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Assignment 10

Process:-

```
#include <linux/module.h>
#include <linux/proc_fs.h>
#include <linux/seq_file.h>
```

```
static int hello_proc_show(struct seq_file *m, void *v)
{
    seq_printf(m, "Hello proc!\n");
    return 0;
}
```

```
static int hello_proc_open(struct inode *inode, struct file *file) {
    return single_open(file, hello_proc_show, NULL);
}
```

```
static const struct file_operations hello_proc_fops = {
    .owner = THIS_MODULE,
    .open = hello_proc_open,
    .read = seq_read,
    .llseek = seq_lseek,
    .release = single_release,
};
```

```
static int _init hello_proc_init(void)
{
    proc_create("hello_proc", 0, NULL,
    &hello_proc_fops);
    return 0;
}
```

```
static void _exit hello_proc_exit(void)
{
    remove_proc_entry("hello_proc", NULL);
}
```

```
MODULE_LICENSE("GPL");
module_init(hello_proc_init);
module_exit(hello_proc_exit);
```

MakeFile :-

```
ganesh@ganesh-desktop:~$ mkdir hello
ganesh@ganesh-desktop:~$ cd hello/
ganesh@ganesh-desktop:~$ gedit hello_proc.c
ganesh@ganesh-desktop:~$ gedit Makefile
ganesh@ganesh-desktop:~/hello$ make
make -C /lib/modules/3.13.0-32-generic/build M=/home/ganesh/hello modules
make[1]: Entering directory `/usr/src/linux-headers-3.13.0-32-generic'
CC [M] /home/ganesh/hello/hello_proc.o
Building modules, stage 2.
MODPOST 1 modules
CC /home/ganesh/hello/hello_proc.mod.o
LD [M] /home/ganesh/hello/hello_proc.ko
make[1]: Leaving directory `/usr/src/linux-headers-3.13.0-32-generic'
ganesh@ganesh-desktop:~/hello$ ls -l
total 44
-rw-rw-r-- 1 ganesh ganesh 783 Mar 16 07:48 hello_proc.c
-rw-rw-r-- 1 ganesh ganesh 783 Mar 16 07:48 hello_proc.c~
-rw-rw-r-- 1 ganesh ganesh 5424 Mar 16 08:00 hello_proc.ko
-rw-rw-r-- 1 ganesh ganesh 1089 Mar 16 08:00 hello_proc.mod.c
-rw-rw-r-- 1 ganesh ganesh 2960 Mar 16 08:00 hello_proc.mod.o
-rw-rw-r-- 1 ganesh ganesh 4632 Mar 16 08:00 hello_proc.o
-rwxrwxrwx 1 ganesh ganesh 158 Mar 16 08:00 Makefile
-rwxrwxrwx 1 ganesh ganesh 158 Mar 16 08:00 Makefile~
-rw-rw-r-- 1 ganesh ganesh 44 Mar 16 08:00 modules.order
-rw-rw-r-- 1 ganesh ganesh 0 Mar 16 08:00 Module.symvers
ganesh@ganesh -desktop:~/hello$ sudo insmod hello_proc.ko
[sudo] password for ganesh:
ganesh@ganesh-desktop:~/hello$ lsmod
Module                Size Used by
hello_proc            12550 0
rndis_wlan            50281 0
rndis_host            14503 1 rndis_wlan
cdc_ether             14351 1 rndis_host
usbnet                43913 3 rndis_host,rndis_wlan,cdc_ether
cfg80211              484040 1 rndis_wlan
cdc_acm               28803 0
usb_storage           62209 0
bnep                  19624 2
rfcomm                69160 0
bluetooth             391196 10 bnep,rfcomm
gpio_ich              13476 0
snd_hda_codec_realtek 61438 1
coretemp              13435 0
snd_hda_intel         52355 3
snd_hda_codec         192906 2 snd_hda_codec_realtek,snd_hda_intel
serio_raw             13462 0
snd_hwdep             13602 1 snd_hda_codec
```

```

snd_pcm          102099 2 snd_hda_codec,snd_hda_intel
snd_page_alloc   18710 2 snd_pcm,snd_hda_intel
snd_seq_midi      13324 0
snd_seq_midi_event 14899 1 snd_seq_midi
lpc_ich          21080 0
snd_rawmidi       30144 1 snd_seq_midi
snd_seq           61560 2 snd_seq_midi_event,snd_seq_midi
snd_seq_device    14497 3 snd_seq,snd_rawmidi,snd_seq_midi
snd_timer        29482 2 snd_pcm,snd_seq
snd               69238 16
i915              783805 3
mac_hid          13205 0
video            19476 1 i915
drm_kms_helper    53081 1 i915
drm               303102 4 i915,drm_kms_helper
soundcore         12680 1 snd
i2c_algo_bit     13413 1 i915
parport_pc        32701 0
ppdev            17671 0
lp               17759 0
parport          42348 3 lp,ppdev,parport_pc
psmouse          106678 0
r8169             67581 0
mii               13934 2 r8169,usbnet
floppy            69418 0

