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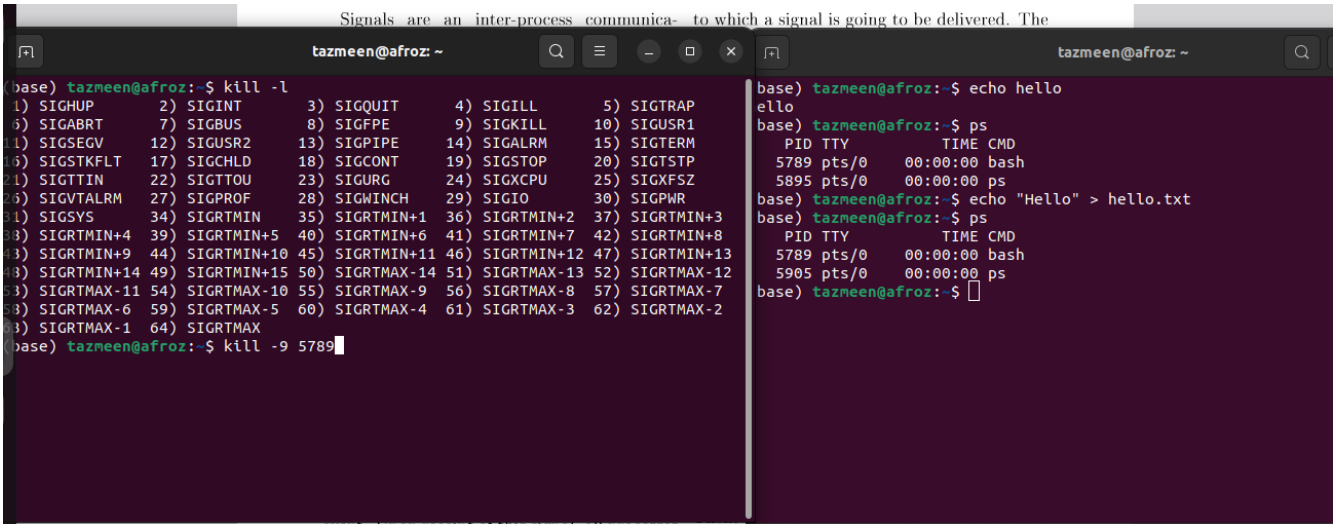
Section : BAI-5A

LAB 10

kill -s process id
The list of signals for -s argument can be seen from the following:

```
(base) tazmeen@afroz:~$ kill -l
 1) SIGHUP       2) SIGINT       3) SIGQUIT      4) SIGILL       5) SIGTRAP
 6) SIGABRT      7) SIGBUS       8) SIGFPE       9) SIGKILL     10) SIGUSR1
11) SIGSEGV     12) SIGUSR2     13) SIGPIPE     14) SIGALRM     15) SIGTERM
16) SIGSTKFLT   17) SIGCHLD     18) SIGCONT     19) SIGSTOP     20) SIGTSTP
21) SIGTTIN     22) SIGTTOU     23) SIGURG      24) SIGXCPU     25) SIGXFSZ
26) SIGVTALRM   27) SIGPROF     28) SIGWINCH    29) SIGIO       30) SIGPWR
31) SIGSYS      34) SIGRTMIN    35) SIGRTMIN+1  36) SIGRTMIN+2  37) SIGRTMIN+3
38) SIGRTMIN+4  39) SIGRTMIN+5  40) SIGRTMIN+6  41) SIGRTMIN+7  42) SIGRTMIN+8
43) SIGRTMIN+9  44) SIGRTMIN+10 45) SIGRTMIN+11 46) SIGRTMIN+12 47) SIGRTMIN+13
48) SIGRTMIN+14 49) SIGRTMIN+15 50) SIGRTMAX-14 51) SIGRTMAX-13 52) SIGRTMAX-12
53) SIGRTMAX-11 54) SIGRTMAX-10 55) SIGRTMAX-9  56) SIGRTMAX-8  57) SIGRTMAX-7
58) SIGRTMAX-6  59) SIGRTMAX-5  60) SIGRTMAX-4  61) SIGRTMAX-3  62) SIGRTMAX-2
63) SIGRTMAX-1  64) SIGRTMAX
(base) tazmeen@afroz:~$
```

