

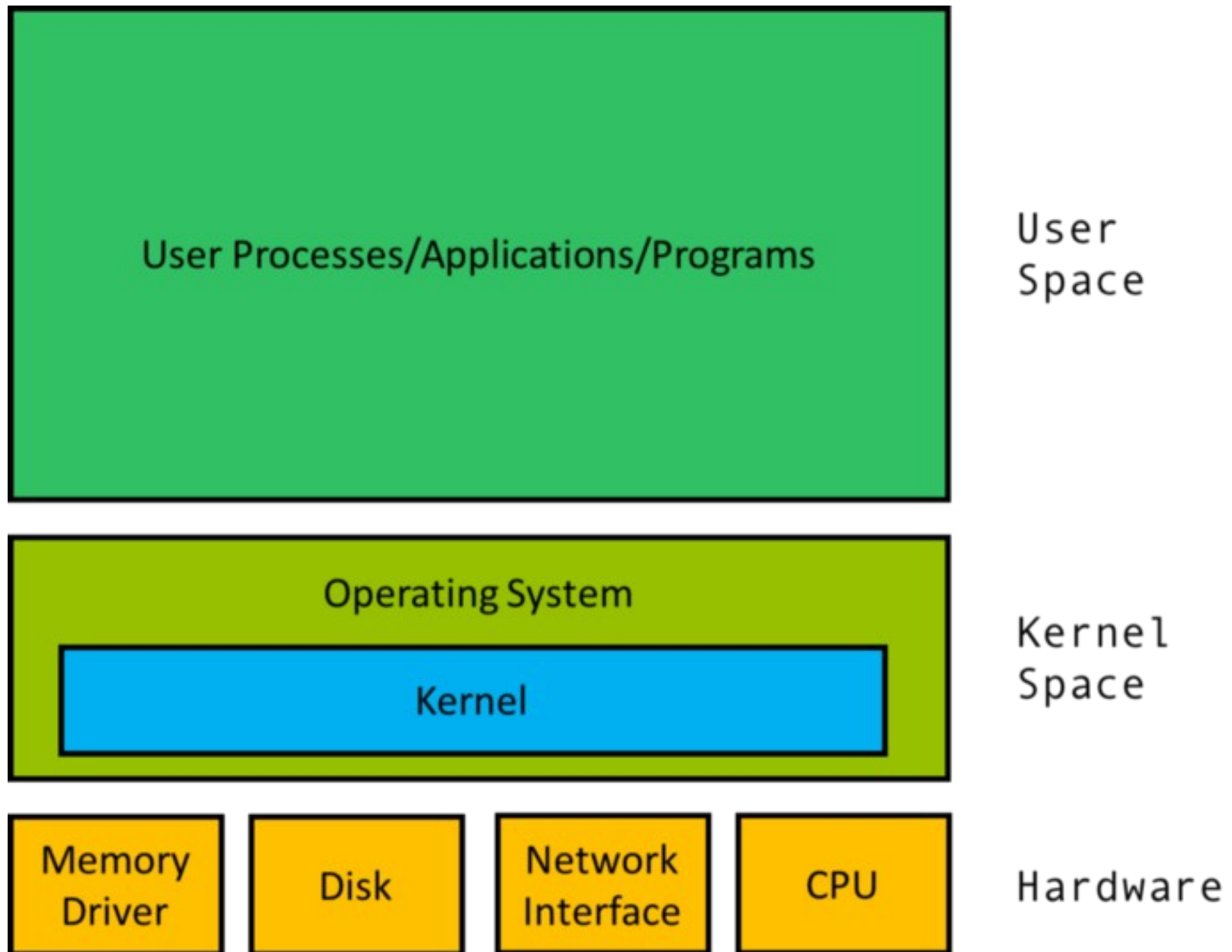
Základy operačních systémů

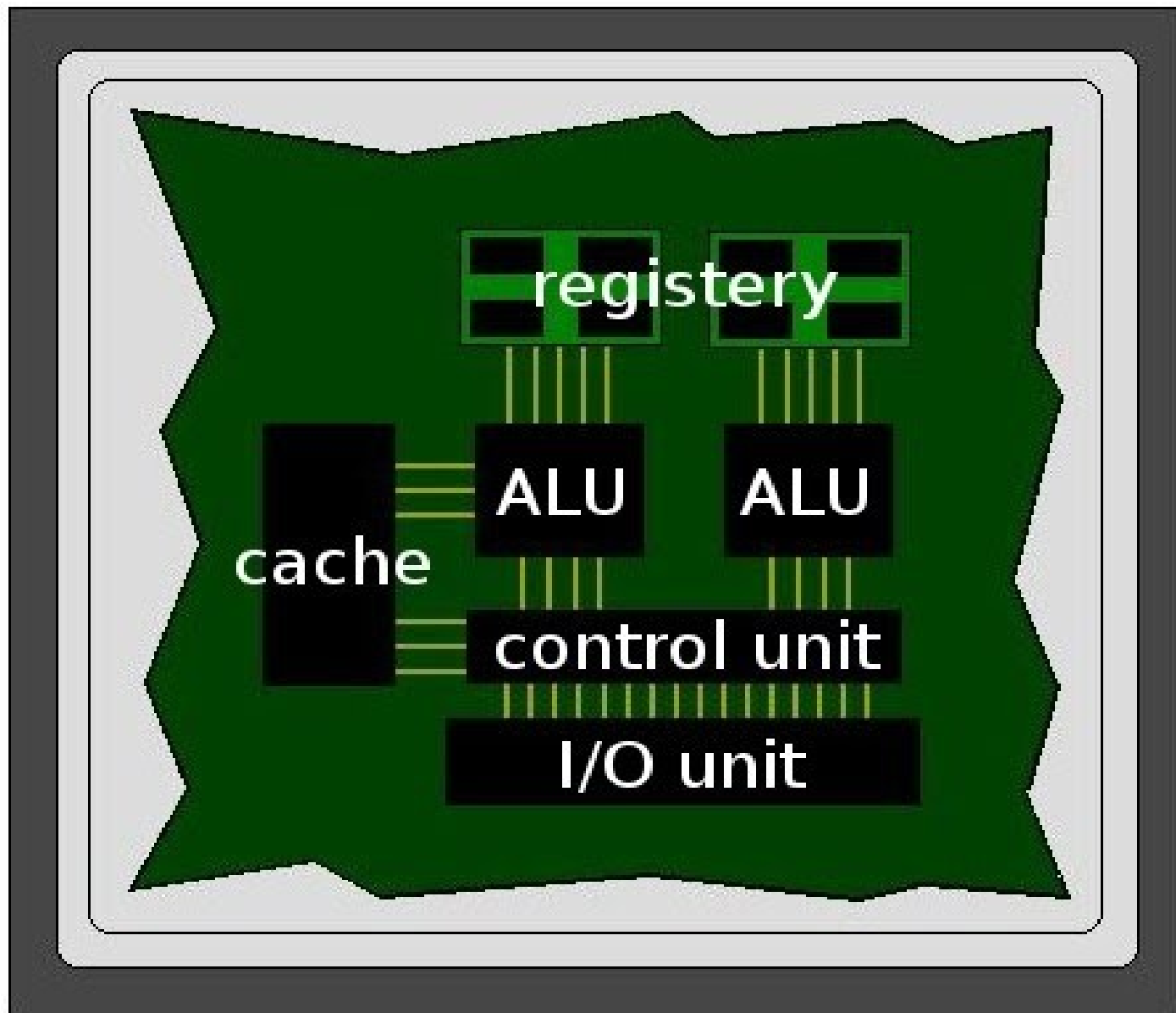
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Obsah

- Procesy a vlákna
- Pridelovanie prostriedkov
- Pamäť
- Súborový systém







Procesy

- Proces
 - obraz inštrukcií patriacich programu
 - vlastný pamäťový priestor
 - vlastné dekripty (handlers)
 - stav

Riadenie procesov

- Riadenie procesov
 - riadi ho plánovač v OS (scheduler)
 - umožňuje paralelizmus (multi-tasking ?)
 - prerušenia
 - stav
 - aktívny proces
 - spiaci proces
 - zombie proces



