

# Shared memory address mapping

Can map shared memory at same or different virtual addresses in each process' address space ?

- **Different Mapping**

Flexible but pointers inside shared memory are invalid (case for `shmget`)

- **Same Mapping**

Less flexible but shared pointer are valid

# Copy on Write

- OSes spend a lot of time copying data
  - System call arguments between user/kernel space
  - Entire address spaces to implement `fork()`
- ➔ Use Copy on Write (CoW) to defer large copies as long as possible, hoping to avoid them altogether
  - Create shared mappings of parent pages in child virtual address space (instead of copying pages)
  - Shared pages are protected as read-only in parent and child  
Any write operation generates a protection fault, trap to OS, copy page, change page mapping in client page table, restart write instruction