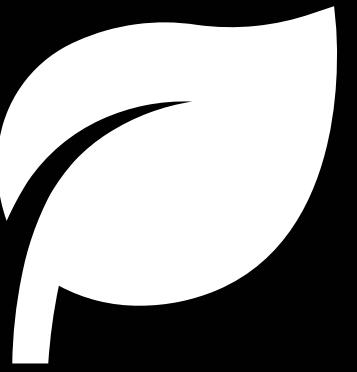


# Cloud Foundations

## Session 01

≈

Presented by Vansh Sood





From hackathons to the Startup Residency program, ShiftKey Labs makes sure students have the skills & support they need to pursue their most innovative ideas!



## HIGHLIGHTS

**NASA Space Apps Challenge**

**Global Game Jam**

**Generative AI Hackathon**

**Workshops & Talks**

REACT  
Blockchain  
Prototyping  
Startups  
Freelancing  
Cybersecurity

shiftkeylabs.ca

@ShiftKeyLabs

info@shiftkeylabs.ca

# About Me

---

- Third-year BCS, Researching in AI, TA at Dalhousie University
- Tech coordinator for Shiftkey Labs and Faculty of Health
- Freelancing for over 6 years
- Worked with 25+ startups and small businesses
- Helped startups raise over \$100,000 in funding
- Founder of a 6 figure web and mobile development agency
- Building a food tech startup Bean
- AWS Solutions Architect
- Google Code-In Grand Prize Winner (Global Top 50)



# Course Overview



Over the next 4 weeks, you'll learn about cloud computing and AWS services.

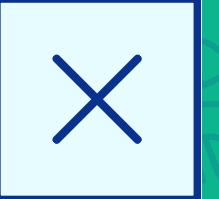
By the end of the course, you'll have the knowledge needed for the AWS Cloud Practitioner certification.

You will get knowledge to practice AWS and I highly recommend giving the AWS Certification and get Reimbursed by ShiftKey

Get ready for hands-on activities, real-world examples, and fun learning experiences!



# HEY DAL STUDENTS!



**ShiftKey's Reimbursement  
Program can put MONEY  
BACK IN YOUR POCKET!**

**SCAN HERE**



**Questions? Email Or Denemark at [Or@dal.ca](mailto:Or@dal.ca) or check our website for more**  
***\*This program is only eligible for Dalhousie students\****



# How is this going to help?

---

## Development Skills

---

Learn the necessary tools and techniques in cloud, specifically focused on AWS.

## Certification Completion

---

Walk away with a certificate you've completed from start to finish, demonstrating your ability to turn ideas into workable applications.

## Career Boost

---

Reliable, practical skills, and a polished certificate to showcase to potential employers, will be a highlight on your resume.

# What are you taking away from this?



Apart from the food? A whole lot of knowledge.

You can choose to just listen, or you can choose to actually work on an application that will teach you more than two development courses in university will.

Work on this for four days, and I guarantee you will have an amazing project with a whole lot of skills up your sleeve.

And even though I'm not a big fan of resumes, this will be an excellent addition to your resume.

# Getting the Certificate

---

What is absolutely necessary?

- Join 3/4 sessions
- Go home and practice!!!
- Give the final exam (date to be announced)
  - Can be replaced with AWS CCP
- Submit 1 min video solution (mock interview)

What can be done?

- Use Cloud regularly
- Give AWS CCP / Other Foundational exams
- Have fun



# Networking basics

---

## What is a Server?

Powerful computer that provides services or resources to other devices (clients) over a network.

Servers store data, run applications, and handle user requests.

## IP Address

An IP address is a unique identifier assigned to every device on a network.

