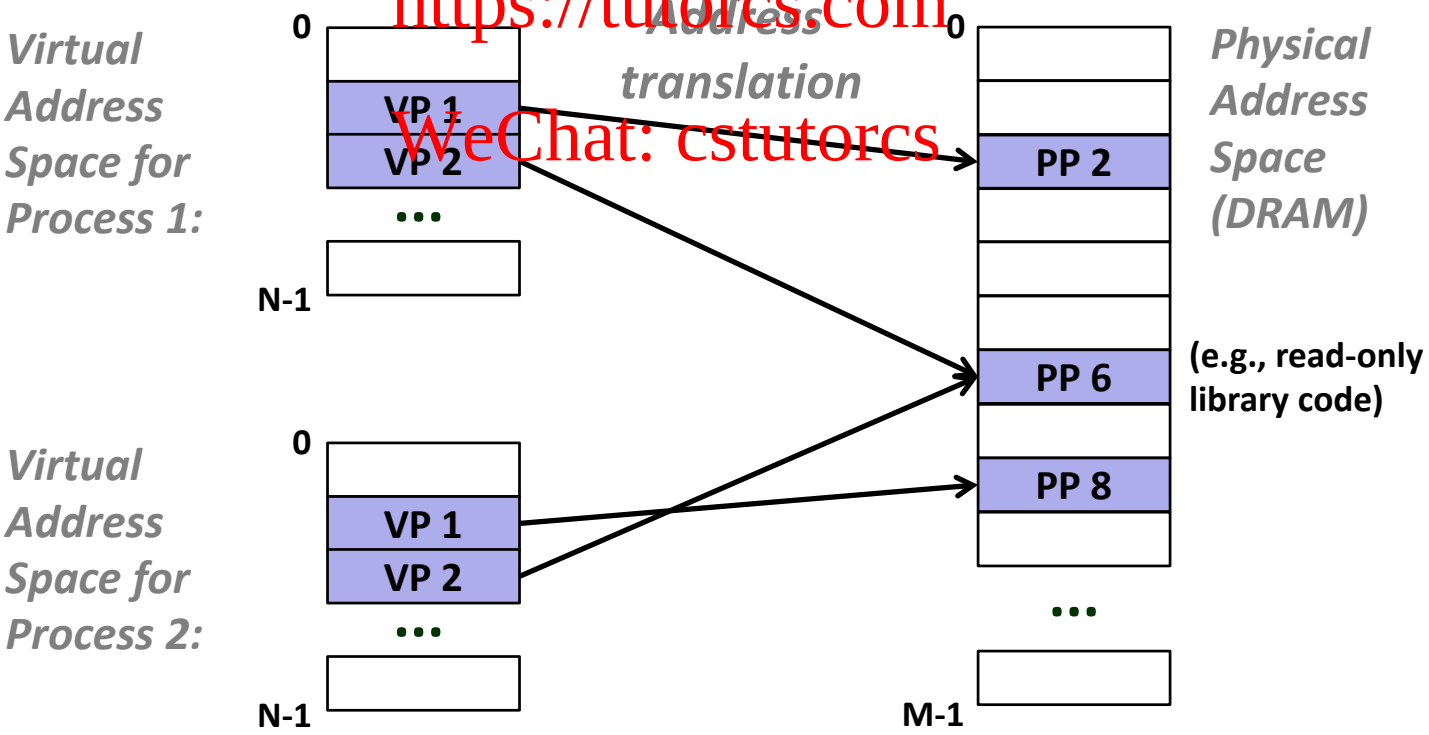
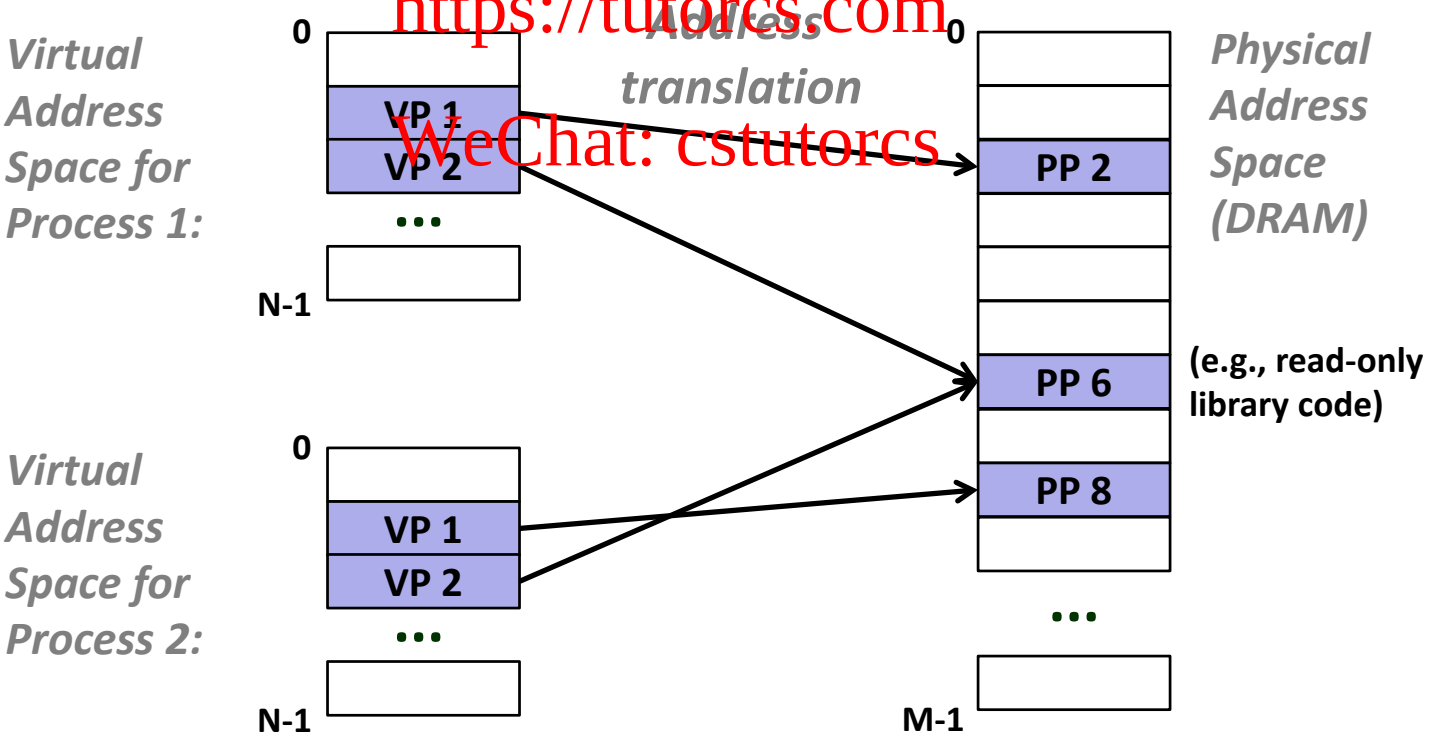
VM as a Tool for Memory Management

- **Key idea: each process has its own virtual address space**
  - It can view memory as a simple linear array
  - Mapping function scatters addresses through physical memory
    - Well chosen mappings simplify memory allocation and management



VM as a Tool for Memory Management

- **Memory allocation**
  - Each virtual page can be mapped to any physical page
  - A virtual page can be stored in different physical pages at different times
- **Sharing code and data among processes**
  - Map virtual pages to the same physical page (here: PP 6)



VM as a Tool for Memory Protection

- Extend PTEs with permission bits
- Page fault handler checks these before remapping
  - If violated, send process SIGSEGV (segmentation fault)