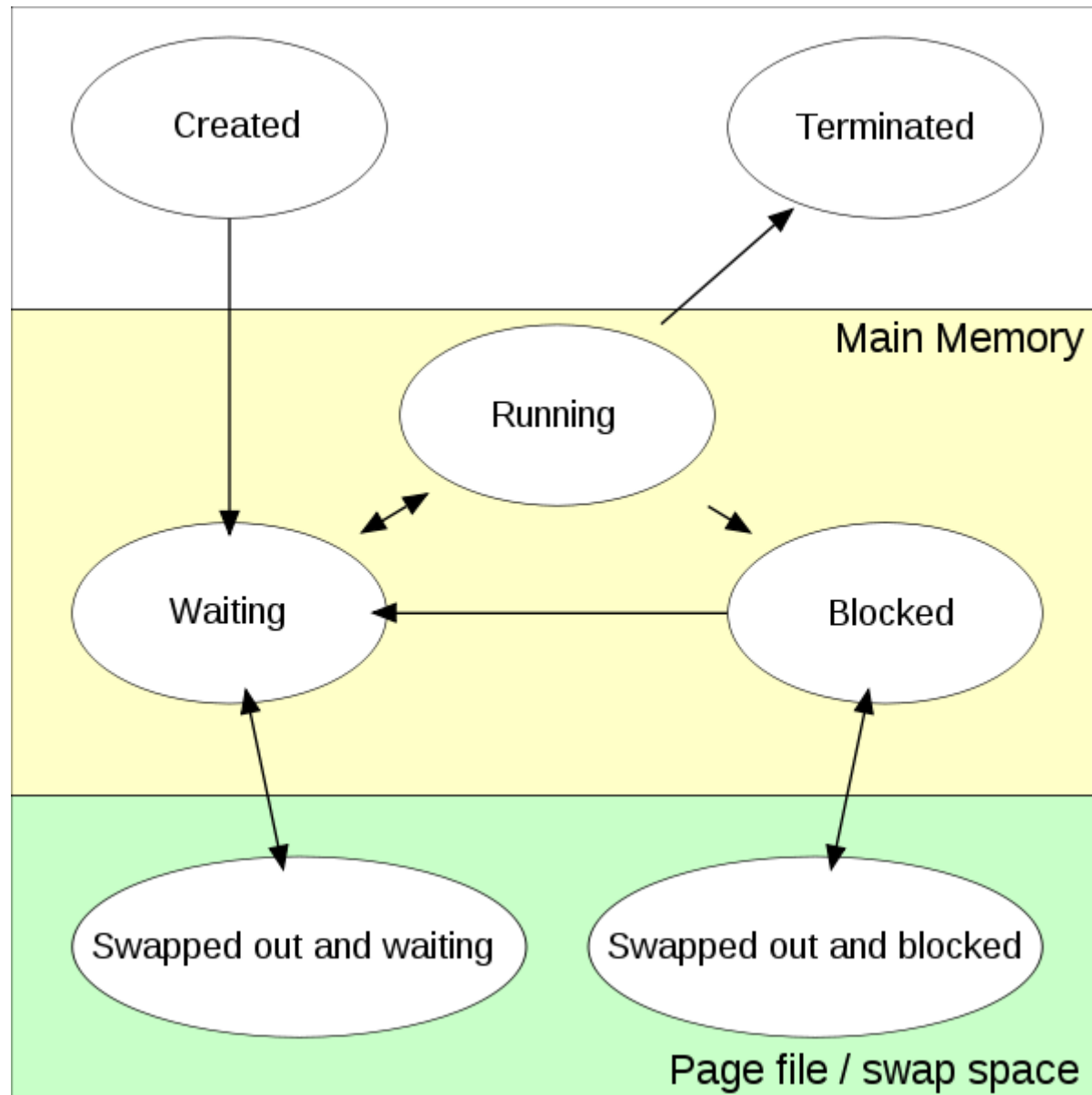
Notepad is not responding

If you restart or close the program, you might lose information.

