

W10. Overriding signal handlers

The purpose of this exercise is to explore and play with signals and signal handlers.

1. Fork repository which contains a source code of a program called *greeting* that does nothing except running an infinite loop. Compile the code into executable *greeting*.
2. Run your program in one window. Kill it by typing Control-C in the same window. Run it again **in the background**. For that pause process (Ctrl+Z) and run *bg*. It should look like it isn't running.
Use *ps aux | grep greeting* to see that indeed it is still running.
Use *fg* to move it to the foreground.
3. Open another window (on the same machine) and run *ps* again.
What is the *pid* of your infinite loop program?
Now that you know the *pid* use the *kill* command to kill it.
There are several possibilities that will work and the command parameters will depend on the *pid* of your running process. Write the command you used here.
4. We are going to write a function in your program called *sing* that will eventually be used as a signal handler. What signature is required for that?
5. Write the function so that it prints the lines of "Happy Birthday" and then returns.
6. Change your program so that it expects one command-line argument that will hold the name of the birthday boy or birthday girl.
Now change your *sing* function so that it sings using the actual name.
Hmmm... You can't change the signature. Why not? How to solve this problem?
7. When you run your *greeting* program, it doesn't sing the song because the *sing* function never gets called. Write the code to install *sing* as the handler for the *SIGUSR1* signal.

8. Now run your compiled *greeting* program from one window, look up the PID from another and send it a SIGUSR1 signal. Did it sing? If not, go back and check your code.

9. Add a *sleep(10);* line to the middle of your singing to simulate taking longer to actually sing the song. Now compile, run and send your program a *SIGUSR1* signal from another window.

Now, before it finishes the singing, send it a SIGINT signal from the other window.

What happened? Why?

10. Change your program so that the SIGINT signal is not delivered to the program in the middle of the birthday song.

Repeat the actions from above to confirm that the song is finished before the program is killed.