# Homework 1 (again

* Compare the pros and cons of a monolithic kernel and a microkernel.
  + Microo – Broken into separate process areas increasing security across processes and easier to maintain with one part breaking not affecting the others.
  + Mono – One big space making it fast and easier to implement from a programming perspective.
* What are the two main functions of an operating system?
  + Extended Machine – Hides kernel details (that can be confusing) and presents users with easier to use system (normally a GUI).
  + Resource manager – Organizes space and time so that different programs and their processes get what they need or higher priority processes get handled and can take from others.
* What are the differences between a trap and an interrupt?
  + The difference between the trap and the interrupt is who is making the request for services and resources, the prior being a user request and the latter being hardware request.
* Describe the steps an OS must take to process an interrupt.
  + To start he system receives the interrupt, afterwards it finishes completing any current instructions it is working on. Then the system sends a response that it got the interrupt request and saves the program status and stack information that it was currently working on. The system now can complete the interrupt routine that was requested and lastly restores the stack and program counter to what they were.
* Explain briefly the three ways to transition from user mode to kernel mode.
  + Trap – User makes requests for resources and services.
  + Interrupt – Hardware makes request for resources and services.
  + Error exception – If an error is encountered, relays the error code and moves on to the next process in line.
* How can I/O devices notify OS the completion of jobs? Please list three ways.
  + The I/O devices notify the OS of completion by sending it a code that it is all done (return 0 at the end of most programs), it can send an error code saying it ended early, or the user can manually stop a process (alt + f4 is a common way).