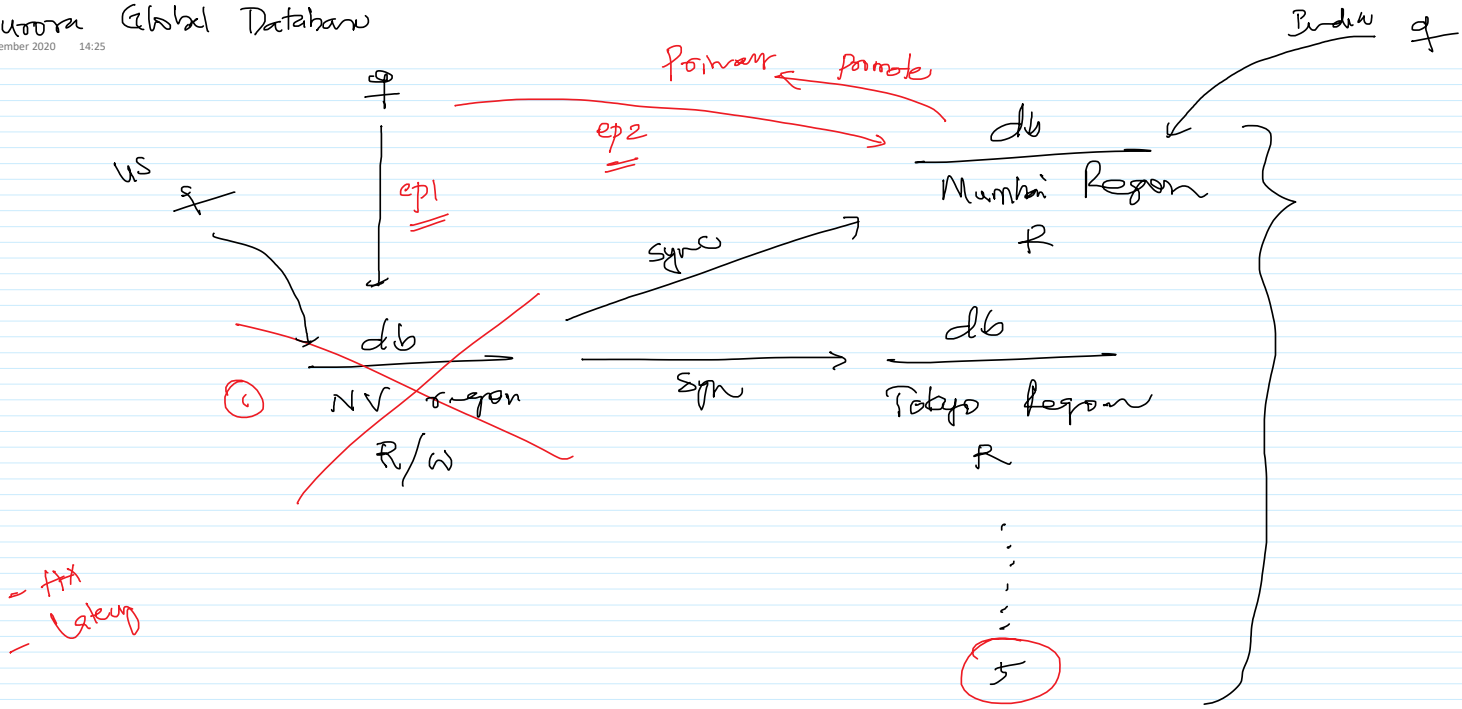
- License
- Install
- Upgrade
- Patch
- HA
- Scale up


RDS
- MySQL
- MariaDB
- PostgreSQL
FOSS
XYZ db
xyz db
EC2
- Oracle db
- MS SQL Server
Proprietary
- Aurora db (AWS)


q
w
r
(30s)
promoted
db
(r/w)
async
async
async
r1
r2
r15
(-6)
15 replicas
same region