kill -9 process id



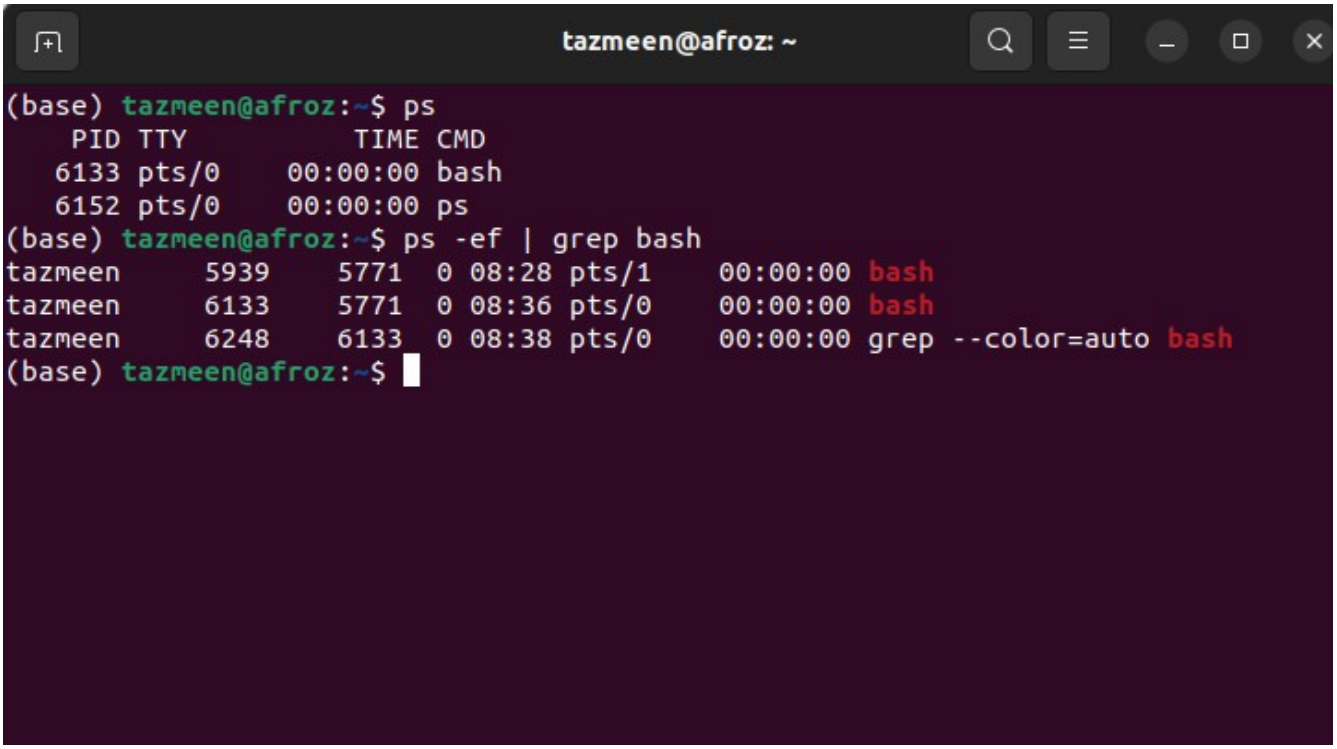
the second terminal is closed after executing this command because 9 is SIGKILL and it kill the process.

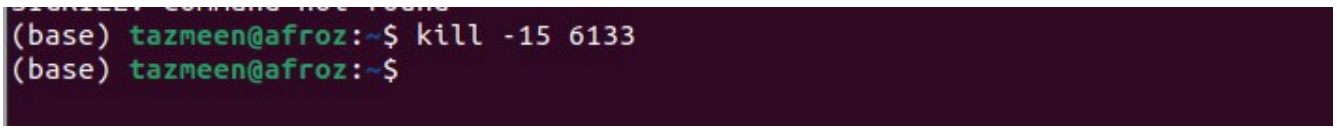
5.1.1.1 Exercise

SIGTERM	(signal 15) is a request to the program to terminate. If the program has a signal handler for SIGTERM that does not actually terminate the application, this kill may have no effect. This is the default signal sent by kill.

