Lab-12

Aim: Study of signals and handling in Linux. Experiencing Daemon.

Explanation:

signal system call:

```
#include <signal.h>

typedef void (*sighandler_t)(int);

sighandler_t signal(int signum, sighandler_t handler);
```

signal() sets the disposition of the signal signum to the handler, which is either SIG_IGN, SIG_DFL, or the address of a programmer-defined function (a "signal handler").

SIG_IGN, then the signal is ignored.

SIG_DFL, then the default action associated with the signal

The signals SIGKILL and SIGSTOP cannot be caught or ignored.

Perform error handling while setting up signal handler. signal() returns the previous value of the signal handler, or SIG_ERR on error. In the event of an error, errno is set to indicate the cause.

Task-1:

Write a program to display all lists of signals with signal number, op code/acronym and description. Know that the similar output is generated using “kill -l” command as well. Practice the same.

- psignal()
-strsignal()
- extern char * sys_siglist[]

Task-2:

Demonstrate SIGSTOP and SIGCONT via a program on a running process of vim like editor or other software. Observe outcome of “bg” - background, “fg” - foreground, “ps -ef | grep vim”.

Task-3:

Implement sig2str or str2sig function. Map a signal number to a name and vice versa. These functions are useful when writing interactive programs that need to accept and print signal names and numbers.

The singal number is stored in the integer pointed to by signop. The name can be either the signal name without SIG prefix or a string representation of the decimal signal number. i.e. “9”.

int sig2str(int signo, char *str)

int str2sig(const char *str, int *signop)

Daemon

Daemon is a process which is normally required to run for a long time. It does not have a controlling terminal attached to it. They are mostly started when the system bootstrapped and terminated when the system halts. Hence, daemon runs in the background. Mostly the command/display name ends with character d for daemon.

Task1: Run the following command and describe your observation about daemon processes.

ps -ajx | grep \? | grep "d]"

ps -ajx | grep \? | grep "daemon"

Task2: Run a process with daemize characteristics.

Task3: Improve daemon to make sure that it only has one copy of itself at any point in time.
[Hint: Use File and record locking for achieving a convenient mutual-exclusion mechanism.]