→ Restart the program

→ Close the program

→ Wait for the program to respond

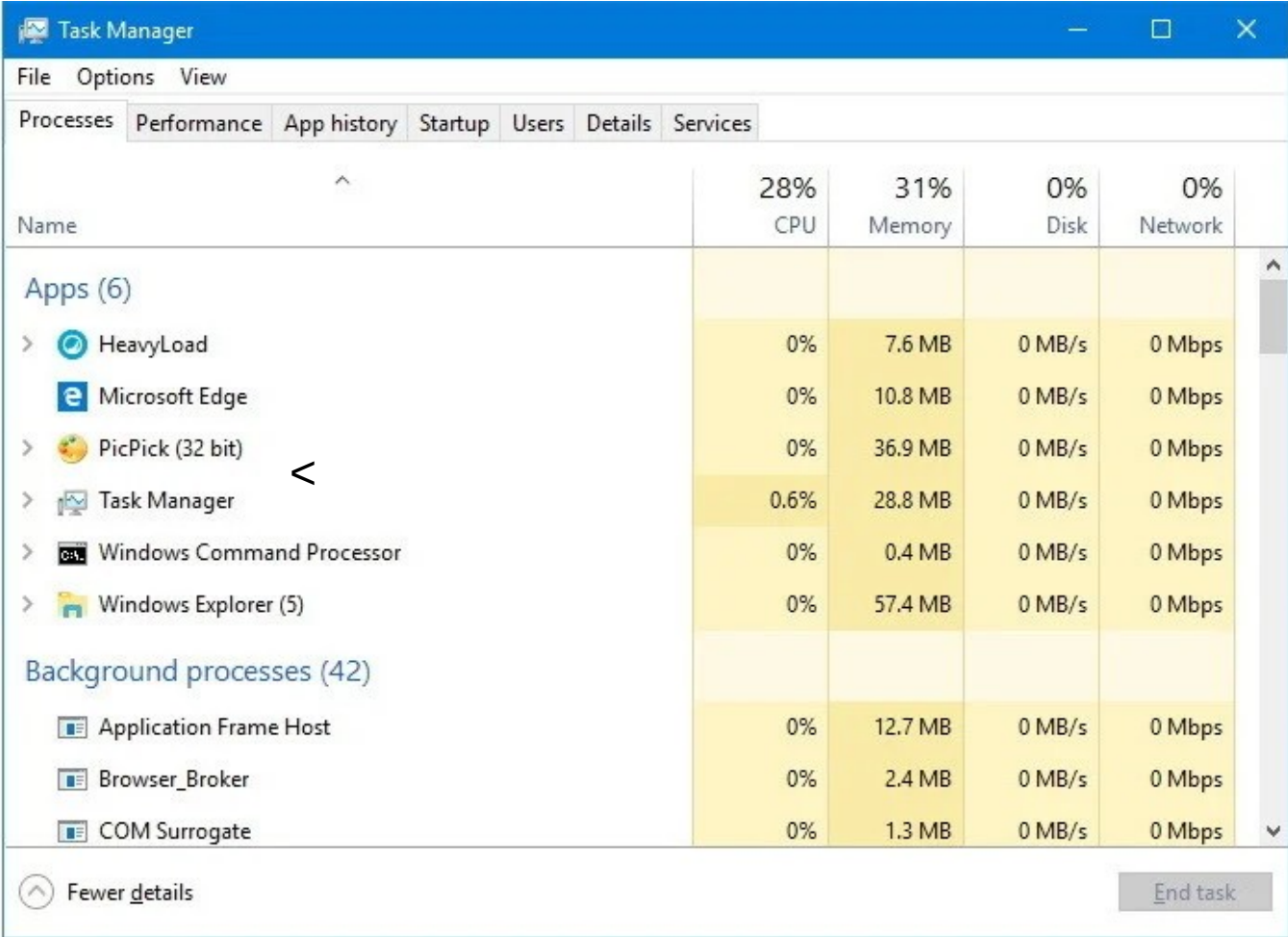
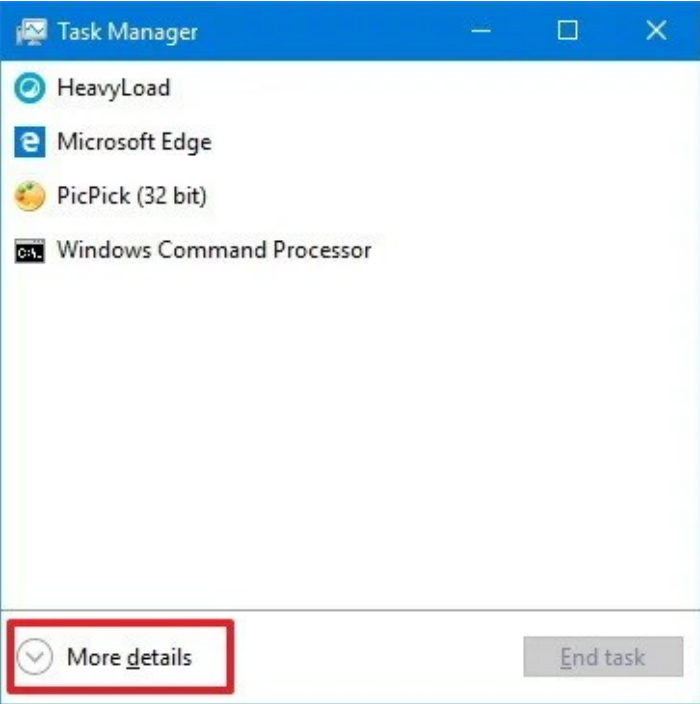