The integer representation for the SIGTERM signal is 15

current process running id 6133





```
(base) tazmeen@afroz:~$ ./test
Parent process (PID: 7294) waiting for child (PID: 7295)
Child process running (PID: 7295)
Child working...
Child working...
Child working...
Child working...
Child working...
Child working...
Child working...
Child working...
Child working...
Child working...
Terminated
```

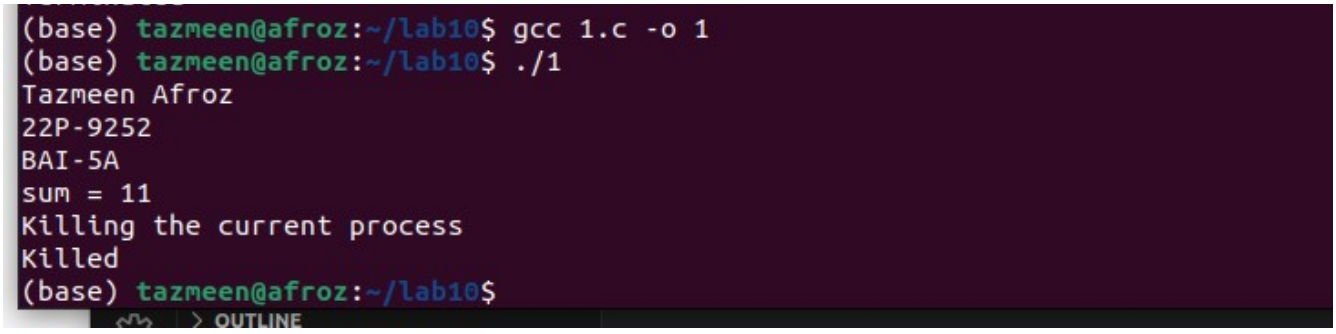
```
(base) tazmeen@afroz:~$ ps
    PID TTY          TIME CMD
   7297 pts/2    00:00:00 bash
   7310 pts/2    00:00:00 ps
(base) tazmeen@afroz:~$ kill -15 7294
(base) tazmeen@afroz:~$ ps au | grep bash
tazmeen     5939  0.0  0.0  11756  5248 pts/1    Ss+  08:28   0:00 bash
tazmeen     6133  0.0  0.0  11756  5120 pts/0    Ss+  08:36   0:00 bash
tazmeen     7297  0.0  0.0  11756  5376 pts/2    Ss   08:47   0:00 bash
tazmeen     7345  0.0  0.0   9432  2432 pts/2    S+   08:48   0:00 grep --color=auto bash
(base) tazmeen@afroz:~$ kill -15 7294
bash: kill: (7294) - No such process
(base) tazmeen@afroz:~$
```

KILL CALL()

code :

