CIS4517/5517 Quiz 2 Name:

1. (4 points) Data can be broadly classified into four types: structured data, unstructured data, dynamic data, and static data. Please briefly explain them and provide an example for each type.

structured data: a predefined model ~~format~~. eg: relational data, transaction info.
unstructured data: No predefined model / ~~format~~ video, audio images.
dynamic data: data that changes. tweets.
static data: data that relatively remains stable.

2. (3 points) To preserve the integrity of data the database system must ensure ACID properties including Atomicity, Consistency, Isolation, and Durability. Please explain Atomicity and Durability.

Atomicity: Either all operations of a transaction are properly reflected or none are in the DB
Durability: After a transaction completes, it persists

3. (3 points) An XML document is modeled as a tree. In this tree model, what do nodes represent?

elements and attributes

4. (4 points) List the four typical operations in REST protocol.

post, put, Get, Delete

5. (2 points) In Windows Azure, which of the following provides a scalable object store in the cloud?
   a. A blob
   b. A disk
   c. A table
   d. A queue

A

6. (2 points) In CCM model, which of the following defines the interaction between application components?
   a. Component design
   b. Deployment design
   c. Architecture design
   d. Relation design

C

→ flip over

7. (2 points) Which one of the following is **not** a property of virtualization?

   A. Isolation
   B. Visibility
   C. Encapsulation
   D. Portability

B

8. (2 points) The limitations of distributed databases can be described in the so-called CAP theorem, which of the following is not part of the CAP theorem?

   A. Availability
   B. Partition Tolerance
   C. Portability
   D. Consistency

C

9. True or false (Provide a brief explanation in the comment area if you think the statement is false.) 8 points, 2 points each.

   1). Type-2 or hosted hypervisors run directly on the host hardware and control the hardware and monitor the guest operating systems.

F ↳ This is type-1 or native hypervisor.

   2). In full virtualization, the virtualization layer completely decouples the guest OS from the underlying hardware. The guest OS requires no modification and is not aware that it is being virtualized. In para-virtualization, the guest OS is modified to enable communication with the hypervisor to improve performance and efficiency.

T

   3) REST protocol is stateless and each request from a client to a server is self-contained.

T

   4) In Google Cloud, different GCE instances share a queue for all incoming requests to achieve auto-scaling.

F Each GCE instance has a seperate queue for incoming requests. If the queue exceeds the predefined length, a new instance will be created to achieve auto-scaling