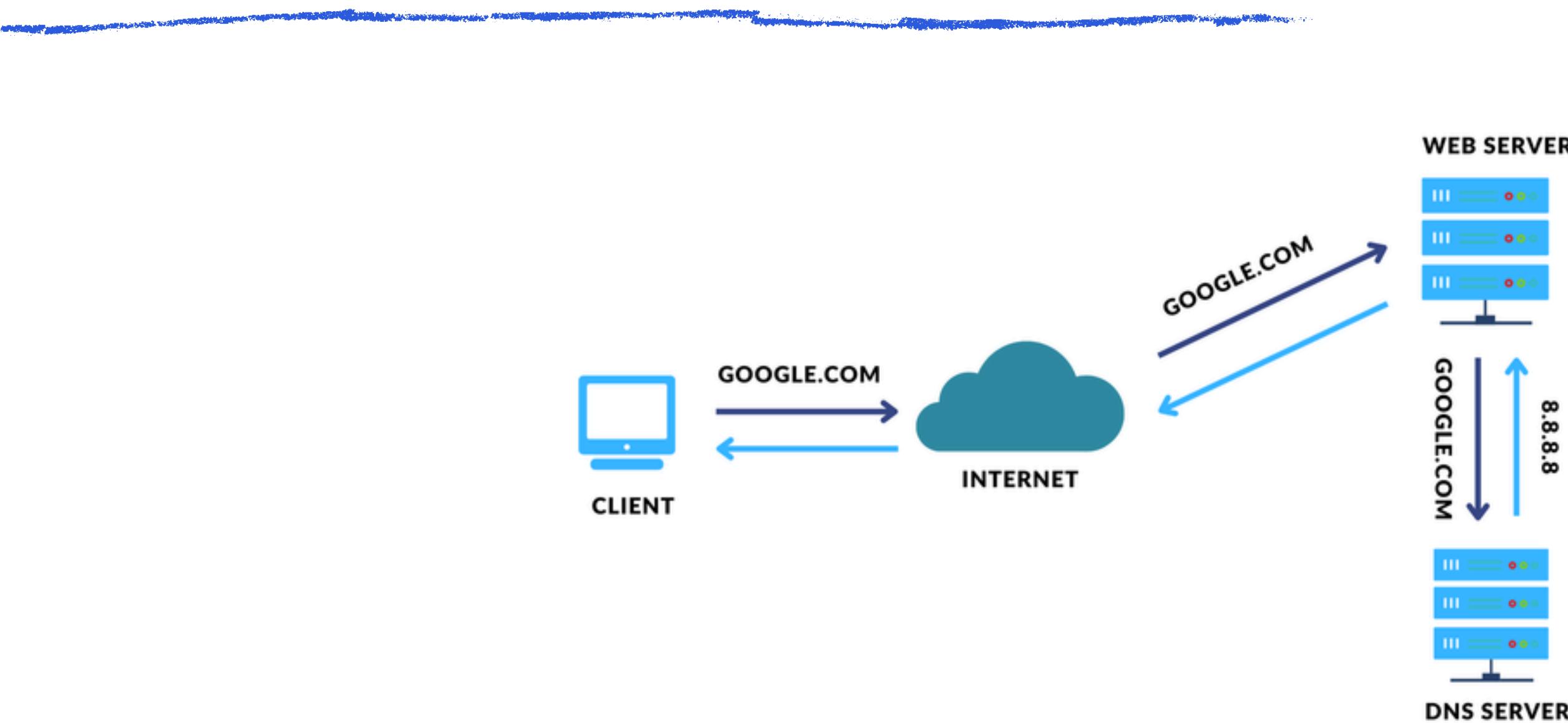
Two main versions: IPv4 (e.g., 192.168.1.1) and IPv6 (e.g., 2001:db8::1).

## DNS

DNS acts like the internet's phonebook.

Translates domain names (e.g., google.com) into IP addresses

# How DNS works?



# What's Cloud?

---

- Cloud computing delivers on-demand IT services over the internet.
- Instead of managing physical servers, you can rent computing resources in the cloud.
- These services can include servers, databases, storage, networking, and software.
- Companies like Netflix and Airbnb rely on cloud platforms for scalability and efficiency.

**There is NO CLOUD, just**



**other people's computers**

 fsfe.org

# Software as a Service (SaaS)



Fully managed software applications delivered over the internet.

No need to install, maintain, or upgrade software on your devices. Users interact with the application via a web browser or app.

## Benefits:

- Quick setup and access
- Automatic updates and maintenance
- Pay-as-you-go pricing



# Platform as a Service (PaaS)

---

A development platform that provides infrastructure and tools to build, test, and deploy applications. Developers can focus on coding without managing underlying servers, storage, or networking.

