MAKE SURE TO STUDY BEFORE FINAL EXAM, THESE WILL DEFINITELY BE ASKED AGAIN!!!!

1. Which of the following have contributed to computing as utility?  
   A. Virtual Machines

B. Virtual Datacenters  
C. Virtual Orgs  
D. Virtual Desktops  
  
Ans: ABCD

1. What are the benefits of virtualization?  
   Ans: Sharing resources, Consolidating resources, Customizing resources,   
   Wrong: Disaggregating resources
2. Which of the following are true?
   1. A Volume can be used by multiple instances
   2. An instance can have many volumes
   3. A volume can be deleted while its instance persists.
   4. An instance can be terminated while its volume persists

Ans: ABCD

1. What can be controlled by an IaaS user?

Ans: The application, The OS, The libraries and runtimes

Wrong: The physical hardware

1. Which are examples of PaaS?
   1. AWS
   2. Heroku
   3. Google App Engine
   4. Docker

Ans: ABC

Note: Docker is a container, not a service. Docker.com can be considered, but not just Docker.

1. What can happen when a guest OS requests privileged hardware access?
   1. Page fault
   2. Trap
   3. I/O interrupt
   4. System Call

Ans: B

1. Which are part of ABI?

Ans: User ISA, System Calls

Wrong: No API, System ISA

9) Which storage service can be used to directly start an EC2 instance from?

Ans: Instance store, EBS

10) Which of the following are true?

1. SaaS can be built upon PaaS
2. IaaS can be built upon PaaS
3. PaaS can be built upon IaaS
4. SaaS can be built upon IaaS

Ans: ACD

11) Which are ISA VMs?

1. Emulator
2. Java VM
3. Hosted VM
4. Classic VM

Ans: ACD

Wrong: B -> Java VM is an ABI VM

12) In general public cloud is better than private cloud in terms of:

Ans: Scalability, No upfront cost.

Wrong: Privacy, Predictable performance

13) Which are the enabling technologies of cloud computing?

1. Virtualization
2. Self managing computing systems
3. Service oriented architecture
4. Machine learning

Ans: ABC (According to 2006, when ML wasn’t a thing as such)

14) SQS provides:

1. Reliable delivery of messages
2. Scalable delivery of messages
3. Scalable storage of messages
4. Delivery of any kind of data

Ans: ABC

15) Which have access to the system ISA?

1. Libraries and runtimes
2. Applications
3. VMM
4. Guest OS

Ans: C

16) Message-queue-based communication allows sender and receiver to:

1. Operate at different speed
2. Not block each other
3. Fail and recover independently
4. Synchronize send and receive operations

Ans: ABC

Theory Questions:

1. Explain how AWS EC2 achieves the five essential characteristics of cloud computing.
2. Page table based question:

Ans: One table that has X|9000 and 9000|6000, where 9000 is a random number to show where the page is stored

The other table X|8000.

**Pop Quiz 3**

1. What aspects of storage does virtual storage typically virtualize?

Ans: Data Location, Data Path.

2. With hosted VMs, what are involved when an application in a VM reads a file?

A. Libraries in the VM

B. Guest OS in the VM

C. Host OS

D. VMM

Ans: ABCD

3. The benefits of FaaS include:

A. Easy to develop applications

B. Fine-grained scaling

C. Support for serverless computing

D. High performance

Ans: ABCD

**FINAL EXAM TOPICS**

What is storage virtualization?

Considering each example discussed in class, how is storage virtualized and what are its benefits?

How can virtual support VMs and Cloud Computing?

PROJECT CONTENT IMPORTANT

Design, Implementations, What AWS services were used and how?, Performance and scalability.