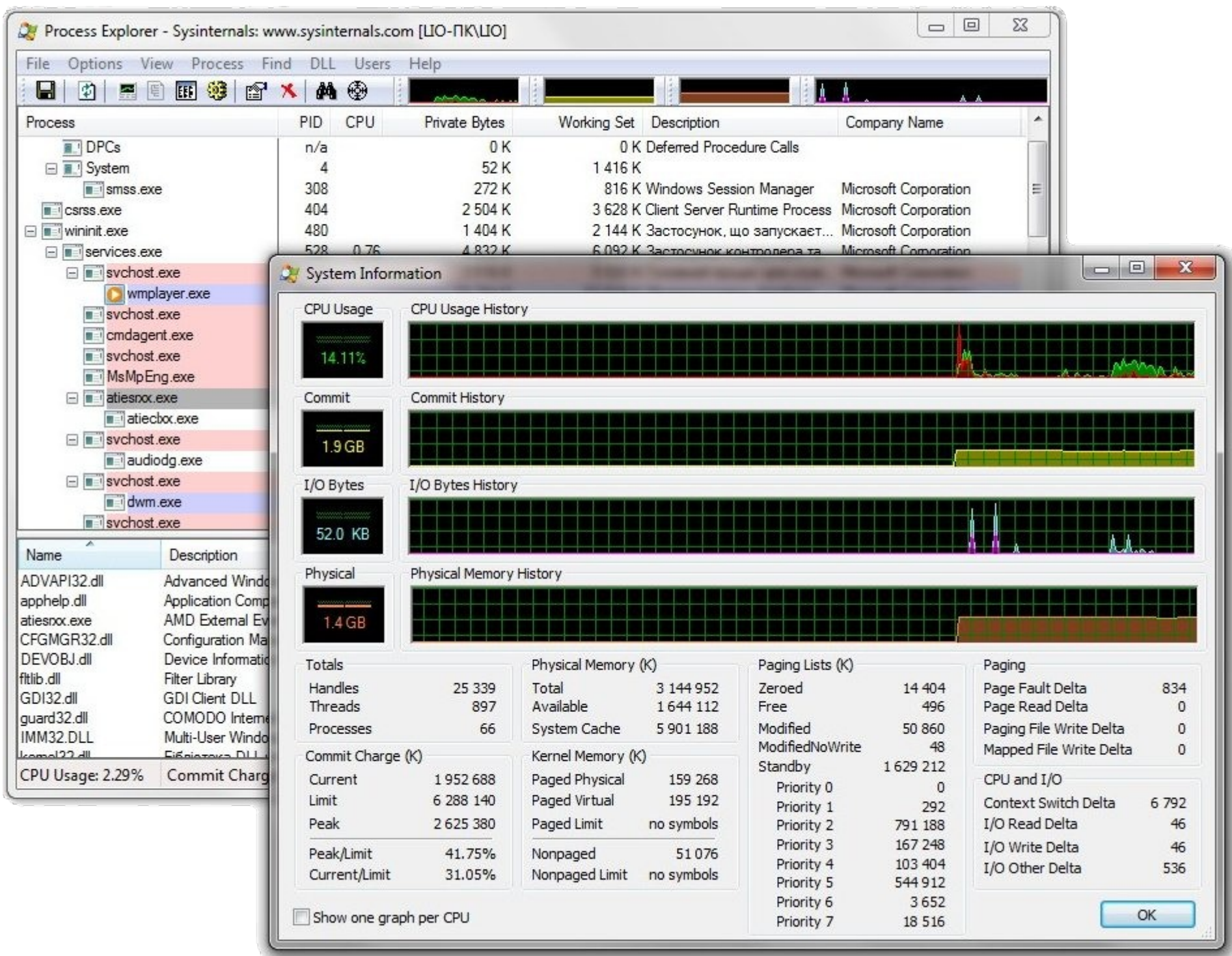
CPU[|||||] 2.0%]
Mem[|||||] 13/123MB]
Swp[0/109MB]