## Benefits:

- Faster app development
- Built-in scalability and monitoring
- Reduced infrastructure management

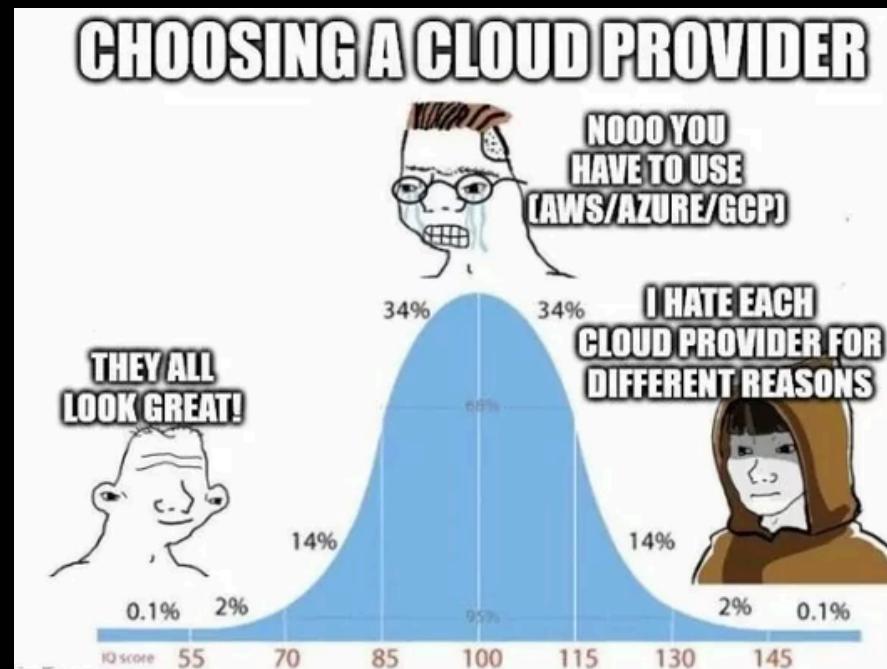


# Infrastructure as a Service (IaaS)

Provides virtualized computing resources (servers, storage, networking) on-demand. Users have full control over the operating system and applications. Ideal for businesses that need flexibility in configuring infrastructure.

## Benefits:

- High flexibility and control
- Scalable infrastructure based on demand
- Pay only for the resources you use



# Types of Cloud

---

## Public Cloud

---

Cloud services shared across multiple customers (e.g., AWS, Azure, Google Cloud).

Cost-effective and scalable.

## Private Cloud

---

Dedicated infrastructure for a single organization.

Offers better security and control but higher costs.

## Hybrid Cloud

---

A mix of public and private clouds, offering both flexibility and control.

Often used to handle sensitive data while using public cloud resources for scalability.

# Why Cloud

---

## Scalability

Easily scale resources up or down based on demand.

## Elasticity

Automatically adjust resources to match workload.

## Cost Efficiency

Pay for only the resources you use, reducing upfront costs.

