COMP304: Operating Systems
Project 3 – Virtual Memory

Oğuzhan Şanlı
72126

Part 1)

- Virtual addresses are read from the file.

• For the address in each line, logical page and offset parsing is done.
- The logical page and offset information are obtained by using the 20 bits at the far right of the 32-bit address information. The 10-bit logical page on the left of the 20 bits and the 10-bit offset on the right
• It is checked whether the Logical page is in TLB.
- Check whether it is in TLB records with the search_tlb function
• If it is not in TLB, it is checked whether it is in the page table.
- Check if the pagetable[logical_page] value is different from -1.
• If it is not in TLB and page table, it is read from BACKING_STORE.bin file and written to memory, match information is added to page table and TLB.
- From the point numbered (logical_page*1024) of the BACKING.STORE.bin file, a character length of 1024 characters is read.
- 1024 characters are written in main_memory[], which are read sequentially from point [physical_page*1024].
- The physical_page value, which was originally started from zero, is incremented by each step.
- pagetable[logical_page] = physical_page; The page table is updated by configuring the assignment.
- With the add_to_tlb method, the match information is added to the TLB records.
• Afterwards, page fault and TLB hit information are printed.

Part 2)

- Virtual addresses are read from the file.

• For the address in each line, logical page and offset parsing is done.
- The logical page and offset information are obtained by using the 20 bits at the far right of the 32-bit address information. The 10-bit logical page on the left of the 20 bits and the 10-bit offset on the right
• It is checked whether the Logical page is in TLB.
- Check whether it is in TLB records with the search_tlb function
• If it is not in TLB, it is checked whether it is in the page table.
- With the findPhysicalPage method, it is checked whether the page is in the table or not.

• If it is not in TLB and page table, it is read from BACKING_STORE.bin file and written to memory, match information is added to page table and TLB.
- Physical address information is obtained with the determinePhysicalPage() method. In this method, if the page_table is not full, the physical_page value, which started from zero at the beginning, is incremented by one. If the page table is full, physical page information is obtained with the getReplacingPhysicalPageUsingFIFO() or getReplacingPhysicalPageUsingLRU() methods according to the algorithm entered with the parameter.
- pagetable[physical_page] = logical_page;
pagetable[physical_page+1] = logical_page;
pagetable[physical_page+2] = logical_page;
pagetable[physical_page+3] = logical_page;
4 page information is updated in the page table (since the page size is 256) by assigning as.
- From the point numbered (logical_page*1024) of the BACKING.STORE.bin file, a character length of 1024 characters is read.
- 1024 characters are written in main_memory[], which are read sequentially from point [physical_page*1024].
- With the add_to_tlb method, the match information is added to the TLB records.
• Afterwards, page fault and TLB hit information are printed.