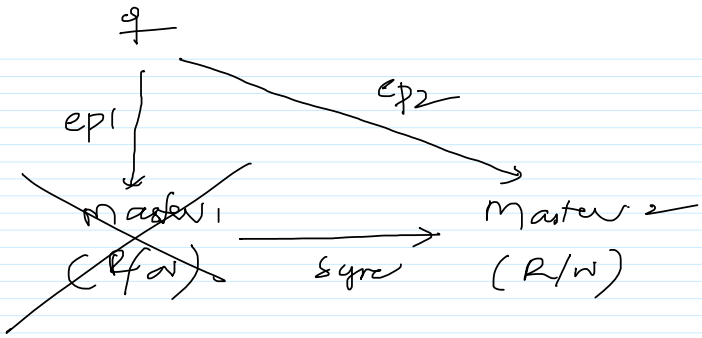
Aurora Global Database

16 November 2020 14:25



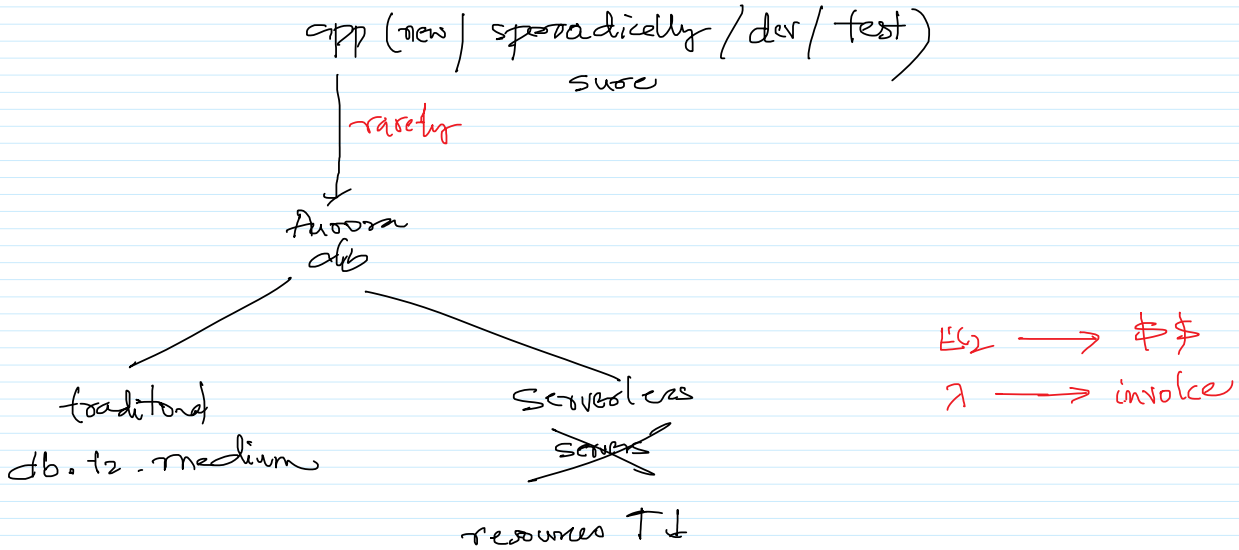
- HA
- Lakeup

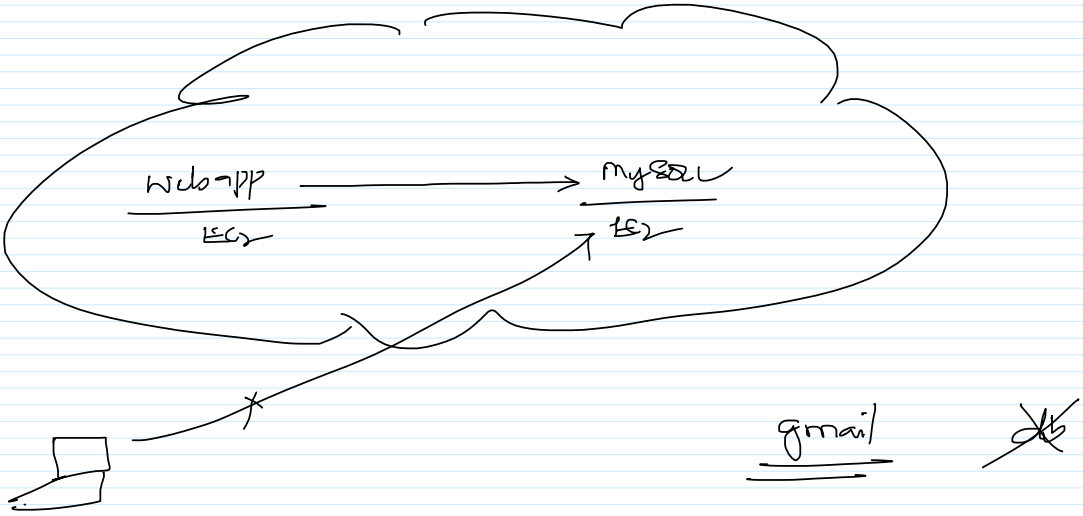
16 November 2020 14:30

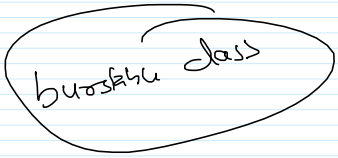


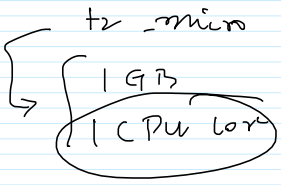
Continious Availability.

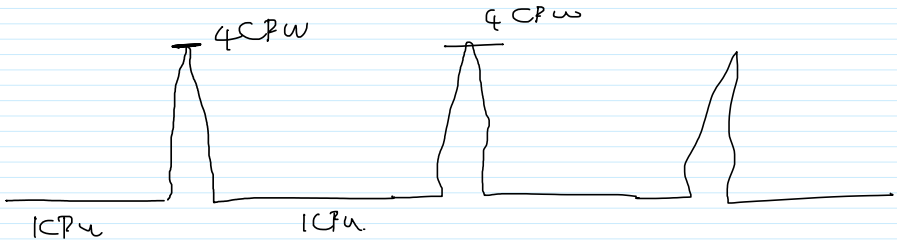
~~HA~~

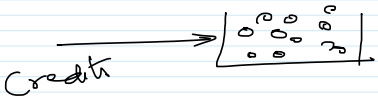

app (new | sporadically / dev / test)
suoc
rarely
Aurora db
traditional
db.t2.medium
Serverless
Servers
resources ↑↓
EC2 → $$
λ → invoice