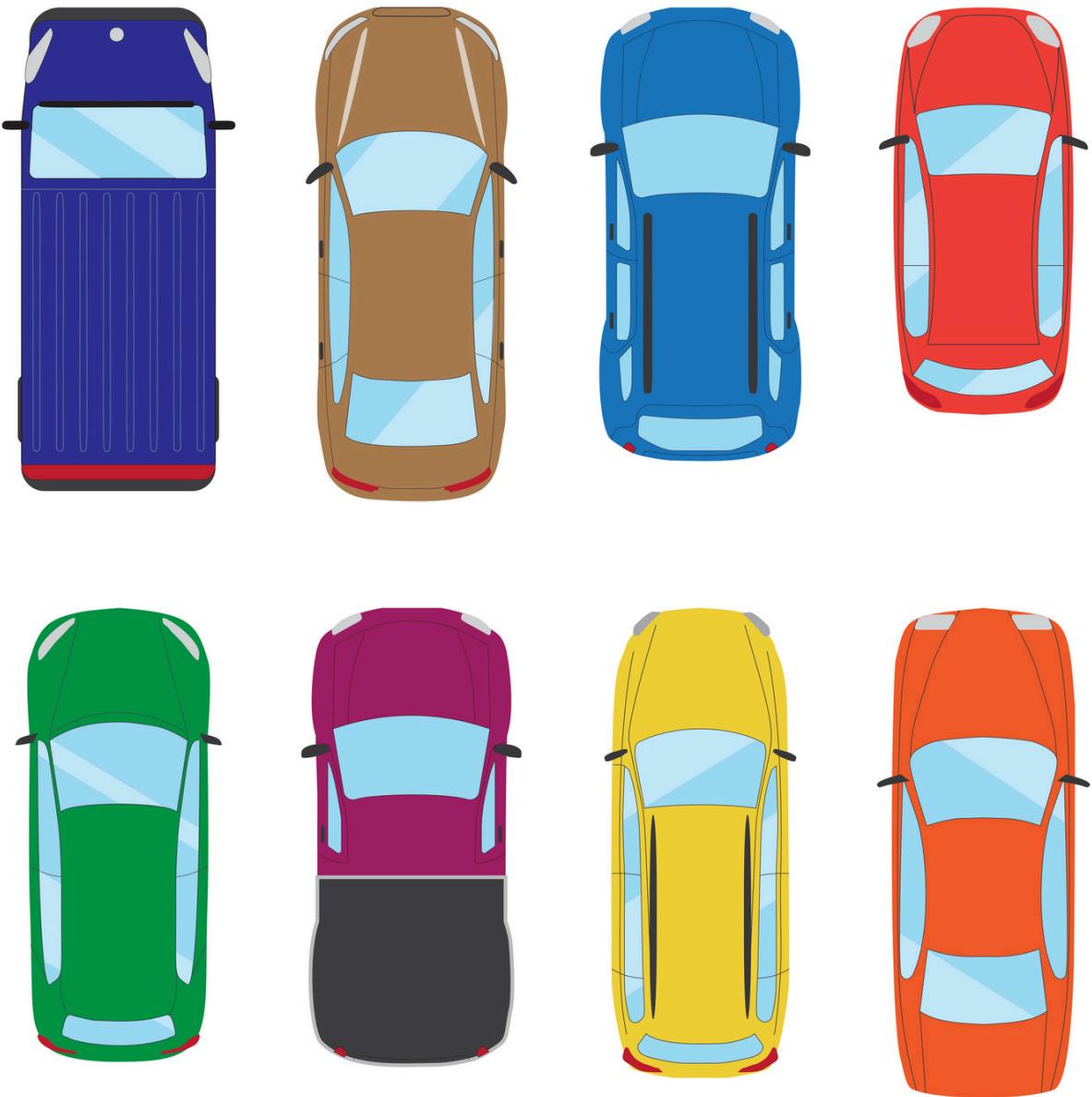
## Global Reach

Access cloud services from anywhere in the world.

