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# EOPSY – LAB 4 : Memory Management

**Task :**   
Create a command file that maps any 8 pages of physical memory to the first 8 pages of virtual memory, and then reads from one virtual memory address at on each of the 64 virtual pages. Step through the simulator one operation at a time and see if you can predict which virtual memory address cause page faults. What page replacement algorithm is being used?

**Experiment:**We start by modifying the commands file so it has enough read instructions.

* **memory.conf  
  Obraz zawierający zrzut ekranu, komputer, monitor, ekran

  Opis wygenerowany automatycznie**We only need to map 8 pages so I commented rest of them out. Rest of the file stays the same.
* **Commands file  
  Obraz zawierający zrzut ekranu, monitor, komputer, laptop

  Opis wygenerowany automatycznie**Due to the pagesize being 16384 all read addresses are targeting addresses ~16k apart.
* **Simulation  
  Obraz zawierający zrzut ekranu, komputer

  Opis wygenerowany automatycznieObraz zawierający zrzut ekranu, komputer

  Opis wygenerowany automatycznie**First screenshot shows the simulation during first page fault. The second shows the simulation while the page replacement algorithm is working. As we can see the replacement works on FIFO (First In First Out) basis. The oldest pages are removed and the the new ones take their place.
* **Output file:**  
  **Obraz zawierający zrzut ekranu, monitor, komputer, ekran

  Opis wygenerowany automatycznie**

**Conclusions:**The output file confirms our predictions. The one read gap in page faults is due to the fact that the addresses are less than page size apart (it was easier to add round numbers while making the commands file). As we can observe on the screenshots the first page fault happens when there is no physical address mapped to virtual space. In this case it was on page 32 (we count pages from 0). Then the page replacement algorithm kicks in and starts replacing pages. We can deduce what kind of algorithm it is by looking at the manner the pages are replaced, or cheat a little and read the java code with the replacement function. There, in comments the algorithm is explained in great deatail.