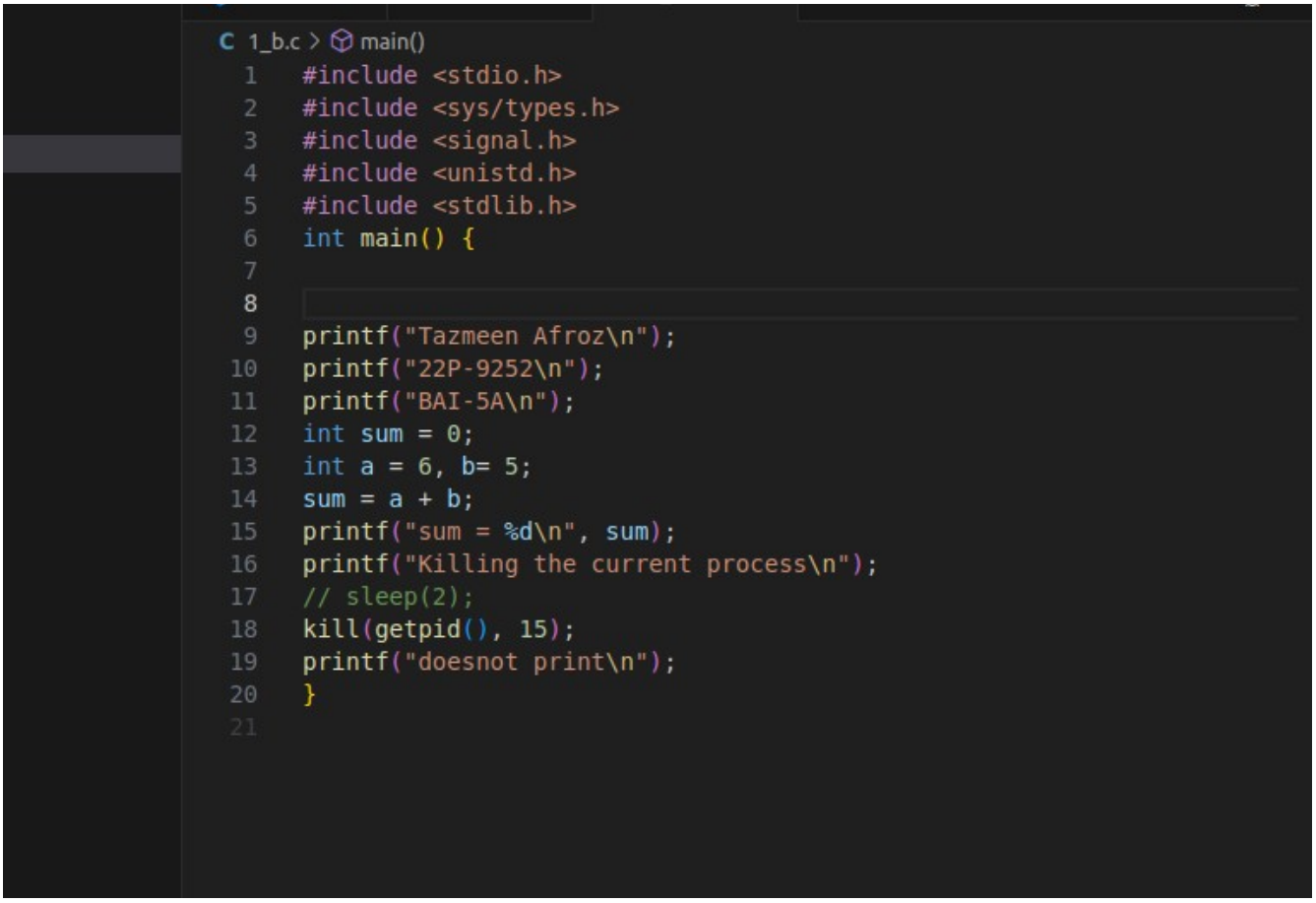
```c
#include <stdio.h>
#include <signal.h>
#include <unistd.h>
#include <stdlib.h>
int main() {


printf("Tazmeen Afroz\n");
printf("22P-9252\n");
printf("BAI-5A\n");
int sum = 0;
int a = 6, b= 5;
sum = a + b;
printf("sum = %d\n", sum);
printf("Killing the current process\n");
// sleep(2);
kill(getpid(), 9);
printf("doesnot print\n");
}
```

output :



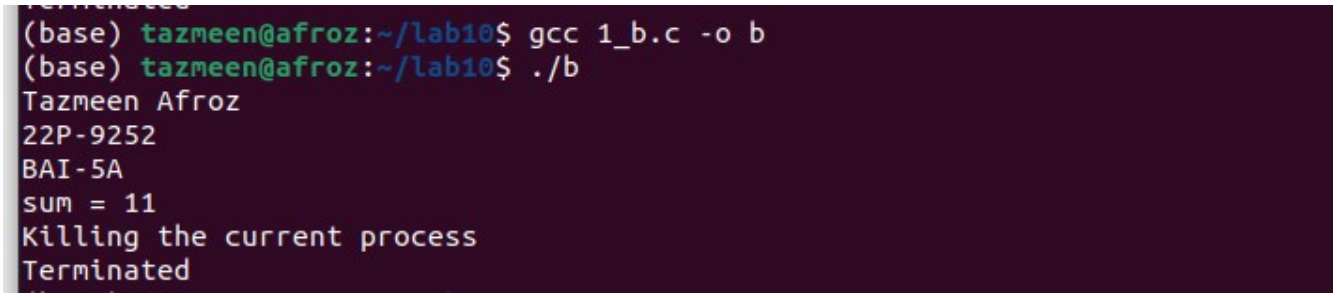
```
(base) tazmeen@afroz:~/lab10$ gcc 1.c -o 1
(base) tazmeen@afroz:~/lab10$ ./1
Tazmeen Afroz
22P-9252
BAI-5A
sum = 11
Killing the current process
Killed
(base) tazmeen@afroz:~/lab10$
```

