San Jose State University
Department of Computer Science
Distributed Systems (CS 249), Section 1
Homework #1 Preview (4 pts)

Questions on Introduction to Distributed System (Chapters 1, 2):

Please answer the following questions:

- **Q1:** Compare and contrast cloud computing with traditional Client-Server Computing? What is novel about cloud computing as a concept? [1 pt]?

    Answer)

    With traditional computing: you are responsible for administering the machines. You need to buy the hardware. You need to do backup/recovery. You are responsible for resource sharing between applications and hardware resources, ….

- **Q2:** Suppose that the operations of the BLOB object are separated into two categories – public operations that are available to all users and protected operations that are available only to certain named users. State all of the problems involved in ensuring that only the named users can use a protected operation. Suppose that access to a protected operation provides information that should not be revealed to all users, what further problems arise [1 Pt]?

    Answer)

    Each request to access a protected operation must include the identity of the user making the request. The problems are:
    - defining the identities of the users…….
    - ensuring that the identity supplied comes from the user it purports to be…...
    - preventing other users from replaying or tampering with the request messages of legitimate users (how?).

Further problems.

- the information returned as the result of a protected operation must be hidden from unauthorized users. This means that the messages containing the information must be usable only by the intended recipient……

- Q3: Consider a simple server that carries out client requests without accessing other servers. Explain why it is generally not possible to set a limit on the time taken by such a server to respond to a client request. What would need to be done to make the server able to execute requests within a bounded time? Is this a practical option [1 pt]?

Answer)

The rate of arrival of client requests is unpredictable…….

To execute requests within bounded time, limit the number of clients to suit the server capacity…..

……….

- Q4: Define the integrity property of reliable communication and list all the possible threats to integrity from users and from system components. What measures can be taken to ensure the integrity property in the face of each of these sources of threats [1 Pt]?

Answer)

Integrity - the message received is identical to the one sent and no messages are delivered twice……………………..