1. Explain the benefit of a “thin waist” for the system call interface.

Decrease the point of contacts between the inside and the outside.

Decouple the innovations in applications from the innovations in hardware.

We don’t want to change the system call interface when we get a new piece of hardware.

We want a simple, stable interface.

Simplicity leads to an ease of understanding for the programmer, easier learning curve, and ease of portability.

2. Explain the advantages of “open before use”.

Check the permissions once for a series of transactions (reads/writes).

Setup internal bookkeeping (buffers) once the transactions start.

3. Explain how kernel buffering decouples a producer and consumer.

Each process can run at its own pace.

Decoupling execution so that strict alternation of reading and writing is unnecessary.

4. Identify pros and cons of microkernel design.

Pros:

Microkernels are simpler and likely more reliable.

Cons:

Worse performance due to all of the message passing communication.