CS 377 – Operating Systems
Discussion Session 2 Questions

Name: _____

These questions will review several key concepts covered in lecture and the textbook. Please write your answers individually without consulting the internet or your textbook. Be succinct (complete sentences not necessary).

1. **OS hardware architecture**. Memory/storage is arranged in a hierarchy in an OS. Describe why we use multiple layers as opposed to only a single layer, and give three examples of specific layers in the memory hierarchy, arranged in order.

2. **OS design**. One popular OS design is layered, in which pieces of functionality are implemented on top of each other. Describe one advantage and one disadvantage of the layered design. Then, assuming we are using such a design, rank the following system components from lowest-level to highest-level: *(a) file system, (b) user interface, (c) system calls, (d) hard disk, (e) software libraries, (f) disk driver.*

3. **System calls**.

    (a) Explain the purpose of system calls.

    (b) Give an example of a specific system call and mention what it does.

    (c) Describe how user programs are prevented from executing sensitive system calls directly.

    (d) Briefly describe what is meant by a **trap** and mention how traps relate to system calls.