Code Modification Report

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Prodi : **Ilmu Komputer 2019**

MAKEFILE

1. Line 3-4:

```
3 CS333_PROJECT ?= 1
4 PRINT_SYSCALLS ?= 0
```

Untuk Task 1, Line 4 diberi nilai 1:

```
4 PRINT_SYSCALLS ?= 1
```

2. Line 16:

```
16 CS333_UPROGS += _date
```

Task 1

- Syscall.c: Line 186-188

```
186     #ifdef PRINT_SYSCALLS
187       cprintf("%s -> %d \n", syscallnames[num], syscalls[num]());
188     #endif
```

Task 2

- User.h   : Line 28-30

```
28 #ifdef CS333_P1
29 int date(struct rtcdate*);
30 #endif // CS333_P1
```

- Usys.S   : Line 33

```
33 SYSCALL(date)
```

- Syscall.h   : Line 25

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

- Syscall.c   :
1. Line 109-111

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

2. Line 138-140

```
138 #ifdef CS333_P1
139 [SYS_date]    sys_date,
140 #endif //CS333_P1
```

3. Line 169-171

```
169 #ifdef CS333_P1
170   [SYS_date]    "date",
171 #endif //CS333_P1
```

- Sysproc.c : Line 101-109

```
101 int
102 sys_date(void)
103 {
104   struct rtcdate *d;
105   if(argptr (0, (void*)&d, sizeof(struct rtcdate)) < 0)
106     return -1;
107   cmostime (d);
108   return 0;
109 }
```

- Date.c : Line 38-42

```
38  /*r.hour %= 12;
39  if (r.hour == 0) r.hour = 12;*/
40
41  printf(1, "%s %s  %d %s%d:%s%d:%s%d UTC %d\n", days[day], months[r.month], r.day,
42    PAD(r.hour), r.hour, PAD(r.minute), r.minute, PAD(r.second), r.second, r.year, s);
```

Task 3

- Proc.h : Line 52

```
52    uint start_ticks;
```

- Proc.c :
1. Line 152

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

2. Line 567-581

```
567       int elapsed_s;
568       int elapsed_ms;
569
570       elapsed_ms = ticks - p->start_ticks;
571       elapsed_s = elapsed_ms / 1000;
572       elapsed_ms = elapsed_ms % 1000;
573
574       Char* zero = "";
575       if(elapsed_ms < 100 && elapsed_ms >= 10)
576         zero = "0";
577       if(elapsed_ms < 10)
578         zero = "00";
579
580       cprintf("%d\t%s\t%s%d.%s%d\t%s\t%d\t",
581         p->pid, p->name, "      ", elapsed_s, zero, elapsed_ms,
   states[p->state], p->sz);
```