

Task 1 --> Syscall Tracing

syscall.c

```
syscall(void)
{
    int num;
    struct proc *curproc = myproc();

    num = curproc->tf->eax;
    if(num > 0 && num < NELEM(syscalls) && syscalls[num]) {
        curproc->tf->eax = syscalls[num]();
        #ifdef PRINT_SYSCALLS
            cprintf("%s -> %d \n", syscallnames[num], num);
        #endif
    } else {
        cprintf("%d %s: unknown sys call %d\n",
            curproc->pid, curproc->name, num);
        curproc->tf->eax = -1;
    }
}
```

4. Date System Call

makefile

```
CS333_PROJECT ?= 0
PRINT_SYSCALLS ?= 1
CS333_CFLAGS ?= -DPDX_XV6
ifeq ($(CS333_CFLAGS), -DPDX_XV6)
CS333_UPROGS += _halt _uptime
endif

ifeq ($(PRINT_SYSCALLS), 1)
CS333_CFLAGS += -DPRINT_SYSCALLS
endif

ifeq ($(CS333_PROJECT), 1)
CS333_CFLAGS += -DCS333_P1
CS333_UPROGS += _date
endif
```

user.h

```
// system calls
#ifdef CS333_P1
int date(struct rtcdate*);
#endif // CS333_P1
```

usys.S

```
SYSCALL(sbrk)
SYSCALL(sleep)
SYSCALL(uptime)
SYSCALL(halt)
SYSCALL(date)
```

syscall.h

```
#define SYS_date    SYS_halt+1
```

syscall.c

```
#ifdef CS333_P1
[SYS_date]    sys_date,
#endif // PDX_XV6
};
```

```
#ifdef CS333_P1
extern int sys_date(void);
#endif // CS333_P1
```

sysproc.c

```
int
sys_date ( void )
{
    struct rtcdate *d ;
    if (argptr ( 0 ,( void*)&d , sizeof ( struct rtcdate)) < 0)
        return -1;
}
```

```
    cmostime(d);  
    return 0;  
}
```

5. Process Information

proc.h

```
uint start_ticks;
```

proc.c

```
p->start_ticks = ticks;
```

```
void  
procdumpP1(struct proc *p, char *state_string)  
{  
    int elapsed_s;  
    int elapsed_ms;  
  
    elapsed_ms = ticks - p->start_ticks;  
    elapsed_s = elapsed_ms / 1000;  
    elapsed_ms = elapsed_ms % 1000;  
  
    char* nol = "";  
    if(elapsed_ms < 100 && elapsed_ms >= 10)  
        nol = "0";  
    if(elapsed_ms < 10)  
        nol = "00";  
  
    cprintf("%d\t%s\t%s%d.%s%d\t%s\t%d\t",  
p->pid, p->name, "    ", elapsed_s, nol, elapsed_ms, states[p->state], p->sz);  
    return;  
}  
#endif
```