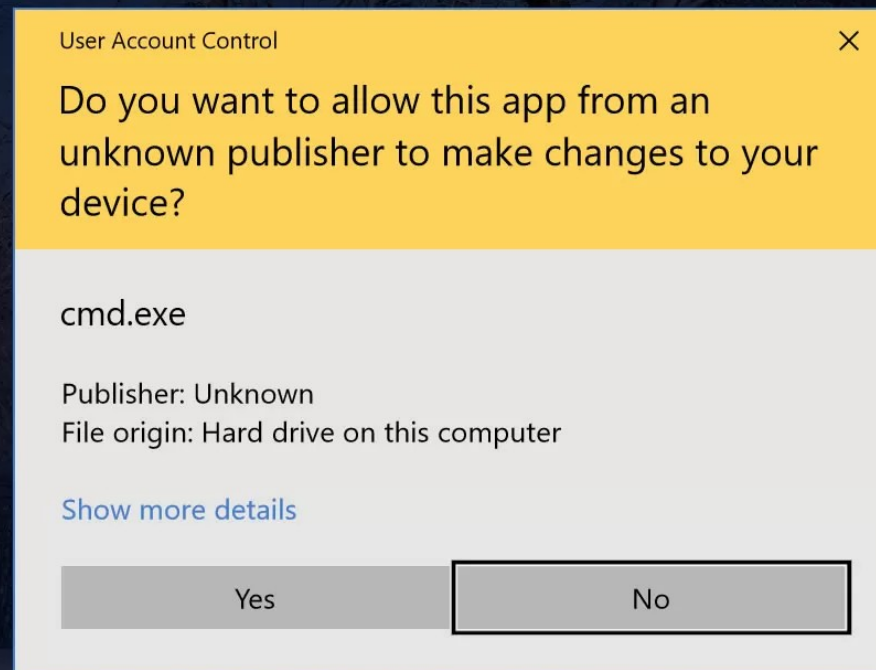
Tasks: 16 total, 1 running
Load average: 0.37 0.12 0.04
Uptime: 00:00:50