webapp
EC2
mySQL
EC2
gmail

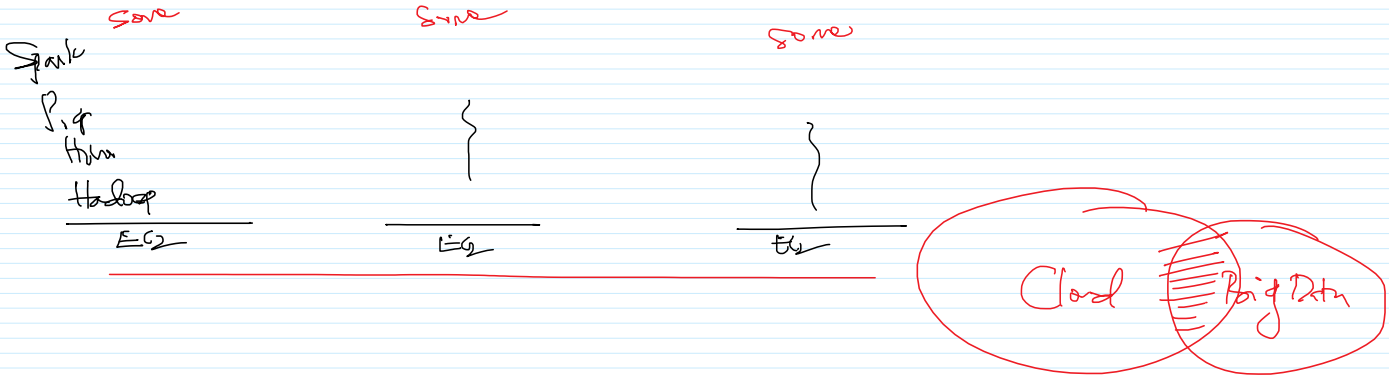

burstable class


t2 _micro
1 GB
1 CPU burst

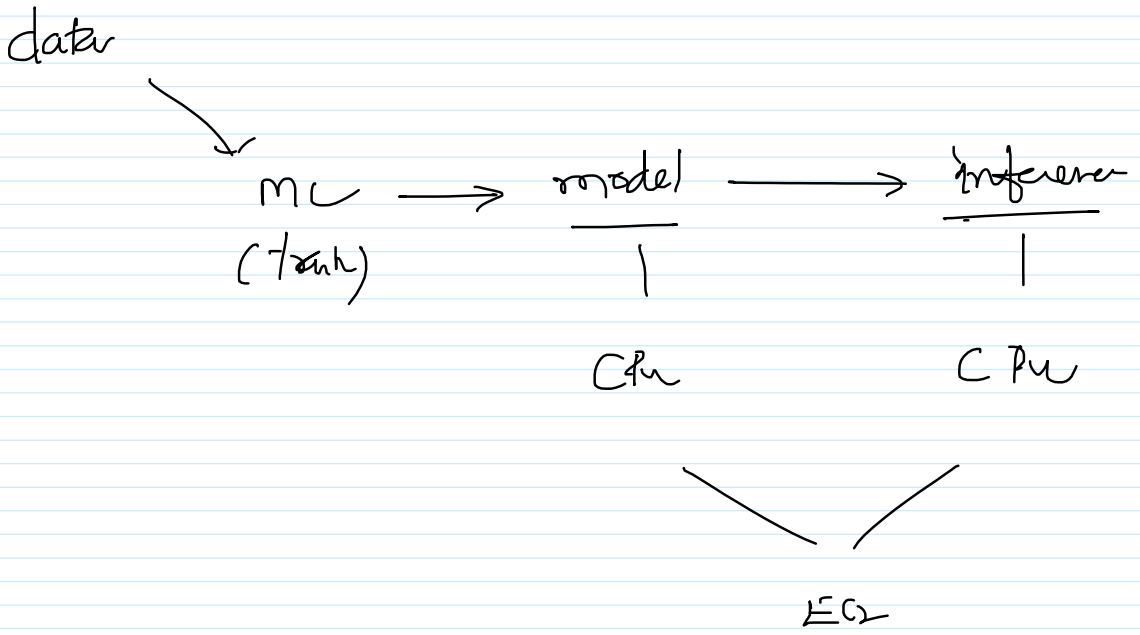

4 CPU
4 CPU
1 CPU
1 CPU


Credit

7B



16 November 2020 16:14



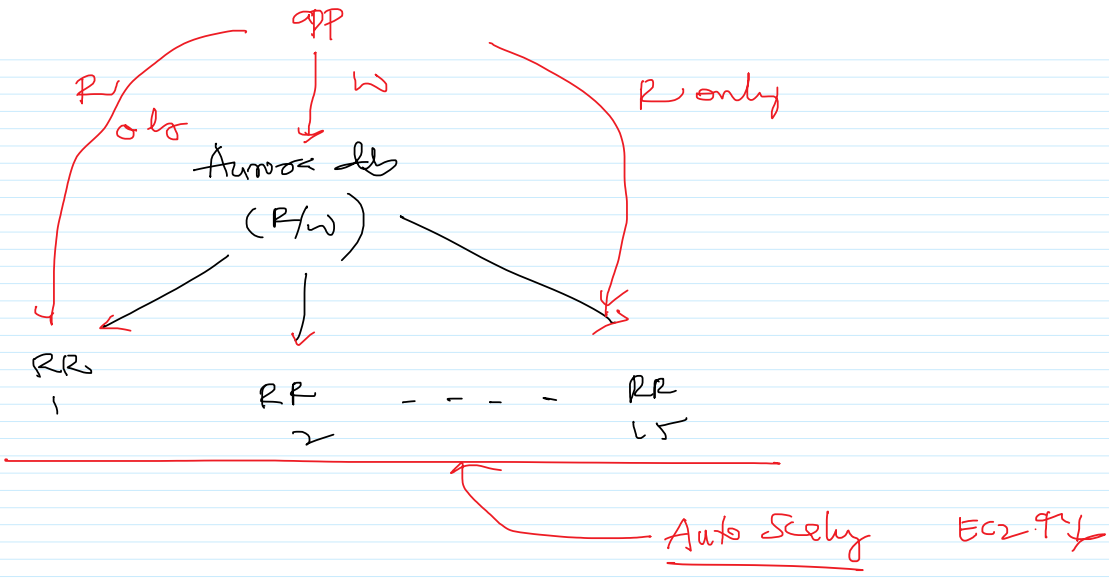
RDS ⟶ RDBMS ⟶ Amazon ✓
