# 📝 Notes on procfs

- **procfs** (Process File System) is a **virtual filesystem** mounted at `/proc` on Linux.
- It doesn't exist on disk — it's generated by the kernel at runtime.
- Provides an **interface to kernel data structures** and **information about processes**.
- Each process running has a directory `/proc/<PID>/` containing details about that process.
- Useful for **monitoring, debugging, and understanding system state**.

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# 📂 Structure of `/proc`

- **Global system info files**:
  - `/proc/cpuinfo` → CPU details
  - `/proc/meminfo` → Memory usage
  - `/proc/uptime` → System uptime
  - `/proc/loadavg` → System load averages
  - `/proc/version` → Kernel version
  - `/proc/filesystems` → Supported filesystems
- **Per-process directories**:
  - `/proc/<PID>/cmdline` → Command line that started the process
  - `/proc/<PID>/cwd` → Link to current working directory
  - `/proc/<PID>/exe` → Link to executable
  - `/proc/<PID>/status` → Process status, UID/GID, memory info
  - `/proc/<PID>/fd/` → Open file descriptors
  - `/proc/<PID>/maps` → Memory mappings of process

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# ⚡ Useful Commands to Explore procfs

## System-wide info

```
cat /proc/cpuinfo      # Show CPU details
cat /proc/meminfo      # Show memory details
cat /proc/uptime       # System uptime (seconds)
```

```
cat /proc/loadavg      # Load averages
cat /proc/version      # Kernel version
```

## Process info (replace `<PID>` with actual process ID)

```
ls /proc               # List all running process IDs
ls /proc/<PID>         # Show what's inside a process folder

cat /proc/<PID>/cmdline   # Show how process was started
cat /proc/<PID>/status    # Show status, memory usage
ls -l /proc/<PID>/cwd     # Show current working directory
ls -l /proc/<PID>/exe     # Show path to executable
ls -l /proc/<PID>/fd      # Show open file descriptors
```

## Live monitoring

```
watch -n 1 cat /proc/meminfo    # Watch memory usage update every 1s
watch -n 1 cat /proc/loadavg    # Watch system load
```

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## 🚀 Example: Inspect Your Shell

```
echo $$             # Show PID of current shell
ls /proc/$$         # Explore your shell process
cat /proc/$$/status # Details about your shell process
```