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

- **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