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<b>Course:</b>	<b>Operating System (BSSE)</b>
<b>Section:</b>	<b>5-2</b>

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## LAB 06

### Task 01:

Step 1:

```
sufyanahmed@55766: ~/Downloads/lab06
sufyanahmed@55766:~/Downloads/lab06$ nano lab06_task01.c
sufyanahmed@55766:~/Downloads/lab06$
```

Step 2:

```
sufyanahmed@55766: ~/Downloads/lab06
GNU nano 6.2 lab06_task01.c *
#include <stdio.h>
#include <stdlib.h>

int main(void) {
    int status;

    status = system("mkdir -p os/lab7");
    if (status == -1) {
        perror("system(mkdir)");
        return 1;
    }

    status = system("date > os/lab7/timestamp");
    if (status == -1) {
        perror("system(date)");
        return 1;
    }

    status = system("cp -f os/lab7/timestamp os/lab7/datetime");
    if (status == -1) {
        perror("system(cp)");
        return 1;
    }

    status = system("chmod 644 os/lab7/timestamp os/lab7/datetime");
    if (status == -1) {
        perror("system(chmod)");
        return 1;
    }

    printf("Done: os/lab7 created, timestamp written and copied to datetime.\n");
    return 0;
}
```

Step 3:

```
sufyanahmed@55766: ~/Downloads/lab06
sufyanahmed@55766:~/Downloads/lab06$ gcc -o lab06_task01 lab06_task01.c
sufyanahmed@55766:~/Downloads/lab06$ ls
first lab06_task01 lab06_task01.c lab06.txt
sufyanahmed@55766:~/Downloads/lab06$
```

Step 4:

```
sufyanahmed@55766: ~/Downloads/lab06
sufyanahmed@55766:~/Downloads/lab06$ ./lab06_task01
Done: os/lab7 created, timestamp written and copied to datetime.
sufyanahmed@55766:~/Downloads/lab06$
```

Step 5:

```
sufyanahmed@55766: ~/Downloads/lab06

sufyanahmed@55766:~/Downloads/lab06$ ./lab06_task01
Done: os/lab7 created, timestamp written and copied to datetime.
sufyanahmed@55766:~/Downloads/lab06$ ls -l os/lab7
total 8
-rw-r--r-- 1 sufyanahmed sufyanahmed 32 Sep 30 00:47 datetime
-rw-r--r-- 1 sufyanahmed sufyanahmed 32 Sep 30 00:47 timestamp
sufyanahmed@55766:~/Downloads/lab06$ cat os/lab7/timestamp
Tue Sep 30 12:47:38 AM PDT 2025
sufyanahmed@55766:~/Downloads/lab06$
```

Step 6:

```
sufyanahmed@55766: ~/Downloads/lab06

sufyanahmed@55766:~/Downloads/lab06$ ./lab06_task01
Done: os/lab7 created, timestamp written and copied to datetime.
sufyanahmed@55766:~/Downloads/lab06$ ls -l os/lab7
total 8
-rw-r--r-- 1 sufyanahmed sufyanahmed 32 Sep 30 00:47 datetime
-rw-r--r-- 1 sufyanahmed sufyanahmed 32 Sep 30 00:47 timestamp
sufyanahmed@55766:~/Downloads/lab06$ cat os/lab7/timestamp
Tue Sep 30 12:47:38 AM PDT 2025
sufyanahmed@55766:~/Downloads/lab06$ cat os/lab7/datetime
Tue Sep 30 12:47:38 AM PDT 2025
sufyanahmed@55766:~/Downloads/lab06$
```

## Task 02:

Step 1:

```
sufyanahmed@55766: ~/Downloads/lab06

sufyanahmed@55766:~/Downloads/lab06$ cat > color_examples.sh <<'EOF'
#!/bin/bash
clear
echo -e "\033[1m Hello World"      # bold
echo -e "\033[5m Blink"           # blink (may not work in all terminals)
echo -e "\033[0m Hello World"     # back to normal
echo -e "\033[31m Hello World"    # red
echo -e "\033[32m Hello World"    # green
echo -e "\033[33m Hello World"    # yellow
echo -e "\033[34m Hello World"    # blue
echo -e "\033[35m Hello World"    # magenta
echo -e "\033[36m Hello World"    # cyan
echo -e -n "\033[0m "             # reset (no newline)
echo -e "\033[41m Hello World"    # red background
echo -e "\033[42m Hello World"    # green background
echo -e "\033[43m Hello World"    # yellow background
echo -e "\033[0m Hello World"    # back to normal
EOF

chmod +x color_examples.sh
./color_examples.sh
```