MySQL
⋮

EMR ⟶ Big Data
Service
/
managed

- ~~Hadoop, Spark~~
- EC2 (5)
- Size of EC2
- R/Az
- SG / KP

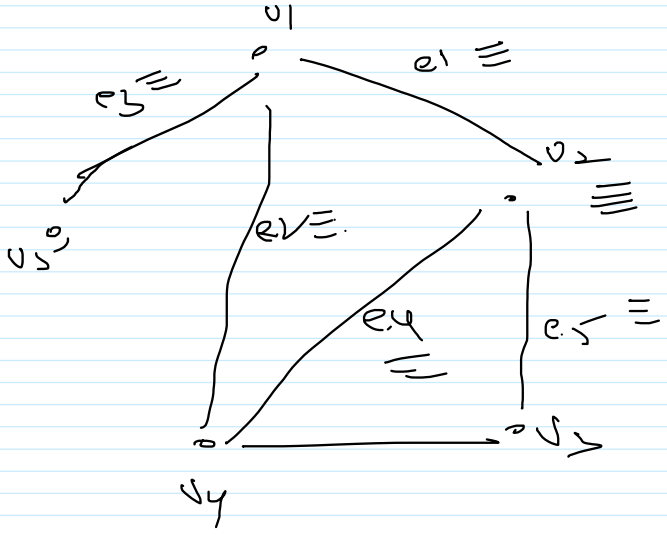
Big Data
Hadoop + Spark
EC2

16 November 2020 16:30

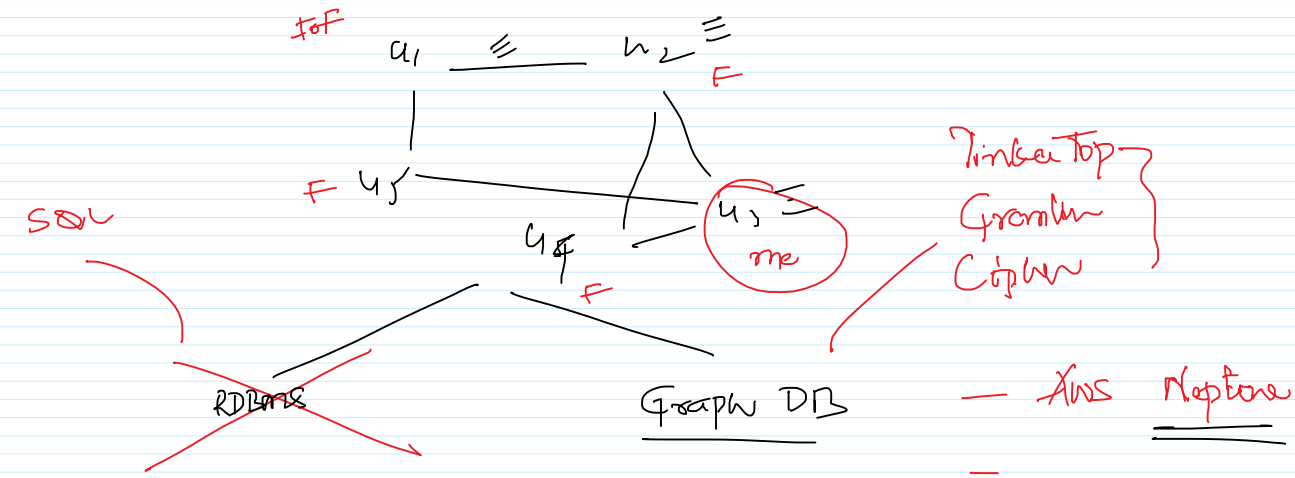


AWS Neptune (Graph DB)

