

Betriebssystemtechnik

Adressräume: Trennung, Zugriff, Schutz

POSIX Speicherverwaltung

Wolfgang Schröder-Preikschat / Volkmar Sieh

SS 2024



POSIX Speicherverwaltung
Strukturen
Funktionen

Schluss



```
1 struct inode {
2     ...
3     struct mm_reg *first;
4     struct mm_reg *last;
5     ...
6 };

1 struct file {
2     ...
3     struct inode *inode;
4     ...
5 };

1 struct thread_files {
2     ...
3     struct file *file[NFILES];
4     ...
5 };

1 struct mm_reg {
2     struct mm_reg *prev;
3     struct mm_reg *next;
4
5     struct mm_reg *proc_prev;
6     struct mm_reg *proc_next;
7
8     struct inode *inode;
9     off_t offset;
10    size_t size;
11    char *vaddr;
12    ...
13 };

15 struct thread_mm {
16     struct hw_mmu_ctxt mmu_ctxt;
17     ...
18     struct mm_reg *reg_first;
19     struct mm_reg *reg_last;
20     ...
21 };

1 struct thread {
2     struct thread *prev;
3     struct thread *next;
4     ...
5     struct thread_mm *mm;
6     struct thread_file *files;
7     ...
8 };
```



```
1 struct page {
2     struct page *free_prev;
3     struct page *free_next;
4     struct page *hash_prev;
5     struct page *hash_next;
6
7     int refcnt;
8     enum { CLEAN, DIRTY, ... } state;
9
10    struct inode *inode;
11    off_t offset;
12
13    ...
14 };

1 struct thread *first_thread;
2 struct thread *last_thread;
3
4 struct page page[NPAGES];
5 struct page *free_first;
6 struct page *free_last;
7 struct page *hash_first[1024];
8 struct page *hash_last[1024];
```

+ Page-Tabelle ;-)



■ File-I/O-Funktionen:

```
1 int open(const char *filename, int flags);
2 int close(int fd);
3
4 ssize_t read(int fd, void *buf, size_t len);
5 ssize_t write(int fd, const void *buf, size_t len);
6
7 int ftruncate(int fd, off_t len);
```

■ Memory-Management-Funktionen:

```
1 void *mmap(void *addr, size_t len, int prot, int flags, int fd, off_t offset);
2 int munmap(void *addr, size_t len);
3
4 int brk(void *addr);
5 void *sbrk(size_t inc);
6
7 pid_t fork();
8 void exit(int retval);
9
10 void mm_fault(void *addr, int prot); /* Page-Fault-Handler */
```



POSIX Speicherverwaltung
Strukturen
Funktionen

Schluss



Danke für die Mitarbeit! Danke für die gute Atmosphäre!
Viel Erfolg für das weitere Studium!

