Laboratory 07. and 08. Processes

Please, be familiar with commands:
- ps
- top, htop
- pstree
- pidof
- kill

Exercise 1. Process creation: child.cc

Please, write a simple program that
- shows its PID, tip: getpid()
- stops using getchar()
- creates child and shows its pid, tip: fork()
- shows in child its PID and a parent PID (PPID), tip: getppid()
- stops using getchar()
- show in OS: PID, PPID and a tree, tip: ps, htop, pidof, pstree

Exercise 2. Process creation: grantchild.cc

Please, copy and extend a program from previous exercise:
- shows its PID, tip: getpid()
- stops using getchar()
- creates child and shows its pid, tip: fork()
- shows in child its PID and a parent PID (PPID), tip: getppid()
- stops using getchar()
- in a child process: create another child, that:
- shows its PID and a parent PID,
- show in OS: PID, PPID and a tree, tip: ps, htop, pidof, pstree

Exercise 3. Process creation: brother.cc

Please, copy and extend a program from previous exercise:
- shows its PID, tip: getpid()
- stops using getchat()
- creates child and shows its pid, tip: fork()
- shows in child its PID and a parent PID (PPID), tip: getppid()
- stops using getchar()
- in a parent process: create another child, that:
- shows its PID and a parent PID,
- in a child process: create another child, that:
- shows its PID and a parent PID,
- show in OS: PID, PPID and a tree, tip: ps, htop, pidof, pstree

Exercise 4. Catch a signal: catchsignal.cc

Please, write a program that reads and shows the signal number send to it, tips:
- man kill
- man signal
- https://www.tutorialspoint.com/cplusplus/cpp_signal_handling.htm

Additional:
- write the name of the signal received
- please, test all signals and say, which one are impossible to catch

Exercise 5. Exec another program: exec.cc, another.cc

Please, write a program (another.cc) that:
- says "Hello, I'm an another program!"
- stops using getchar()

Please, write a program (exec.cc) that:
- says "Hello, I'm exec program!"
- stops using getchar()
- replaces own process and runs another.cc program, tip: exec()

Please, explain using system commands like ps/htop what happen, when running exec.cc program.

Exercise 6. Call system command: system.cc

Please, write a program (system.cc) that:
- says "Hello, I'm system program!"
- stops using getchar()
- runs system command "ls -al /var/log/", tip: system()

Please, explain using system commands like ps/htop what happen, when running exec.cc program.