Step 2:

```
sufyanahmed@55766: ~/Downloads/lab06
Hello World
Blink
Hello World
Hello World
Hello World
Hello World
Hello World
Hello World
Hello World
Hello World
Hello World
Hello World
Hello World
sufyanahmed@55766:~/Downloads/lab06$
```

## Task 03:

Step 1:

```
sufyanahmed@55766:~/Downloads/lab06$ ls /lib/modules
6.8.0-40-generic
sufyanahmed@55766:~/Downloads/lab06$ uname -r
6.8.0-40-generic
sufyanahmed@55766:~/Downloads/lab06$
```

## Task 04:

Step 1:

```
sufyanahmed@55766:~/Downloads/lab06$ uname -r
6.8.0-40-generic
sufyanahmed@55766:~/Downloads/lab06$ uname
Linux
sufyanahmed@55766:~/Downloads/lab06$ uname -n
55766
sufyanahmed@55766:~/Downloads/lab06$ uname -r
6.8.0-40-generic
sufyanahmed@55766:~/Downloads/lab06$ uname -v
#40~22.04.3-Ubuntu SMP PREEMPT_DYNAMIC Tue Jul 30 17:30:19 UTC 2
sufyanahmed@55766:~/Downloads/lab06$ uname -m
x86_64
sufyanahmed@55766:~/Downloads/lab06$ uname -p
x86_64
sufyanahmed@55766:~/Downloads/lab06$ uname -i
x86_64
sufyanahmed@55766:~/Downloads/lab06$ uname -o
GNU/Linux
sufyanahmed@55766:~/Downloads/lab06$ uname -a
Linux 55766 6.8.0-40-generic #40~22.04.3-Ubuntu SMP PREEMPT_DYNAMIC Tue Jul 30 17:30:19 UTC 2 x86_64 x86_64 GNU/Linux
sufyanahmed@55766:~/Downloads/lab06$
```

## Task 05:

Step 1:

```
sufyanahmed@55766: ~/Downloads/lab06
sufyanahmed@55766:~/Downloads/lab06$ cat > labsort6 <<'EOF'
End of file
6 apples
file to be sorted
apple on the table
25 years old
File To be Sorted
EOF
sufyanahmed@55766:~/Downloads/lab06$
```

Step 2:

```
sufyanahmed@55766:~/Downloads/lab06$ sort labsort6
25 years old
6 apples
apple on the table
End of file
file to be sorted
File To be Sorted
sufyanahmed@55766:~/Downloads/lab06$ sort -r labsort6
File To be Sorted
file to be sorted
End of file
apple on the table
6 apples
25 years old
sufyanahmed@55766:~/Downloads/lab06$ sort -n labsort6
apple on the table
End of file
file to be sorted
File To be Sorted
6 apples
25 years old
sufyanahmed@55766:~/Downloads/lab06$ sort -f labsort6
25 years old
6 apples
apple on the table
End of file
file to be sorted
File To be Sorted
sufyanahmed@55766:~/Downloads/lab06$ sort -k1,1 labsort6
25 years old
6 apples
apple on the table
End of file
file to be sorted
File To be Sorted
sufyanahmed@55766:~/Downloads/lab06$
```

Step 3:

```
sufyanahmed@55766:~/Downloads/lab06$ ls
first lab06_task01 lab06_task01.c lab06.txt labsort6 os output_sort_labsort6.txt
sufyanahmed@55766:~/Downloads/lab06$ cat output_sort_labsort6.txt
25 years old
6 apples
apple on the table
End of file
file to be sorted
File To be Sorted
sufyanahmed@55766:~/Downloads/lab06$
```

## Task 06:

Step 1:

```
sufyanahmed@55766: ~/Downloads/lab06
sufyanahmed@55766:~/Downloads/lab06$ cat > two_cols.txt <<'EOF'
12 Operation payback
6 Network security
14 Hacking is fun
7 Tiger lives in jungle
13 Pakistan will win today
EOF
sufyanahmed@55766:~/Downloads/lab06$
```