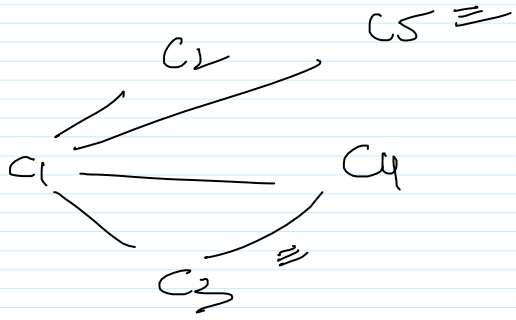
16 November 2020 16:32



FB (>2B users) Social Graph



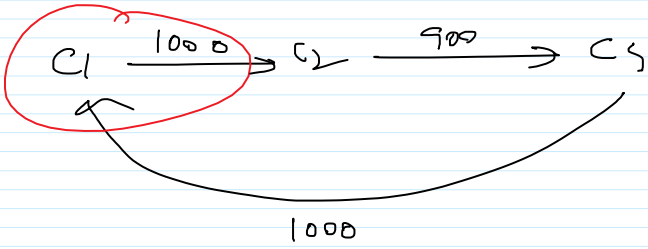
Spatial Graph



A → D

- shortest
- Quick
- ~~Fare~~ ~~Toll~~

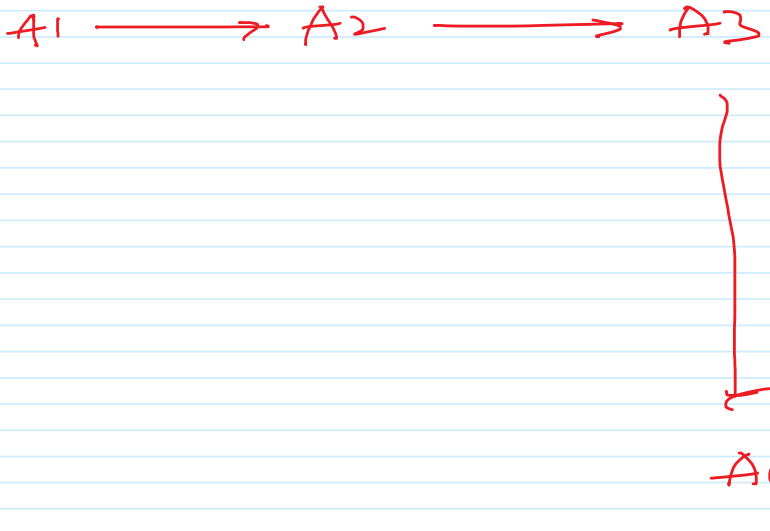
Financial Student

