

1. Adam is working in an IT company. He has been given a task to reduce the load of a system by killing some of the processes running in the LINUX operating system. Which commands will he use to complete the given task with the help of the following operation?

- (i) Kill processes by name
- (ii) Kill a process based on the process name
- (iii) Kill a single process at a time with the given process ID

OUTPUT:

```
M ~
ASUS@LAPTOP-5DB0ADS1 MSYS ~
$ taskkill //IM notepad.exe
SUCCESS: Sent termination signal to the process "Notepad.exe" with PID 4864.
ASUS@LAPTOP-5DB0ADS1 MSYS ~
$ |
```

```
M ~
ASUS@LAPTOP-5DB0ADS1 MSYS ~
$ taskkill //IM notepad.exe
SUCCESS: Sent termination signal to the process "Notepad.exe" with PID 4864.
ASUS@LAPTOP-5DB0ADS1 MSYS ~
$ taskkill //IM chrome.exe //F
SUCCESS: The process "chrome.exe" with PID 14540 has been terminated.
SUCCESS: The process "chrome.exe" with PID 14592 has been terminated.
SUCCESS: The process "chrome.exe" with PID 14932 has been terminated.
SUCCESS: The process "chrome.exe" with PID 14948 has been terminated.
SUCCESS: The process "chrome.exe" with PID 14968 has been terminated.
SUCCESS: The process "chrome.exe" with PID 15236 has been terminated.
SUCCESS: The process "chrome.exe" with PID 6968 has been terminated.
SUCCESS: The process "chrome.exe" with PID 9376 has been terminated.
SUCCESS: The process "chrome.exe" with PID 17204 has been terminated.
SUCCESS: The process "chrome.exe" with PID 3136 has been terminated.
SUCCESS: The process "chrome.exe" with PID 18068 has been terminated.
SUCCESS: The process "chrome.exe" with PID 11136 has been terminated.
SUCCESS: The process "chrome.exe" with PID 18600 has been terminated.
SUCCESS: The process "chrome.exe" with PID 1784 has been terminated.
SUCCESS: The process "chrome.exe" with PID 6528 has been terminated.
SUCCESS: The process "chrome.exe" with PID 13488 has been terminated.
SUCCESS: The process "chrome.exe" with PID 12144 has been terminated.
ASUS@LAPTOP-5DB0ADS1 MSYS ~
$ |
```

2. Write a program for process creation using C

(i) Orphan Process

CODE:

```
M ~
GNU nano 8.7
#include <stdio.h>
#include <unistd.h>

int main() {
    pid_t pid = fork();

    if (pid > 0) {
        // Parent process
        printf("Parent process PID: %d\n", getpid());
        sleep(2); // Parent exits early
        printf("Parent exiting...\n");
    }
    else if (pid == 0) {
        // Child process
        sleep(5); // Child runs longer
        printf("Child process PID: %d\n", getpid());
        printf("New Parent PID (init): %d\n", getppid());
    }
    else {
        printf("Fork failed\n");
    }

    return 0;
}
```

OUTPUT:

```
M ~
ASUS@LAPTOP-5DB0ADS1 MSYS ~
$ nano hello.c

ASUS@LAPTOP-5DB0ADS1 MSYS ~
$ nano hello.c

ASUS@LAPTOP-5DB0ADS1 MSYS ~
$ gcc hello.c -o hello

ASUS@LAPTOP-5DB0ADS1 MSYS ~
$ ./hello
Parent process PID: 891
Parent exiting...

ASUS@LAPTOP-5DB0ADS1 MSYS ~
$ Child process PID: 892
New Parent PID (init): 1
```

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(ii) Zombine Process

CODE:

```
M ~
GNU nano 8.7
#include <stdio.h>
#include <unistd.h>

int main() {
    pid_t pid = fork();

    if (pid > 0) {
        // Parent process
        printf("Parent process PID: %d\n", getpid());
        sleep(10); // Parent wait() call nahi karta
        printf("Parent exiting...\n");
    }
    else if (pid == 0) {
        // Child process
        printf("Child process PID: %d\n", getpid());
        printf("Child exiting...\n");
    }
    else {
        printf("Fork failed\n");
    }

    return 0;
}
```

OUTPUT:

```
ASUS@LAPTOP-5DB0ADS1 MSYS ~
$ nano hello.c

ASUS@LAPTOP-5DB0ADS1 MSYS ~
$ gcc hello.c -o hello

ASUS@LAPTOP-5DB0ADS1 MSYS ~
$ ./hello
Child process PID: 900
Child exiting...
Parent process PID: 899
Parent exiting...

ASUS@LAPTOP-5DB0ADS1 MSYS ~
$ |
```

3. Create the process using fork () system call.

- (i) Child Process creation
- (ii) Parent process creation
- (iii) PPID and PID

CODE:

```
GNU nano 8.7 hello.c
#include <stdio.h>
#include <unistd.h>

int main() {
    pid_t pid;

    pid = fork();    // create child process

    if (pid < 0) {
        printf("Fork failed\n");
    }
    else if (pid == 0) {
        // Child process
        printf("Child Process Created\n");
        printf("Child PID  : %d\n", getpid());
        printf("Parent PID : %d\n", getppid());
    }
    else {
        // Parent process
        printf("Parent Process Created\n");
        printf("Parent PID : %d\n", getpid());
        printf("Child PID  : %d\n", pid);
    }

    return 0;
}
```

OUTPUT:

```
ASUS@LAPTOP-5DB0ADS1 MSYS ~
$ nano hello.c

ASUS@LAPTOP-5DB0ADS1 MSYS ~
$ gcc hello.c -o hello

ASUS@LAPTOP-5DB0ADS1 MSYS ~
$ ./hello
Child Process Created
Parent Process Created
Child PID  : 913
Parent PID : 912
Parent PID : 912
Child PID  : 913
```

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