Comp 304

Project 3 - Virtual Memory Manager

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Running instructions:

Call on command prompt:

For Part 1:
gcc part1.c -o part1
./part1 BACKING_STORE.bin addresses.txt
The output will be as follows:

```
Number of Translated Addresses = 1000
Page Faults = 421
Page Fault Rate = 0.421
TLB Hits = 164
TLB Hit Rate = 0.164
mehmet@mehmet-X580VD:/media/mehmet/DATA/Ders Notları/comp304/project3/project3/Part_1$
```

For Part 2:
gcc part2.c -o part2
./part2 BACKING_STORE.bin addresses.txt -p {0 or 1}

Based on input -p 0 the output will be as follows:

```
Number of Translated Addresses = 1000
Page Faults = 441
Page Fault Rate = 0.441
TLB Hits = 164
TLB Hit Rate = 0.164
mehmet@mehmet-X580VD:/media/mehmet/DATA/Ders Notları/comp
art_2$
```

Based on input -p 1 the output will be as follows:

```
Number of Translated Addresses = 1000
Page Faults = 445
Page Fault Rate = 0.445
TLB Hits = 164
TLB Hit Rate = 0.164
mehmet@mehmet-X580VD:/media/mehmet/DATA/
art_2$
```

Each part of the code works fine.

Brief implementation details:
For part 1, I basically used a fifo algorithm with physical and virtual memory being equal. In that

way, I did not need to lookup for the table to locate physical memory, I just put the new references to the table.
In part 2, I created a new method to achieve those table lookups, since now the logical and physical memory is different.

In the first part, 20 bit and 10 offset are given, which leaves 10 bits to the pages. Thus yielding, 1024 pages and 1024 page-size, with virtual and physical memory being equal.
In the second part, the frame number is 256, where we keep page size and pages to 1024, and considering that, we have to adapt the virtual memory so that it will make sense regarding physical memory.

The hardest part was adapting these virtual-physical memory allocations. Anything else is basically creating tables, searching tables, changing and adding to tables. In that sense, I created fromLogicalToPhysicalMemory(int logical_page, int physical_page) function which copies the virtual memory to physical memory, if possible.