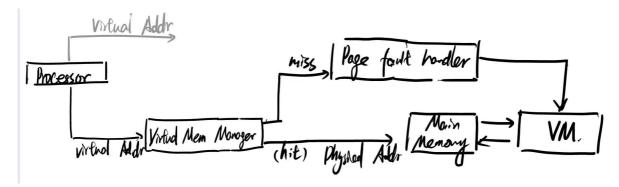
W5D1

Virtual Memory

存在于memory上层,disk中划分一块空间作为虚存。以page为单位映射到memory,memory可以看成充当了disk的cache。

访存

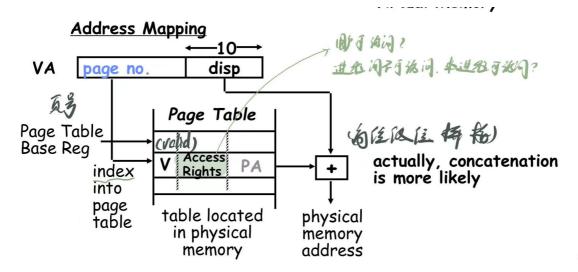


processor发出virtual address,通过virtual memory manager尝试将virtual address映射为physical address。

- hit: 成功映射为physical address,根据physical address访问main memory。
- miss: 报page fault, 根据virtual address在virtual memory找到所在的page, 将其备份到main memeory。processor再次发出virtual address尝试。

address mapping

通过page table将virtual address映射为physical address。

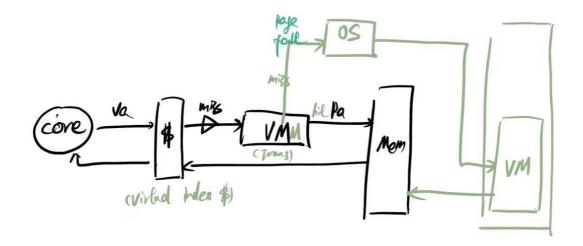


CS252/F

带有cache的两种架构方式

virtual index cache

通过virtual memory向cache中找



存在问题

homonyms

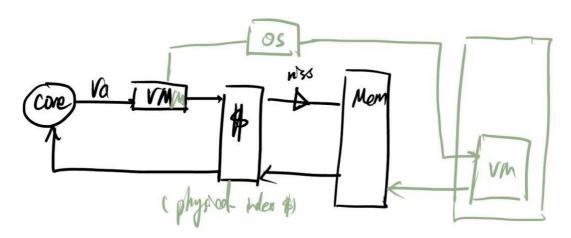
同一virtual address映射为多个physical address

synonyms

多个virtual address映射为同一physical address

physical index cache

先将virtual address映射到physical address,再通过physical address向cache找



安全 (cache不接触到virtual address) , 但消耗更多clock cycle。