Welcome to 451: Intro to Operating Systems

- OS: a program that abstracts hardware resources for other programs to use

- HW Resources
  - CPU
  - Memory: volatile, byte addressable
  - I/O devices: can also be implemented on top of network (NFS) & memory
  - Storage
  - Network Adapter
  - Mouse, keyboard, speakers, microphone
HW resources ⇒ software abstractions

What do we gain from ↑?

⇒ ease of use.
⇒ portable interface (programs independent from HW)
⇒ managed access (resource sharing & management)
⇒ common interface (enables sharing & communication)

How does OS provide these abstractions?

⇒ What we will cover in class!
Our model:
Single computer, single OS, single core/CPU. Common abstractions

Beyond 4S:
- More complex hardware
  - Multicore, heterogeneous
  - Different HW resources

- More complex software
  - Containers, virtual machines

- Different abstractions
  - Designed for specific workloads