**AWS**

* Free tier refers to the limited use of AWS
  + Compute (2nd definition is official AWS, 1st is simplified)
    - EC2 (Elastic Cloud Compute)
      * Some processors are included in free tier
      * Basically, a virtual computer, very similar to the desktop or laptop computer you use at home, and commonly referred to as an ***instance***
      * Web service that provide resizable compute capacity in the cloud. It is designed to make web-scale cloud computing easier for developers
    - ELB (Elastic Load Balancing)
      * A tool that distributes incoming web traffic (i.e. visitors to a web stie) and equally across multiple EC2 instances that are running a web site.
        + Helps prevent one server from being overloaded while another server can handle more visitors
      * ELB automatically distributes incoming application traffic across multiple Amazon EC2 instances. It enables fault-tolerance in applications seamlessly providing the required amount of load-balancing capacity needed to route application traffic
    - Lambda (Serverless Computing)
      * Serverless computing essentially, allowing code to be run without setup and maintenance of actual servers
      * Lambda lets you run code without having to provision or manage servers. You’re only charged for the compute time you consume. There is no change when your code is not running. With Lambda you can run code for virtually any type of application or backend service. All with zero admin. You just upload your code and Lambda takes care of everything required to run and scale with high availability
    - Asdf
* VPC notes
  + Region and Availability Zones
    - Regions throughout world
      * Each region is completely independent
      * Regions are completely isolated from others to achieve greatest possible fault tolerance and stability
    - Each region houses multiple availability zones
    - Ec2 allows you to create instances and data in multiple locations.
      * Resources are not replicated across regions unless you do so specifically, default is not replicated
      * When you launch an instance, you must select an AMI that’s in the same Region
      * If AMI is in another region you can copy over the AMI to the region you are using
      * Charge for data transfer between regions
    - Availability Zones
      * Can be selected upon creation or launch of an instance
      * Can design so that if instance fails another instance takes over in another availability zone
      * Can use Elastic IP addresses to mask failure of an instance by rapidly remapping the address to an instance in another zone
      * When you launch an instance, select a region close to your customers. Can protect from failure by using separate availability zones
      * Must select regional endpoints
    - Internet Gateways
* IAM
  + Identity Access Management
  + Identity Federation
    - AD
    - Facebook
    - LinkedIn
  + MFA
  + Allows you to set up your own password rotation policy
  + Key Terms
    - Users
      * End Users
    - Groups
      * Collection of Users
      * Each user will inherit the permissions of the group
    - Policies
      * Made up of documents
      * In JSON format
* EC2 notes
  + Instance Type
    - # of virtual CPUs
    - How much memory
    - How much bandwidth
  + EBS
    - Volumes
      * What are volumes?
    - IOPS
      * Input/Output Operations Per Second
      * Simple def
        + Amount of data that can be written to or retrieved from EBS per second
      * AWS def
        + IOPS are a unit of measure representing input/output operations per second. The second operations are measure in KiB, and the underlying drive technology determines the maximum amount of data thata volume type counts as a single I/O. I/O size is capped at 256 KiB for SSD volumes and 1,024 KiB for HDD volumes because SSD volumes handle small or random I/O much more efficiently than HDD volumes
      * More IOPS mean better volume performance
      * What determines the amount of IOPS?
        + EBS volume size. The larger the storage size (in GiB), the more IOPS the volume has