```

```

ganesh@ganesh-desktop:~/hello$ ls -l /proc

```

```

total 0

```

```

dr-xr-xr-x 9 root    root      0 Mar 16 07:40 1
dr-xr-xr-x 9 root    root      0 Mar 16 07:40 10
dr-xr-xr-x 9 root    root      0 Mar 16 08:02 1024
dr-xr-xr-x 9 root    root      0 Mar 16 07:40 1073
dr-xr-xr-x 9 root    root      0 Mar 16 07:40 11
dr-xr-xr-x 9 root    root      0 Mar 16 07:40 1121
dr-xr-xr-x 9 rtkit   rtkit    0 Mar 16 07:40 1142
dr-xr-xr-x 9 root    root      0 Mar 16 07:40 12
dr-xr-xr-x 9 root    root      0 Mar 16 07:40 13
dr-xr-xr-x 9 root    root      0 Mar 16 07:40 137
dr-xr-xr-x 9 root    root      0 Mar 16 07:40 14
dr-xr-xr-x 9 ganesh  ganesh    0 Mar 16 07:41 1424
dr-xr-xr-x 9 ganesh  ganesh    0 Mar 16 07:40 1433
dr-xr-xr-x 9 root    root      0 Mar 16 07:40 145
dr-xr-xr-x 9 root    root      0 Mar 16 07:40 146
dr-xr-xr-x 9 root    root      0 Mar 16 07:40 15
dr-xr-xr-x 9 ganesh  ganesh    0 Mar 16 07:40 1501
dr-xr-xr-x 9 ganesh  ganesh    0 Mar 16 08:02 1506
dr-xr-xr-x 9 ganesh  ganesh    0 Mar 16 07:40 1511
dr-xr-xr-x 9 ganesh  ganesh    0 Mar 16 07:40 1517
dr-xr-xr-x 9 ganesh  ganesh    0 Mar 16 08:02 1528
dr-xr-xr-x 9 ganesh  ganesh    0 Mar 16 08:02 1529

```

dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 08:02	1531
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:40	1533
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:40	1549
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:40	1558
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41	1559
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:40	1561
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:40	1564
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:40	1570
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:40	1572
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:40	1576
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:40	1579
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:40	1589
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:40	1590
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:40	1593
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	16
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41	1618
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41	1622
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41	1643
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41	1646
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41	1648
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41	1653
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41	1654
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41	1656
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41	1659
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41	1665
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41	1668
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41	1699
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	17
dr-xr-xr-x	9	colord	colord	0 Mar 16 07:41	1719
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41	1725
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41	1762
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41	1766
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41	1768
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41	1783
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41	1784
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41	1787
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41	1789
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41	1799
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	18
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41	1838
dr-xr-xr-x	9	root	root	0 Mar 16 07:41	1854
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41	1874
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41	1884
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41	1889
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41	1893
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	19
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41	1915
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41	1927
dr-xr-xr-x	9	root	root	0 Mar 16 07:41	1967

dr-xr-xr-x	9	root	root	0 Mar 16 08:02 1984
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41 1998
dr-xr-xr-x	9	root	root	0 Mar 16 07:40 2
dr-xr-xr-x	9	root	root	0 Mar 16 07:40 20
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41 2007
dr-xr-xr-x	9	nobody	dip	0 Mar 16 07:41 2021
dr-xr-xr-x	9	root	root	0 Mar 16 07:40 21
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41 2165
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41 2171
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41 2190
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41 2199
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:41 2205
dr-xr-xr-x	9	root	root	0 Mar 16 07:40 23
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:42 2340
dr-xr-xr-x	9	root	root	0 Mar 16 07:40 24
dr-xr-xr-x	9	root	root	0 Mar 16 07:40 25
dr-xr-xr-x	9	root	root	0 Mar 16 07:42 2529
dr-xr-xr-x	9	root	root	0 Mar 16 07:40 26
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:43 2646
dr-xr-xr-x	9	root	root	0 Mar 16 07:40 27
dr-xr-xr-x	9	root	root	0 Mar 16 07:40 28
dr-xr-xr-x	9	root	root	0 Mar 16 07:40 280
dr-xr-xr-x	9	root	root	0 Mar 16 07:40 287
dr-xr-xr-x	9	root	root	0 Mar 16 07:40 29
dr-xr-xr-x	9	root	root	0 Mar 16 08:02 2992
dr-xr-xr-x	9	root	root	0 Mar 16 07:40 3
dr-xr-xr-x	9	root	root	0 Mar 16 07:40 30
dr-xr-xr-x	9	root	root	0 Mar 16 08:02 3020
dr-xr-xr-x	9	root	root	0 Mar 16 08:02 3021
dr-xr-xr-x	9	root	root	0 Mar 16 08:02 3034
dr-xr-xr-x	9	root	root	0 Mar 16 08:02 3066
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 07:45 3075
dr-xr-xr-x	9	root	root	0 Mar 16 07:40 31
dr-xr-xr-x	9	root	root	0 Mar 16 07:40 32
dr-xr-xr-x	9	root	root	0 Mar 16 07:40 33
dr-xr-xr-x	9	root	root	0 Mar 16 07:40 34
dr-xr-xr-x	9	root	root	0 Mar 16 07:40 35
dr-xr-xr-x	9	root	root	0 Mar 16 07:40 36
dr-xr-xr-x	9	root	root	0 Mar 16 07:40 38
dr-xr-xr-x	9	root	root	0 Mar 16 07:40 388
dr-xr-xr-x	9	root	root	0 Mar 16 07:40 39
dr-xr-xr-x	9	root	root	0 Mar 16 08:02 3908
dr-xr-xr-x	9	root	root	0 Mar 16 07:40 40
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 08:00 4098
dr-xr-xr-x	9	root	root	0 Mar 16 07:40 41
dr-xr-xr-x	9	ganesh	utmp	0 Mar 16 08:00 4105
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 08:00 4106
dr-xr-xr-x	9	root	root	0 Mar 16 07:40 42
dr-xr-xr-x	9	root	root	0 Mar 16 07:40 43