SIGTERM



```c
#include <stdio.h>
#include <sys/types.h>
#include <signal.h>
#include <unistd.h>
#include <stdlib.h>
int main() {

printf("Tazmeen Afroz\n");
printf("22P-9252\n");
printf("BAI-5A\n");
int sum = 0;
int a = 6, b= 5;
sum = a + b;
printf("sum = %d\n", sum);
printf("Killing the current process\n");
// sleep(2);
kill(getpid(), 15);
printf("doesnot print\n");
}
```

Output :



```
(base) tazmeen@afroz:~/lab10$ gcc 1_b.c -o b
(base) tazmeen@afroz:~/lab10$ ./b
Tazmeen Afroz
22P-9252
BAI-5A
sum = 11
Killing the current process
Terminated
```

5.1.2.1 Exercise

part a

```
(base) tazmeen@afroz:~/lab10$ gcc 2.c -o 2
(base) tazmeen@afroz:~/lab10$ ./2
Parent process
Parent process id: 10054
Child process id: 10055
Killing the child process
```

in parent process killing the child process and output of ps shows defunct zombie process

```
(base) tazmeen@afroz:~/lab10$ ps
    PID TTY          TIME CMD
  10058 pts/5    00:00:00 bash
  10071 pts/5    00:00:00 ps
(base) tazmeen@afroz:~/lab10$ ps au
USER         PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
tazmeen     1341  0.0  0.0 162744  5888 tty2     Ssl+ 07:53   0:00 /usr/libexec/gdm-wayland-session env GNOME_SHELL_SESSION_MOD
tazmeen     1344  0.0  0.1 223396 15360 tty2     Sl+  07:53   0:00 /usr/libexec/gnome-session-binary --session=ubuntu
tazmeen     6133  0.0  0.0  11756  4608 pts/0    Ss+  08:36   0:00 bash
tazmeen     7297  0.0  0.0  11756  4224 pts/2    Ss+  08:47   0:00 bash
tazmeen     8324  0.0  0.0  11788  5504 pts/3    Ss+  09:01   0:00 /usr/bin/bash --init-file /usr/share/code/resources/app/out/
tazmeen     8858  0.0  0.0  11760  5248 pts/4    Ss   09:06   0:00 bash
tazmeen    10054  0.0  0.0   2776  1408 pts/4    S+   09:30   0:00 ./2
tazmeen    10055  0.0  0.0      0     0 pts/4    Z+   09:30   0:00 [2] <defunct>
tazmeen    10058  0.0  0.0  11756  5120 pts/5    Ss   09:31   0:00 bash
tazmeen    10079  0.0  0.0  13024  3328 pts/5    R+   09:31   0:00 ps au
(base) tazmeen@afroz:~/lab10$
```

part b

This indicates the state of the process. S stands for sleeping.