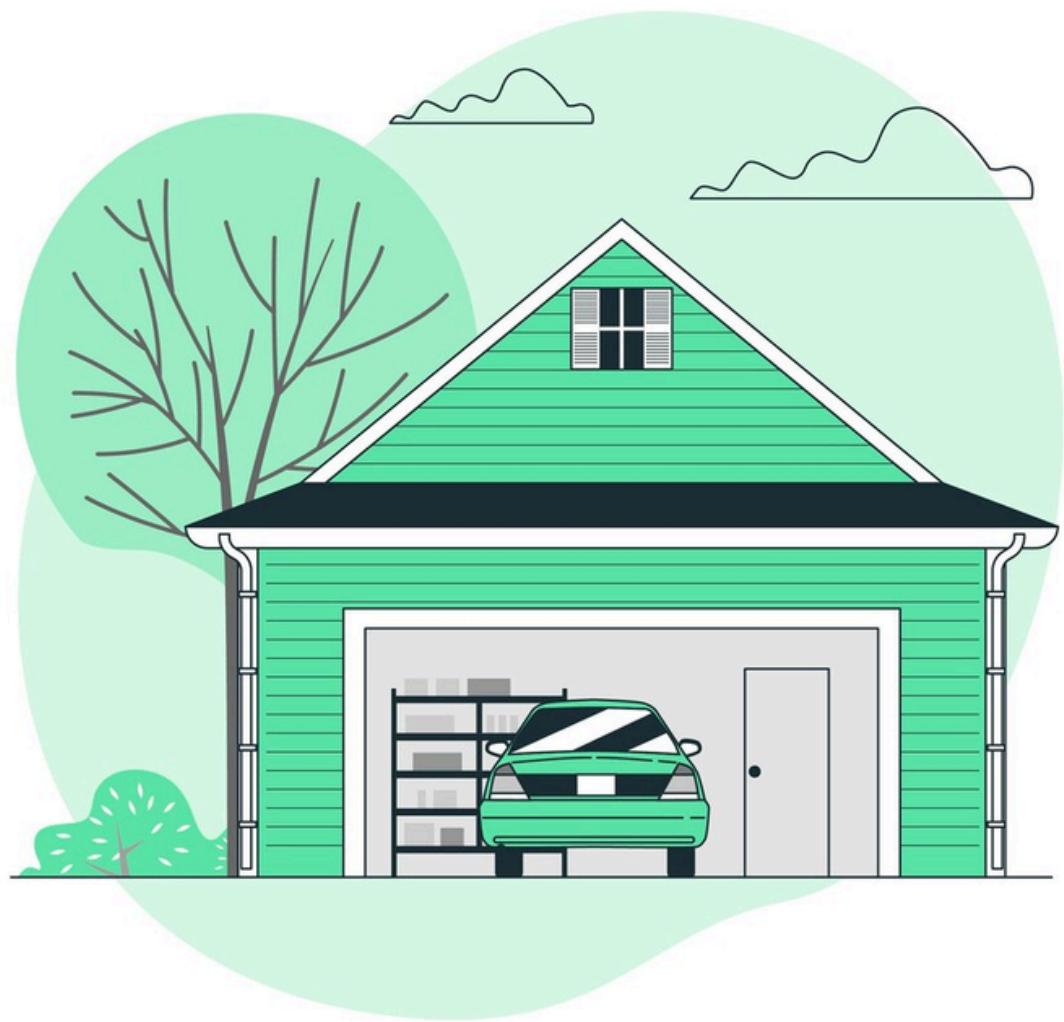
DADDY, WHAT ARE CLOUDS MADE OF?



