

CSE 3320 OPERATING SYSTEMS
SPRING 2024

QUIZ 1

Score: _____ / 100



Soot Sprite Edition

Name: _____

Student ID: _____

“I certify that the following work is my work alone and I will follow the highest standards of integrity and uphold the spirit of the Honor Code”

Signature: _____

This is a closed book, closed notes quiz. There are helpful function signatures on the last page. You do not need to worry about #includes
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1. (100 points) Write the following

```
int getpinfo(struct pstat *)
```

and

```
int sys_getpinfo( void )
```

This routine should return 0 if successful, and -1 otherwise (if, for example, a bad or NULL pointer is passed into the kernel).

Extra Space If Needed

Reference

```
#define NPROC 64

struct pstat {
    int inuse[NPROC];           // whether this slot of the process table is in use (1 or 0)
    int tickets[NPROC];        // the number of tickets this process has
    int pid[NPROC];            // the PID of each process
};

struct proc {
    enum procstate state;      // Process state
    int pid;                   // Process ID
    int tickets;
};

struct proc proc[NPROC];
typedef uint64* pagetable_t;

void          getint(int, int*);
int           getstr(int, char*, int);
void          getaddr(int, uint64 *);
int           fetchstr(uint64, char*, int);
int           fetchaddr(uint64, uint64*);
void          argint(int, int*);
int           argstr(int, char*, int);
void          argaddr(int, uint64 *);
void          argptr(int, uint64 *);
int           popstr(uint64, char*, int);
int           popaddr(uint64, uint64*);
int           popstr(int, char*, int);
void          popaddr(int, uint64 *);
void          popptr(int, uint64 *);

uint64 *      walk(pagetable_t, uint64, int);
uint64        walkaddr(pagetable_t, uint64);
int           copyout(pagetable_t, uint64, char *, uint64);
int           copyin(pagetable_t, char *, uint64, uint64);
int           copyinstr(pagetable_t, char *, uint64, uint64);
int           copy_touser(int user_dst, uint64 dst, void *src, uint64 len);
int           copy_fromuser(void *dst, int user_src, uint64 src, uint64 len);
int           either_copyout(int user_dst, uint64 dst, void *src, uint64 len);
int           either_copyin(void *dst, int user_src, uint64 src, uint64 len);
int           copy_tokernel(int user_dst, uint64 dst, void *src, uint64 len);
int           copy_fromkernel(void *dst, int user_src, uint64 src, uint64 len);
int           kernel_copyin(int user_dst, uint64 dst, void *src, uint64 len);
int           kernel_copyout(void *dst, int user_src, uint64 src, uint64 len);
```