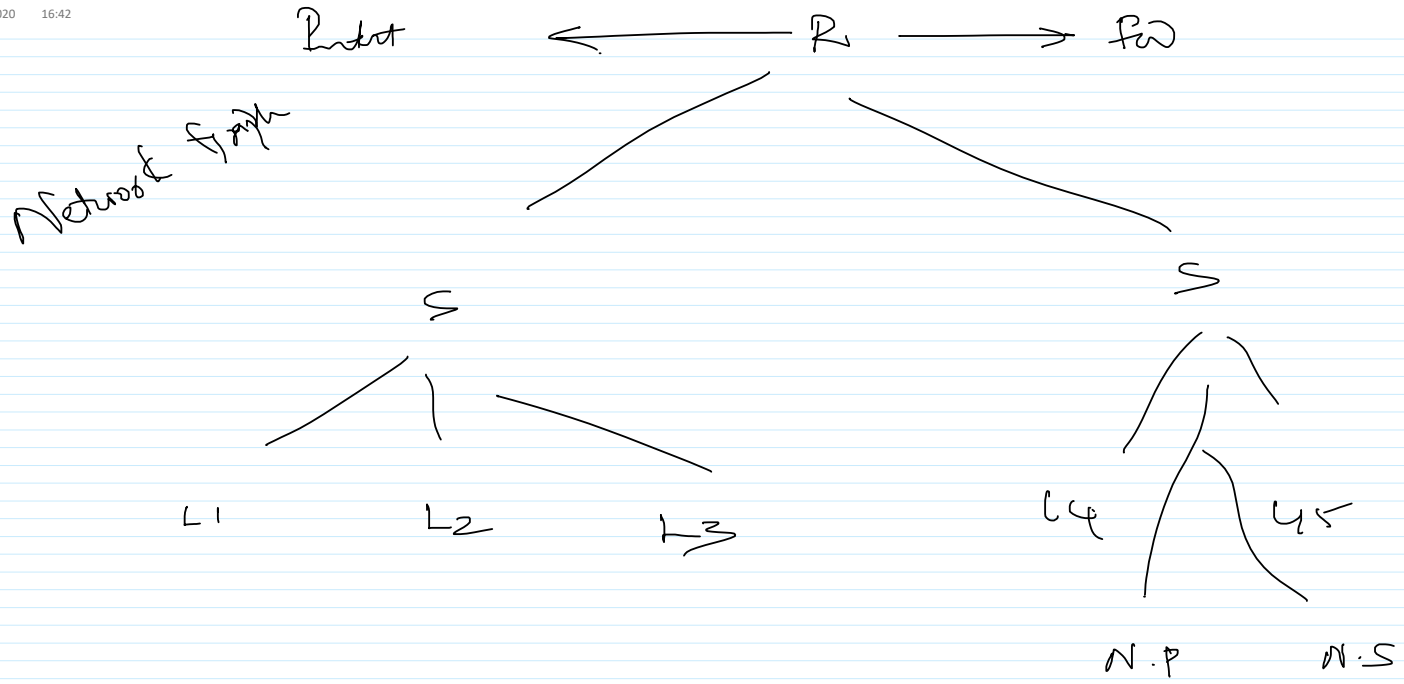


money laundry

16 November 2020 16:41

Logits

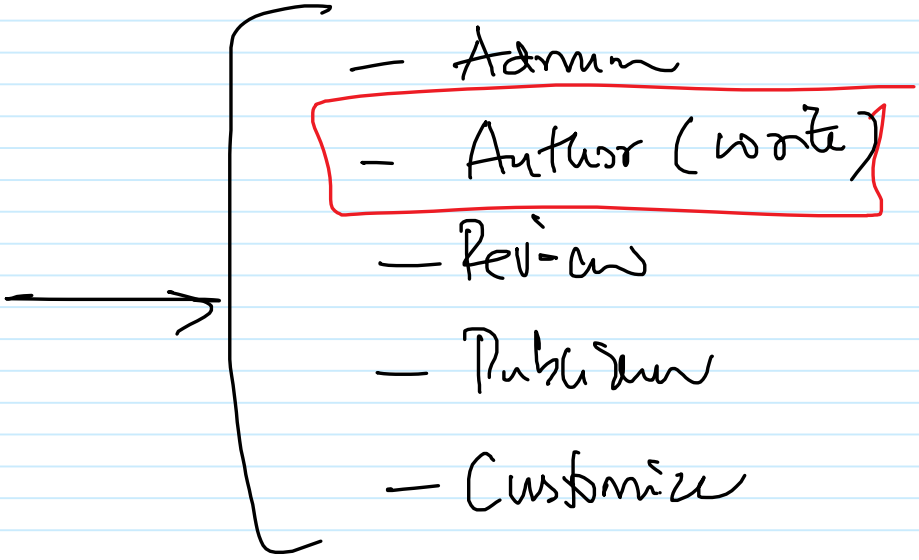


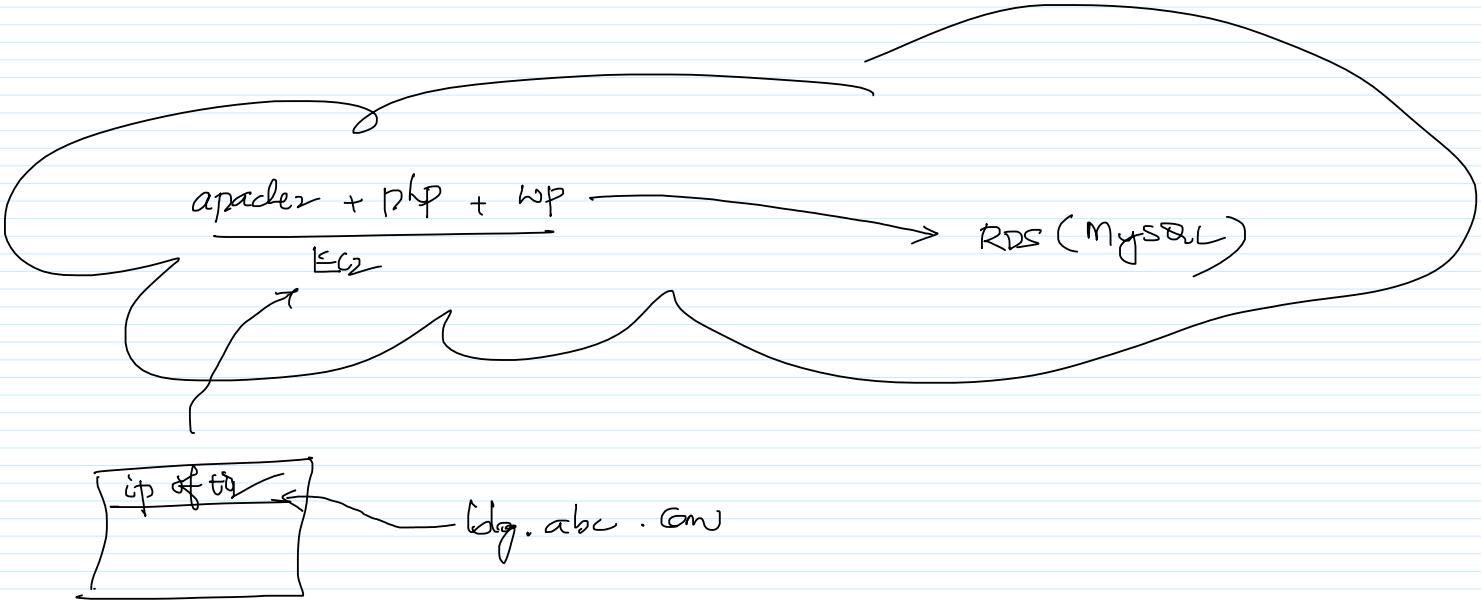

Network Graph
S
S
L1
L2
L3
L4
L5
N.P
N.S

Wordpress — php → foss