Step 2:

```
sufyanahmed@55766: ~/Downloads/lab06

sufyanahmed@55766:~/Downloads/lab06$ cat > two_cols.txt <<'EOF'
12 Operation payback
6 Network security
14 Hacking is fun
7 Tiger lives in jungle
13 Pakistan will win today
EOF
sufyanahmed@55766:~/Downloads/lab06$ sort -n -k1,1 two_cols.txt
sort -n -r -k1,1 two_cols.txt
sort -k2,2 two_cols.txt
sort -f -k2,2 two_cols.txt
sort -k3,3 two_cols.txt
6 Network security
7 Tiger lives in jungle
12 Operation payback
13 Pakistan will win today
14 Hacking is fun
14 Hacking is fun
13 Pakistan will win today
12 Operation payback
7 Tiger lives in jungle
6 Network security
14 Hacking is fun
6 Network security
12 Operation payback
13 Pakistan will win today
7 Tiger lives in jungle
14 Hacking is fun
6 Network security
12 Operation payback
13 Pakistan will win today
7 Tiger lives in jungle
14 Hacking is fun
7 Tiger lives in jungle
12 Operation payback
6 Network security
13 Pakistan will win today
sufyanahmed@55766:~/Downloads/lab06$
```

Step 3:

```
sufyanahmed@55766: ~/Downloads/lab06

sufyanahmed@55766:~/Downloads/lab06$ sort -n -k1,1 two_cols.txt > output_two_cols_num.txt
sort -k2,2 two_cols.txt > output_two_cols_col2.txt
sufyanahmed@55766:~/Downloads/lab06$ cat output_two_cols_num.txt
6 Network security
7 Tiger lives in jungle
12 Operation payback
13 Pakistan will win today
14 Hacking is fun
sufyanahmed@55766:~/Downloads/lab06$ cat output_two_cols_col2.txt
14 Hacking is fun
6 Network security
12 Operation payback
13 Pakistan will win today
7 Tiger lives in jungle
sufyanahmed@55766:~/Downloads/lab06$
```

## Task 07:

Step 1:

```
sufyanahmed@55766: ~/Downloads/lab06

sufyanahmed@55766:~/Downloads/lab06$ echo "Hello from file" > filename
```

Step 2:

```
sufyanahmed@55766: ~/Downloads/lab06

sufyanahmed@55766:~/Downloads/lab06$ cat filename > new
sufyanahmed@55766:~/Downloads/lab06$ cat new
Hello from file
```

Step 3:

```
sufyanahmed@55766: ~/Downloads/lab06

sufyanahmed@55766:~/Downloads/lab06$ date > new
sufyanahmed@55766:~/Downloads/lab06$ cat new
Tue Sep 30 01:07:21 AM PDT 2025
```

Step 4:

```
sufyanahmed@55766: ~/Downloads/lab06

sufyanahmed@55766:~/Downloads/lab06$ ls | sort -r
two_cols.txt
output_two_cols_num.txt
output_two_cols_col2.txt
output_sort_labsort6.txt
os
new
lab_uname_v.txt
lab_uname_r.txt
lab_uname_p.txt
lab_uname_o.txt
lab_uname_n.txt
lab_uname_m.txt
lab_uname_i.txt
lab_uname_a.txt
labsort6
lab_output_uname_r.txt
lab_output_lib_modules.txt
lab06.txt
lab06_task01.c
lab06_task01
first
filename
color_examples.sh
```

Step 5:



```
sufyanahmed@55766:~/Downloads/lab06$ ls | sort -r >> new
sufyanahmed@55766:~/Downloads/lab06$ cat new
Tue Sep 30 01:07:21 AM PDT 2025
two_cols.txt
output_two_cols_num.txt
output_two_cols_col2.txt
output_sort_labsort6.txt
os
new
lab_uname_v.txt
lab_uname_r.txt
lab_uname_p.txt
lab_uname_o.txt
lab_uname_n.txt
lab_uname_m.txt
lab_uname_i.txt
lab_uname_a.txt
labsort6
lab_output_uname_r.txt
lab_output_lib_modules.txt
lab06.txt
lab06_task01.c
lab06_task01
first
filename
color_examples.sh
```