

Question 2.1:

There are several ways to check if process is running:

1) procfs-stat() function(using “/proc/pid” as path):
stat(const char* pathname, struct stat* statbuf).

This function return information about a file , in the buffer pointed to by statbuf.

We will check if in the proc dir there is a process with the pid that we want to search if exist.

On success the function returns 0 and fill the statbuf structure with file properties, which means that a process with the same pid is exist.

On failure the function returns -1 and errno set appropriately,if errno=ENONET that means that the process with the same pid wasn't found, any other error means error happened while try to get the properties of the file(more information at man 2 stat).

Advantage:

- We can get more information on the process.

Disadvantage:

- Need to know the pid.
- We cant send signals and communicate through this function.
- Cant use this methond in Windows.

2) getgid() function:

getgid(pid_t pid).

The function return the process group ID of the process whose process ID is equal to pid. If pid is equal to 0 then function return the process group ID of the calling process.

In success the function return the process group id of the process with the same ID as pid.

On failure the function return -1 and errno set appropriately, in case of errno=EPERM we dont have permission to the process, in case of ESRCH there is not process with this pid).

Advantage:

- We can find the process group ID of given pid.
- We can check if process is exist or not.

Disadvantage:

- We cant send signals and communicate through this function.
- We cant get much more information on the process

3)Signals-kill(pid,0):

When we send sig 0 then acutally no signal is sent, but existence and permission check are still performed.

To send a signal we must know the pid of the process ,

The only signals that can be sent to process id 1(the init processes) are those for init has explicitly installed signal handlers.

Disadvantage:

- Signals that we sent can be ignored, as we showed in this question.
- Order of the signals not guaranteed

Advantage:

- easy way to check if process is running or if we have permission.
- Can communicate with other processes through signals.
- Can send all the signals with kill function.

We can use commands from terminal to find if process is runing and get alot information on the process.

Such as :top, ps...