

## Zombie Process

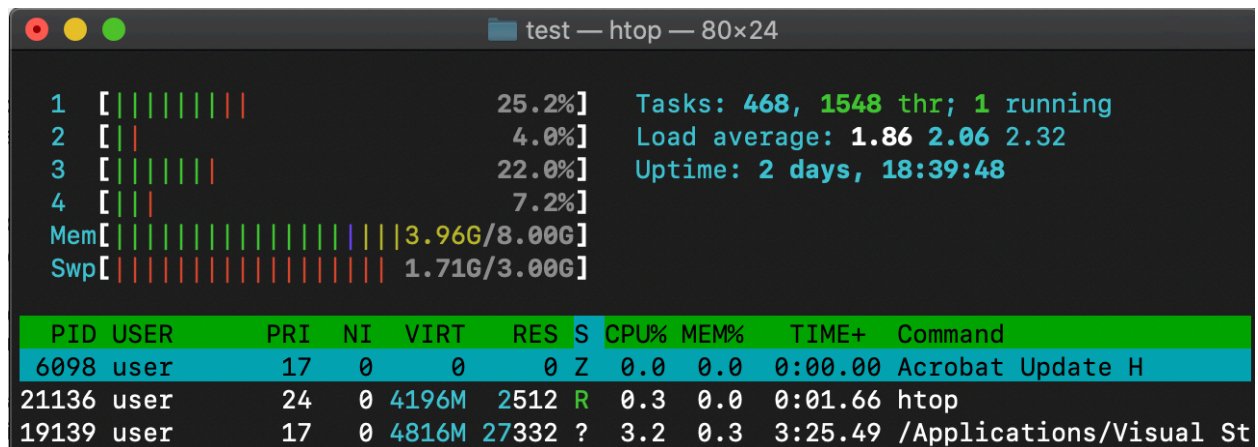
Whenever we run a program it creates a parent process and a lot of child processes. All of these child processes use resources such as memory and CPU allocated to them by the kernel.

Once these child processes have finished executing they send an Exit call and die. This Exit call has to be read by the parent process which later calls the wait command to read the exit\_status of the child process so that the child process can be removed from the processes table. If the Parent reads the Exit call correctly sent by the Child Process, the process is removed from the processes table.

But, if the parent fails to read the exit call from the child process, the child process which has already finished its execution and is now dead will not be removed from the processes table. Hence, the process that has finished execution but is still in processes table is called a zombie process.

### Find Zombie Process using htop

Look for 'Z' in the status 'S' column in htop



The screenshot shows the htop interface with a dark background. At the top, it says 'test — htop — 80x24'. Below this, there are statistics for tasks (468, 1548 thr; 1 running), load average (1.86 2.06 2.32), and uptime (2 days, 18:39:48). Memory usage is shown as 3.96G/8.00G and swap as 1.71G/3.00G. The main table lists processes with columns: PID, USER, PRI, NI, VIRT, RES, S, CPU%, MEM%, TIME+, and Command. The process with PID 6098 is a zombie (S=Z) with 0% CPU and 0% memory, running the command 'Acrobat Update H'. Other processes shown are htop (PID 21136) and Visual Studio (PID 19139).

PID	USER	PRI	NI	VIRT	RES	S	CPU%	MEM%	TIME+	Command
6098	user	17	0	0	0	Z	0.0	0.0	0:00.00	Acrobat Update H
21136	user	24	0	4196M	2512	R	0.3	0.0	0:01.66	htop
19139	user	17	0	4816M	27332	?	3.2	0.3	3:25.49	/Applications/Visual St

### Kill Zombie Process using htop

```
$ sudo kill -9 6098s
```

```
test — htop — 80x24

 1  [|||||] 15.9%] Tasks: 465, 1563 thr; 1 running
 2  [||] 4.0%] Load average: 1.69 2.26 2.39
 3  [|||||] 12.6%] Uptime: 2 days, 18:45:09
 4  [||] 3.3%]
Mem[|||||||||||||||||||3.88G/8.00G]
Swp[|||||||||||||||||1.68G/3.00G]

Send signal: PID USER PRI NI VIRT RES S CPU% MEM% TIME+ Command
18 SIGTSTP 6098 user 17 0 0 0 Z 0.0 0.0 0:00.00 Acrobat
19 SIGCONT 21136 user 24 0 4196M 2180 R 0.3 0.0 0:02.87 htop
20 SIGCHLD 19139 user 17 0 4816M 28316 ? 3.0 0.3 3:32.19 /Applica
```