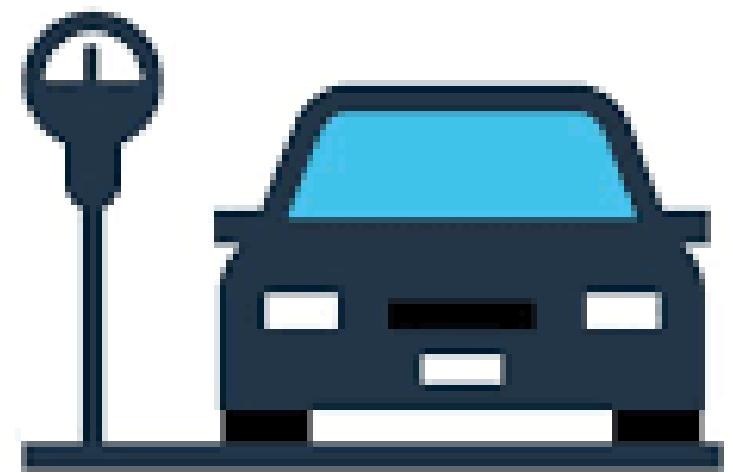
# Analogy time



**House**  
**(Local Dev)**



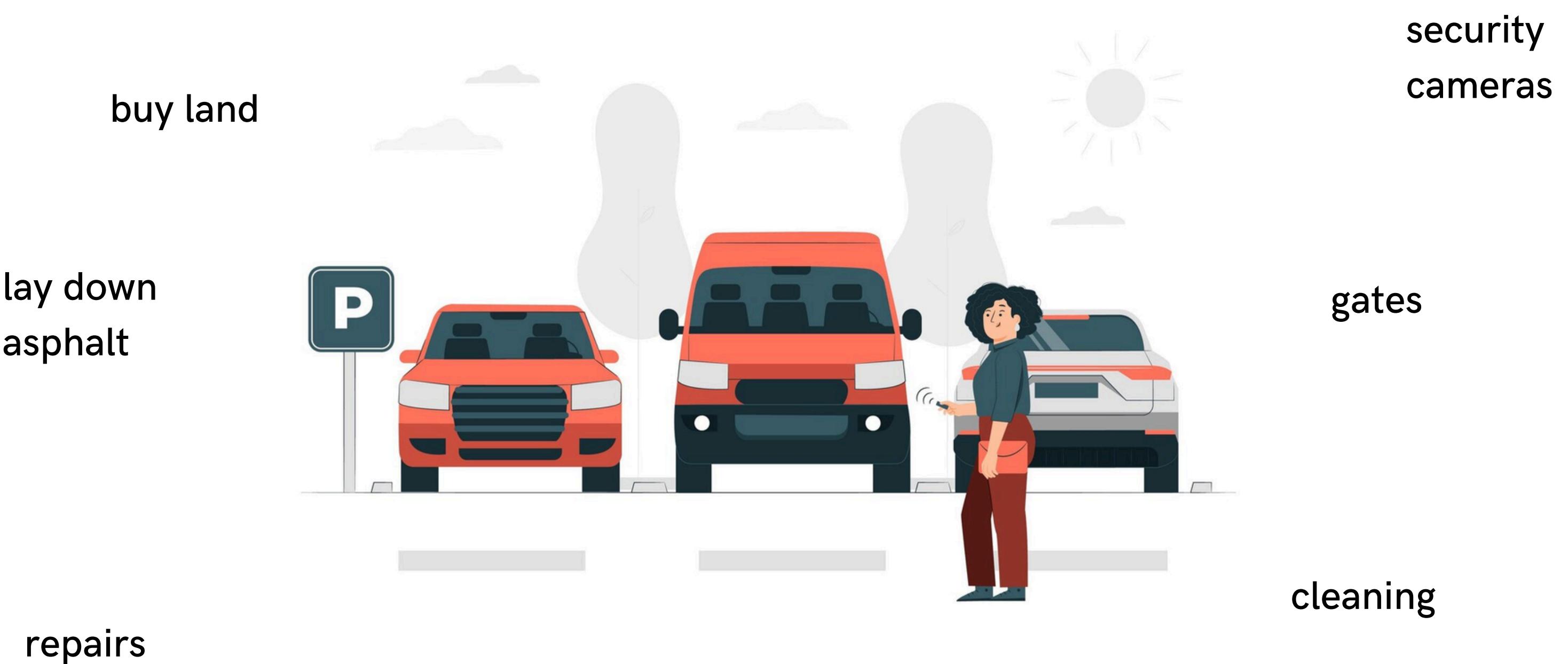
**Rent a spot**  
**(SaaS)**



**Shared spot**  
**(shared server space)**



# Own your own - On Premises IT



# Rent it from a parking provider - Cloud

pay less  
than owning

handled  
maintenance

easy  
expansion

pre built  
security

better  
service

no overhead on  
infrastructure



# Questions?



WE ARE WATCHING YOU



# Amazon Web Services

---

- Amazon Web Services (AWS) is the largest cloud service provider in the world.
- AWS offers more than 200 fully-featured services for computing, storage, networking, machine learning, and more.
- Customers include startups, large enterprises, and public sector organizations.
- Examples: NASA, Spotify, Netflix all use AWS to power their services.





# AWS Global Architecture

## Regions

Geographically distributed locations where AWS data centers are hosted.

Examples: US East (Virginia), Asia Pacific (Mumbai).

## Availability Zones (AZs)

Multiple isolated data centers within a region for high availability.

Applications can be deployed across AZs to ensure redundancy.

## Edge Locations

Points of presence that cache content for faster delivery.

Example: AWS CloudFront delivers content with low latency using edge locations

# Core AWS Overview

---

## Compute

---

EC2: Scalable virtual servers.

Lambda: Run code without managing servers (serverless).

## Storage

---

S3: Highly durable object storage for files, images, and backups.

