

# HW3 writeup

## Team10

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1.

For mlockall, it will lock all the calling process's virtual address space into RAM and preventing that memory from being put to swap area. What is more, if we put MCL\_CURRENT | MCL\_FUTURE here, it means that we should lock all allocated memory and the memory which needed to be allocate into the physical memory(RAM).

2.

Memory size = 100KB

Access time(mem\_alloc) = 125728 nsec

Access time(mem\_alloc\_lock) = 3333 nsec

Average memory access time(mem\_alloc) = 5029.12 nsec

Average memory access time(mem\_alloc\_lock) = 133.32 nsec

Memory size = 1MB

Access time(mem\_alloc) = 1477750 nsec

Access time(mem\_alloc\_lock) = 21979 nsec

Average memory access time(mem\_alloc) = 5911 nsec

Average memory access time(mem\_alloc\_lock) = 87.916 nsec

Memory size = 10MB

Access time(mem\_alloc) = 17237067 nsec

Access time(mem\_alloc\_lock) = 207967 nsec

Average memory access time(mem\_alloc) = 6894.82 nsec

Average memory access time(mem\_alloc\_lock) = 83.1868 nsec

Memory size = 100MB

Access time(mem\_alloc) = 131799858 nsec

Access time(mem\_alloc\_lock) = 1666653 nsec

Average memory access time(mem\_alloc) = 5271.99 nsec

Average memory access time(mem\_alloc\_lock) = 66.666 nsec

3.

The system uses virtual memory with demand paging, therefore, The page will be bring to memory when it is needed. So, we should try to use the mlock-like-function to lock the needed page to avoid to cause page fault. If we do not use the mlock-like-function, we can try to use some algorithm to prevent those paging which we need to use to be replaced or swapped. Like using special algorithm for replacing to solve this problem to avoid replacement to those specific pages.