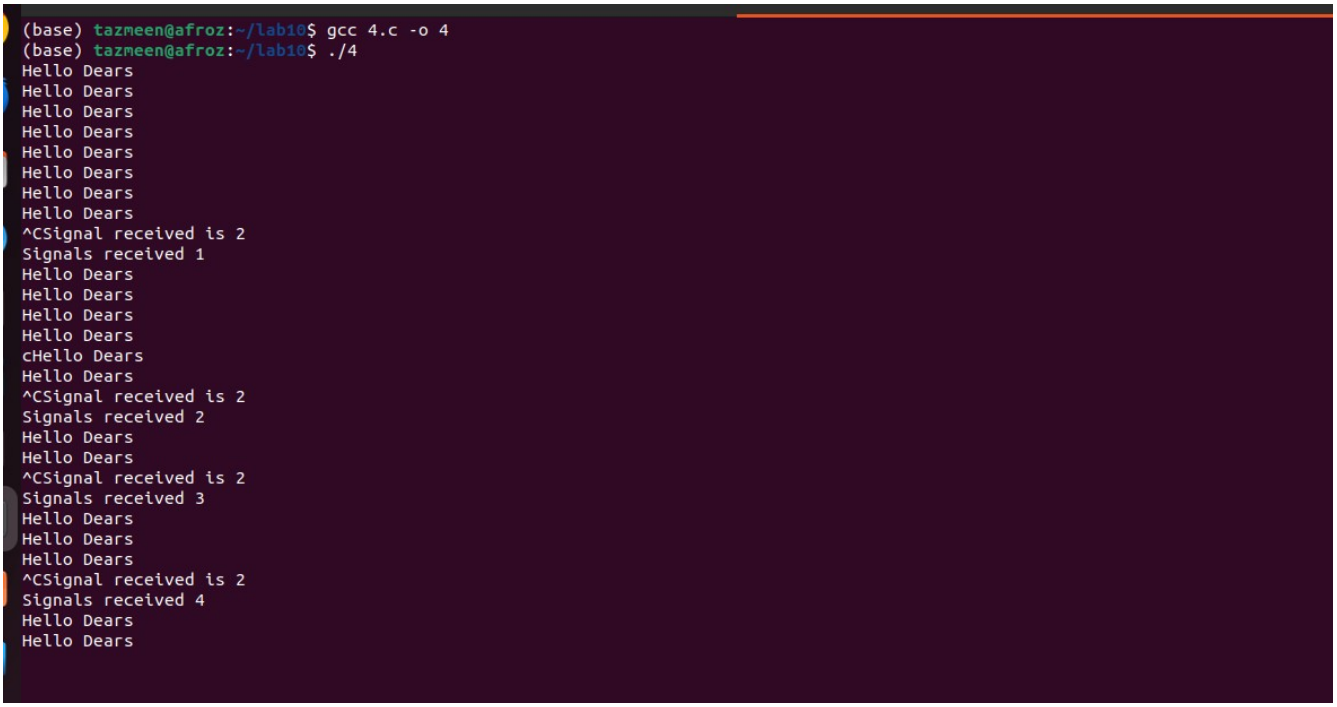
```
Child process
Child process id: 10305
Parent process id: 10304
Killing the parent process
Killed
(base) tazmeen@afroz:~/lab10$ ps au
USER         PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
tazmeen     1341  0.0  0.0 162744  5888 tty2     Ssl+ 07:53   0:00 /usr/libexec/gdm-wayland-session env GNOME_SHELL_SESSION_MODE=ubunt
tazmeen     1344  0.0  0.1 223396 15360 tty2     Sl+  07:53   0:00 /usr/libexec/gnome-session-binary --session=ubuntu
tazmeen     6133  0.0  0.0  11756  4608 pts/0    Ss+  08:36   0:00 bash
tazmeen     7297  0.0  0.0  11756  4224 pts/2    Ss+  08:47   0:00 bash
tazmeen     8324  0.0  0.0  11788  5504 pts/3    Ss+  09:01   0:00 /usr/bin/bash --init-file /usr/share/code/resources/app/out/vs/work
tazmeen     8858  0.0  0.0  11760  5248 pts/4    Ss+  09:06   0:00 bash
tazmeen    10058  0.0  0.0  11756  5120 pts/5    Ss   09:31   0:00 bash
tazmeen    10227  0.0  0.0   2776   768 pts/5    S    09:34   0:00 ./3
tazmeen    10255  0.0  0.0   2776   768 pts/5    S    09:34   0:00 ./3
tazmeen    10289  0.0  0.0   2776   768 pts/5    S    09:35   0:00 ./3
tazmeen    10305  0.0  0.0   2776   768 pts/5    S    09:36   0:00 ./3
tazmeen    10318  0.0  0.0  13024  3328 pts/5    R+   09:36   0:00 ps au
(base) tazmeen@afroz:~/lab10$ gcc 3.c -o 3
(base) tazmeen@afroz:~/lab10$ ./3
Child process
```

The Ss state in the ps command output indicates that the process is in an interruptible sleep state and is the session leader.

- S: The process is sleeping, meaning it is waiting for an event to complete.
- s: The process is a session leader, which means it is the first process in a session and can control terminal input/output.

After some time no process is shown as it terminates the whole programming

ctrl +c with signal call



ctrl +c without signal call