

## **Part 2 - XV6**

- **Step 1 – Update process structure**

**File Name:** `proc.h`

**Code Added:**

```
int userflag; // User-defined per-process integer flag
```

- **Step 2 – Assign syscall numbers**

**File Name:** `syscall.h`

**Code Added:**

```
#define SYS_setflag 23  
#define SYS_getflag 24
```

- **Step 3 – Declare handlers and update syscall table**

**File Name:** `syscall.c`

**Code Added:**

```
extern int sys_setflag(void);  
extern int sys_getflag(void);
```

**And inside `syscalls[ ]` table:**

```
[SYS_setflag] sys_setflag,  
[SYS_getflag] sys_getflag,
```

- **Step 4 – Implement kernel handlers**

**File Name:** sysproc.c

**Code Added:**

```
int
sys_setflag(void)
{
    int flag;
    if(argint(0, &flag) < 0)
        return -1;
    myproc()->userflag = flag;
    return 0;
}

int
sys_getflag(void)
{
    return myproc()->userflag;
}
```

- **Step 5 – Update user prototypes**

**File Name:** user.h

**Code Added:**

```
int setflag(int);
int getflag(void);
```

- **Step 6 – Add syscall stubs**

**File Name:** usys.S

**Code Added:**

```
SYSCALL(setflag)
SYSCALL(getflag)
```

- **Step 7 – User Program Example**

**File Name:** testflags.c

**Code Added:**

```
#include "types.h"
#include "user.h"
#include "stat.h"

int main(void)
{
    int roll_flag1 = 1234;
    int roll_flag2 = 1700;

    printf(1, "Setting flag to %d\n", roll_flag1);
    setflag(roll_flag1);
    printf(1, "Flag retrieved: %d\n", getflag());

    printf(1, "Setting flag to %d\n", roll_flag2);
    setflag(roll_flag2);
    printf(1, "Flag retrieved: %d\n", getflag());

    exit();
}
```

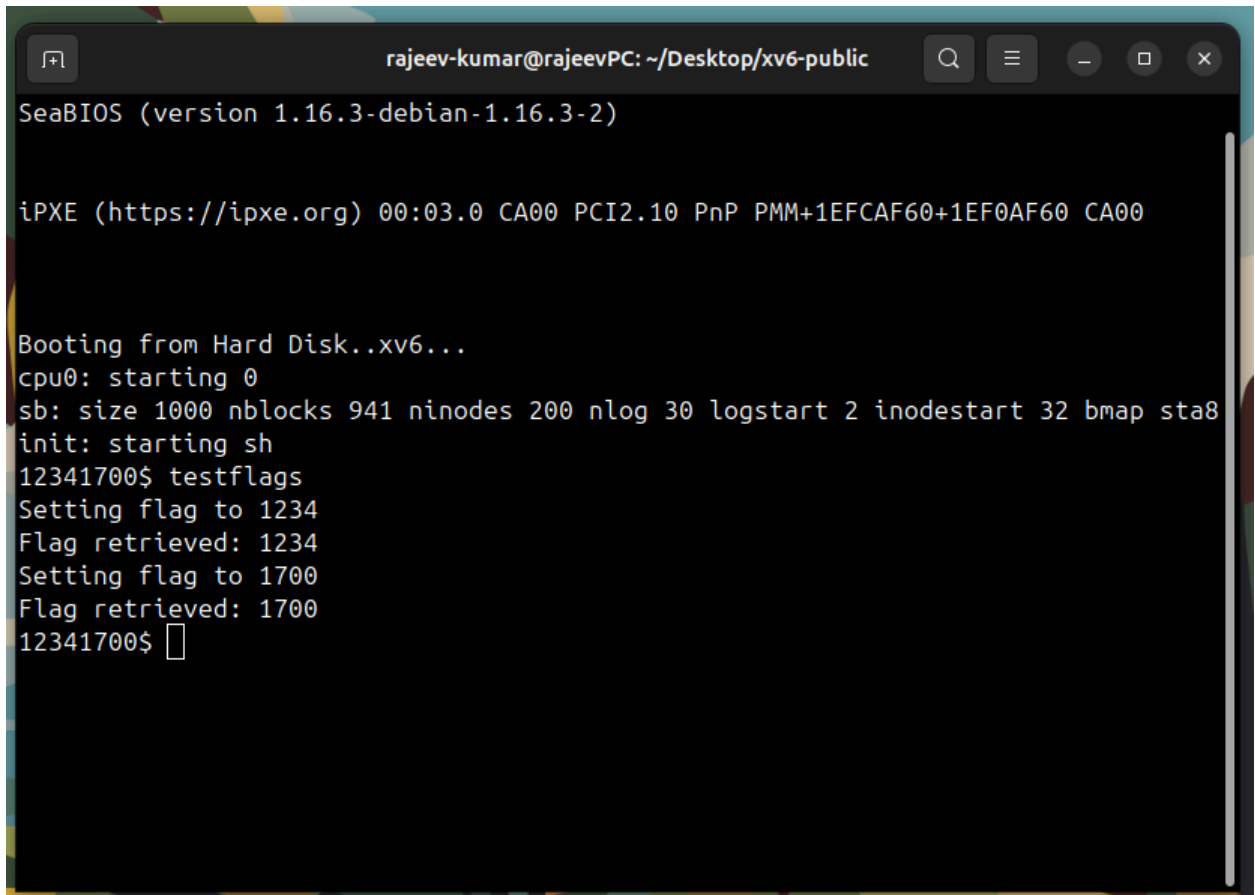
- **Step 8 – Add to Makefile**

**File Name:** Makefile

**Code Added in UPROGS:**

```
_testflags\
```

- Output :



The image shows a terminal window with a dark background and light-colored text. The window title bar at the top reads "rajeev-kumar@rajeevPC: ~/Desktop/xv6-public". The terminal output shows the SeaBIOS boot process, including the iPXE logo and various boot parameters. The output is as follows:

```
SeaBIOS (version 1.16.3-debian-1.16.3-2)

iPXE (https://ipxe.org) 00:03.0 CA00 PCI2.10 PnP PMM+1EFCAF60+1EF0AF60 CA00

Booting from Hard Disk..xv6...
cpu0: starting 0
sb: size 1000 nblocks 941 ninodes 200 nlog 30 logstart 2 inodestart 32 bmap sta8
init: starting sh
12341700$ testflags
Setting flag to 1234
Flag retrieved: 1234
Setting flag to 1700
Flag retrieved: 1700
12341700$
```