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* Lab 10 - CIS 452
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* A windows-focused programming assignment that will explore the memory of a windows
  machine.
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*****/
//#include "pch.h"
#include <Windows.h>
#include <iostream>
#include <stdlib.h>

int main()
{
    // Page size
    SYSTEM_INFO sys_info;
    GetSystemInfo(&sys_info);
    std::cout << "Page size: " << sys_info.dwPageSize << " Bytes" << std::endl;

    // Allocate memory
    char *allocated_mem;
    allocated_mem = malloc(1024 * 1024);
    std::cout << "1M bytes of memory allocated.\n\n" << std::endl;

    // Query system
    // Determine state of allocated memory
    MEMORY_BASIC_INFORMATION mem_info;
    VirtualQuery(allocated_mem, &mem_info, sizeof(mem_info));
    switch (mem_info.State)
    {
        case MEM_COMMIT:
            std::cout << "Memory state: Committed. " << std::endl;
            break;
        case MEM_RESERVE:
            std::cout << "Memory state: Reserved. " << std::endl;
            break;
        case MEM_FREE:
            std::cout << "Memory state: Free. " << std::endl;
            break;
    }

    // Free memory
    free(str);
    std::cout << "\n\nMemory freed.\n\n" << std::endl;

    // Query system after freeing memory
    // Determine state of allocated memory
    VirtualQuery(allocated_mem, &mem_info, sizeof(mem_info));
    switch (mem_info.State)
    {
        case MEM_COMMIT:
            std::cout << "Memory state: Committed. " << std::endl;
            break;
        case MEM_RESERVE:
            std::cout << "Memory state: Reserved. " << std::endl;
            break;
        case MEM_FREE:
            std::cout << "Memory state: Free. " << std::endl;
            break;
    }

    return 0;
}
```