dr-xr-xr-x	9	root	root	0 Mar 16 07:40	439
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 08:01	4394
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	44
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 08:01	4401
dr-xr-xr-x	9	root	root	0 Mar 16 08:02	4409
dr-xr-xr-x	9	ganesh	ganesh	0 Mar 16 08:02	4426
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	5
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	500
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	56
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	58
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	581
dr-xr-xr-x	9	messagebus	messagebus	0 Mar 16 07:40	583
dr-xr-xr-x	9	syslog	syslog	0 Mar 16 07:40	586
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	59
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	606
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	607
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	61
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	62
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	624
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	642
dr-xr-xr-x	9	avahi	avahi	0 Mar 16 07:40	645
dr-xr-xr-x	9	avahi	avahi	0 Mar 16 07:40	650
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	655
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	661
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	7
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	8
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	816
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	820
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	826
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	827
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	830
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	85
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	86
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	87
dr-xr-xr-x	9	kernoops	adm	0 Mar 16 07:40	873
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	88
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	883
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	9
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	908
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	909
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	920
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	960
dr-xr-xr-x	9	root	root	0 Mar 16 07:40	968
dr-xr-xr-x	9	root	root	0 Mar 16 08:02	990
dr-xr-xr-x	9	whoopsie	whoopsie	0 Mar 16 07:40	998
dr-xr-xr-x	3	root	root	0 Mar 16 08:02	acpi
dr-xr-xr-x	4	root	root	0 Mar 16 08:02	asound
-r--r--r--	1	root	root	0 Mar 16 08:02	buddyinfo
dr-xr-xr-x	4	root	root	0 Mar 16 08:02	bus

```

-r--r--r-- 1 root    root          0 Mar 16 08:02 cgroups
-r--r--r-- 1 root    root          0 Mar 16 08:02 cmdline
-r--r--r-- 1 root    root          0 Mar 16 08:02 consoles
-r--r--r-- 1 root    root          0 Mar 16 08:02 cpuinfo
-r--r--r-- 1 root    root          0 Mar 16 08:02 crypto
-r--r--r-- 1 root    root          0 Mar 16 08:02 devices
-r--r--r-- 1 root    root          0 Mar 16 08:02 diskstats
-r--r--r-- 1 root    root          0 Mar 16 08:02 dma
dr-xr-xr-x 2 root    root          0 Mar 16 08:02 driver
-r--r--r-- 1 root    root          0 Mar 16 08:02 execdomains
-r--r--r-- 1 root    root          0 Mar 16 08:02 fb
-r--r--r-- 1 root    root          0 Mar 16 08:02 filesystems
dr-xr-xr-x 5 root    root          0 Mar 16 08:02 fs
-r--r--r-- 1 root    root          0 Mar 16 08:02 hello_proc
-r--r--r-- 1 root    root          0 Mar 16 08:02 interrupts
-r--r--r-- 1 root    root          0 Mar 16 08:02 iomem
-r--r--r-- 1 root    root          0 Mar 16 08:02 ioports
dr-xr-xr-x 2 root    root          0 Mar 16 08:02 ipmi
dr-xr-xr-x 28 root    root          0 Mar 16 08:02 irq
-r--r--r-- 1 root    root          0 Mar 16 08:02 kallsyms
ganesh@ganesh-desktop:~/hello$ cat /proc/hello_proc
Hello proc!
ganesh@ganesh-desktop:~/hello$

```