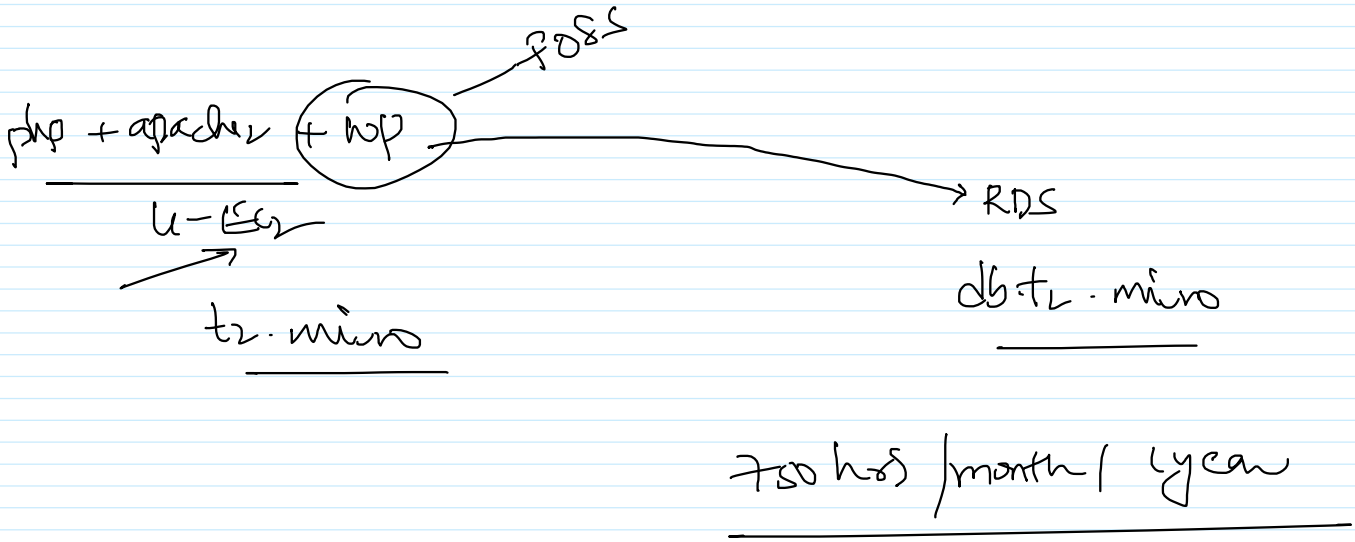
16 November 2020 16:45

└ cms




apache2 + php + wp
EC2
RDS (MySQL)

ip of EC2
blog.abc.com


php + apache + wp
free SSL
u-ec2
t2.micro
RDS
db.t2.micro
750 hrs / month / year

16 November 2020 17:37

Moodle (FOSS) Php

LMS