

**操作系统课程设计**

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| **实验四、进程控制** | **Experiment 4, Memory Monitoring** |

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# Purpose

Experiment for Windows:

Windows designs a memory monitor that requires:

Real-time display of the memory usage in the current system, including the layout of the system address space and the usage of physical memory;

Real-time display of the virtual address space layout and working set information of the experiment 2 process control (ParentProcess.exe)

Related syscalls:

GetSystemInfo, VirtualQueryEx, VirtualAlloc, GetPerformanceInfo, GlobalMemoryStatusEx...

Linux experiment:

Use the top command to view the system, subcommands P, T, M

Use ps -A to view all processes and find the pid of ProcessParent

Use top -p pid to check the status of the ProcessParent program;

Use pmap -d pid to view the memory usage of ProcessParent

# Problem Discussion

The experiment requires that the program must display

1. the system’s memory usage
2. the system address space layout
3. the physical memory usage
4. virtual address space
5. parentprocess.exe from lab 2’s working information

**GetSystemInfo**

GetSystemInfo() retrieves information about the current system. It accepts a pointer to a SYSTEM\_INFO structure that receives the information.

The SYTEM\_INFO structure contains information about the current computer system. For this experiment, the ProcessorArchitecture, NumberOfProcessors, and AllocationGranularity will be retrieved.

# Execution [Windows]

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## Results and Analysis [Windows]

# Execution [Linux]

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## Results and Analysis [Linux]

# Reference:

* <https://learn.microsoft.com/en-us/windows/win32/api/sysinfoapi/nf-sysinfoapi-getsysteminfo>
* <https://learn.microsoft.com/en-us/windows/win32/api/sysinfoapi/ns-sysinfoapi-system_info>
* <https://learn.microsoft.com/en-gb/windows/win32/sysinfo/getting-hardware-information?redirectedfrom=MSDN>