Detailed VM design – Lu Yan

In our group, I am responsible for implementing the two-level TLBs, and the interaction between them. The following diagrams show the fields and methods of the TLB classes.

Different TLB replacement and flushing policies will be implemented by each group member, such as LRU, FIFO and Random, etc.

Class TlbFirst

• entries
// an array of page table entry objects, with fields isPresent, isValid, isReferenced, VPN, PDBR, offset. (May include isDirty)
//fully associative
• size: 64
…

• insert( )
• replace( ) //policy
• flush( ) //all flushed when process switches
• handleHit( ) //cpu go to fetch data from RAM
• handleMiss( ) //continue to search in TLB2

Class TlbSecond

• entries
// an array of page table entry objects, with fields isPresent, isValid, isReferenced, VPN, PDBR, offset. (May include isDirty)
//set associative
• size: 1024

• insert()
• replace() // policy
• flush() //selective flushed when process switches: policy
• handleHit( ) //cpu go fetch data from RAM
• handleMiss( ) //cpu go fetch page table from RAM, update TLB1, and retry