EBS: Block storage for use with EC2 instances.

## Networking

---

VPC (Virtual Private Cloud): Isolated network environments in AWS.

Route 53: DNS and domain management service.

# Use? Cloud? Where?



## Web Hosting

Deploy scalable websites and applications with services like EC2 and S3.

## Data Storage and Backup

Use S3 to store large datasets and Glacier for archiving.

## Machine Learning

Train and deploy machine learning models with AWS SageMaker.

## Disaster Recovery

Ensure business continuity by replicating data across multiple regions.



# The Free Tier

---

## 1. Always Free

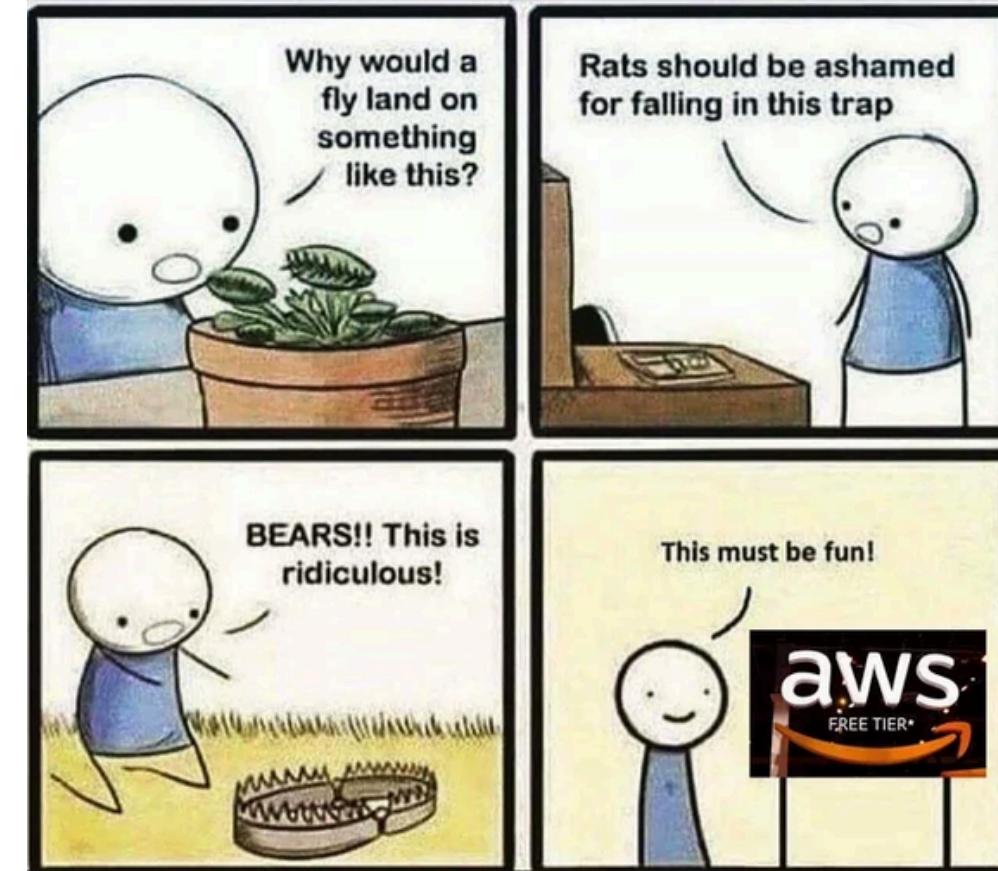
- Services available indefinitely without a time limit
  - Amazon DynamoDB (25 GB storage)
  - Amazon S3 (5 GB storage)

## 2. 12-Month Free Trial

- Free for 12 months after signing up
  - EC2 (750 hours/month of t2.micro instance)
  - RDS (750 hours/month of db.t2.micro)
  - Amazon CloudFront (50 GB data transfer)

## 3. Short-Term Free Trials

- Try services for a limited period
  - Amazon Redshift (free for 2 months)
  - Amazon SageMaker (250 hours/month for 2 months)



# Questions?



# Lets play



# Thank you



Reach out to me:

<https://www.linkedin.com/in/vanshsood/>