

Orphan process

process her father killed -9 pid

parent id of it transfered to the init "systemd"

Zombie process

parent donot wait() for child so keep reserved pcb not deleted and be in zombie state till parent process killed

```
#include <stdio.h>
#include <stdlib.h>
#include <sys/wait.h>
#include <unistd.h>
#include <string.h>

#define BUF_SIZE 100
int main()
{
    char buf[BUF_SIZE];

    while(1) {
        printf("I am a simple shell, enter your command $ ");
        fgets(buf, BUF_SIZE, stdin);
        buf[strlen(buf) - 1] = 0;
        if (strlen(buf) == 0)
            continue;

        pid_t pid = fork();
        if (pid > 0) {
            int status;
            printf("PARENT: my pid = %d, my child pid = %d\n", getpid(),
                pid);
            sleep(1);
        } else if (pid == 0) {
            printf("CHILD: my pid = %d, my parent pid = %d\n", getpid(),
                getppid());
            char *newargv[] = { buf, NULL };
            char *newenvp[] = { NULL };
            execve(buf, newargv, newenvp);
            printf
```

```

        ("Exec failed, kernel is not the mode of executing programs\n");
        exit(-1);
    } else {
        printf("PARENT: failed to fork\n");
    }
}
return 0;
}

```

notice the Z state of cmds done on this bad shell rmved only @ closing the parent

```

ps -lt pts/0

```

F	S	UID	PID	PPID	C	PRI	NI	ADDR	SZ	WCHAN	TTY	TIME	CMD
0	S	1000	3584	3577	0	80	0	-	2687	do_wai	pts/0	00:00:00	bash
0	S	1000	3593	3584	0	80	0	-	624	wait_w	pts/0	00:00:00	
Zombie_Shell													
1	Z	1000	3603	3593	0	80	0	-	0	-	pts/0	00:00:00	
Zombie_Shell <defunct>													
1	Z	1000	3605	3593	0	80	0	-	0	-	pts/0	00:00:00	
Zombie_Shell <defunct>													