
Header file q.h

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/* q.h - firstid, firstkey, isempty, lastkey, nonempty */
/* q structure declarations, constants, and inline procedures */
#ifndef NQENT
#define NQENT NPROC + NSEM + 4 /* for ready & sleep */
#endif

struct qent { /* one per process plus two per list */
    int qkey; /* key on which the queue is ordered */
    int qnext; /* pointer to next process or tail */
    int qprev; /* pointer to previous process or head */
};

extern struct qent q[]; /* array q */
extern int nextqueue;

/* inline list manipulation procedures */

#define isempty(list) (q[(list)].qnext >= NPROC)
#define nonempty(list) (q[(list)].qnext < NPROC)
#define firstkey(list) (q[q[(list)].qnext].qkey)
#define lastkey(tail) (q[q[(tail)].qprev].qkey)
#define firstid(list) (q[(list)].qnext)

#define EMPTY (-1) /* NULL pointer */

extern char *deg(int);
extern char *seeg(int);
```