| PID | USER | PRI | NI | UIRT | RES | SHR | S | CPU% | MEM% | TIME+ | Command |
|------|--------|-----|----|------|------|------|---|------|------|---------|--------------------|
| 3692 | per | 15 | 0 | 2424 | 1204 | 980 | R | 2.0 | 1.0 | 0:00.24 | htop |
| 1 | root | 16 | 0 | 2952 | 1852 | 532 | S | 0.0 | 1.5 | 0:00.77 | /sbin/init |
| 2236 | root | 20 | -4 | 2316 | 728 | 472 | S | 0.0 | 0.6 | 0:01.06 | /sbin/udevd --daem |
| 3224 | dhcp | 18 | -2 | 2412 | 552 | 244 | S | 0.0 | 0.4 | 0:00.00 | dhclient3 -e IF_ME |
| 3488 | root | 18 | 0 | 1692 | 516 | 448 | S | 0.0 | 0.4 | 0:00.00 | /sbin/getty 38400 |
| 3491 | root | 18 | 0 | 1696 | 520 | 448 | S | 0.0 | 0.4 | 0:00.01 | /sbin/getty 38400 |
| 3497 | root | 18 | 0 | 1696 | 516 | 448 | S | 0.0 | 0.4 | 0:00.00 | /sbin/getty 38400 |
| 3500 | root | 18 | 0 | 1692 | 516 | 448 | S | 0.0 | 0.4 | 0:00.00 | /sbin/getty 38400 |
| 3501 | root | 16 | 0 | 2772 | 1196 | 936 | S | 0.0 | 0.9 | 0:00.04 | /bin/login -- |
| 3504 | root | 18 | 0 | 1696 | 516 | 448 | S | 0.0 | 0.4 | 0:00.00 | /sbin/getty 38400 |
| 3539 | syslog | 15 | 0 | 1916 | 704 | 564 | S | 0.0 | 0.6 | 0:00.12 | /sbin/syslogd -u s |
| 3561 | root | 18 | 0 | 1840 | 536 | 444 | S | 0.0 | 0.4 | 0:00.79 | /bin/dd bs 1 if /p |
| 3563 | klog | 18 | 0 | 2472 | 1376 | 408 | S | 0.0 | 1.1 | 0:00.37 | /sbin/klogd -P /va |
| 3590 | daemon | 25 | 0 | 1960 | 428 | 308 | S | 0.0 | 0.3 | 0:00.00 | /usr/sbin/atd |
| 3604 | root | 18 | 0 | 2336 | 792 | 632 | S | 0.0 | 0.6 | 0:00.00 | /usr/sbin/cron |
| 3645 | per | 15 | 0 | 5524 | 2924 | 1428 | S | 0.0 | 2.3 | 0:00.45 | -bash |

F1Help F2Setup F3SearchF4InvertF5Tree F6SortByF7Nice -F8Nice +F9Kill F10Quit







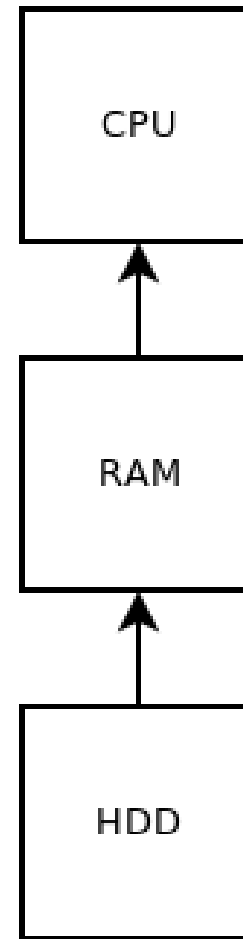
<https://www.techspot.com/guides/1718-run-as-administrator-explained/>

Vlákná

- Vlákno
 - nemá vlastnú pamäť, využíva spoločnú pamäť procesu
 - multi-threading
 - riadenie vlákien – synchronizácia, prístup k údajom

Pamäť

- Pamäť procesora
 - Registre
 - Pamäť inštrukcií
- Operačná pamäť
 - údaje OS
 - údaje programov
 - premenné programu, malloc a free...
- Disk
 - súborový systém, súbory
 - swap
 - open, close, ...



Stránkovanie pamäte

- Rozdelenie pamäte na stránky
- Zavádzanie stránok podľa potreby

Súborový systém

- Windows
 - FAT 16, FAT 32, NTFS, ReFS
 - swap ako súbor - pagefile
 - C:\Windows\system32\system.dll
- MacOS
 - HFS+, APFS
- Linux
 - ext4, Btrfs
 - swap ako samostatná partícia
 - /var/lib/firmware/usb_nova.fw
- Unix
 - UFS, ZFS

Zdroje

- Štefanovič, J.: Základy operačních systémů, STU
- Wikipedia:
http://en.wikipedia.org/wiki/Process_%28computing%29
- Dr. Mike Murphy: Page Tables,
<http://www.youtube.com/watch?feature=autoplay&NR=1&v=Vw1B-U0Frws>