BİL 214 – System Programming

Homework #7

Assigned on 15.11.2022 – Due on 22.11.2022

- Submit one C source file per question.
- If a source file fails to compile with the gcc compiler, you get zero credits for that question.
- Make sure your submission file names are formatted as:
  FirstName_LastName_StudentID_HW#_Q#.c
  For example: **Toygar_Akgun_123456789_HW7_Q1.c**
                          Toygar_Akgun_123456789_HW7_Q2.c …

1. [25 points] Write a C program that finds and prints all available signals on a Linux machine.

2. [25 points] Write a C program which emulates the execution of the following shell commands:
   $cat a.txt | grep coder | wc -l
   Your code will be tested with a text file called "a.txt" that contains a predetermined number of instances of the word "coder".

3. [25 points] Using the alarms (SIGALRM), write C program that that executes the following flow:

   Stars by waiting 5 seconds for one of the keyboard events CTRL+C (SIGINT), CTRL+Z (SIGTSTP) or CTRL+\ (SIGQUIT),

   a. If one of these keyboard events is detected, prints the detected signal name and code on a newline and waits for another 5 seconds.
   b. Exits if no keyboard event is detected in the 5 second window.

4. [25 points] Using processes and pipes, write a C program that executes the following flow:
   a. Parent process creates a pipe.
   b. Parent process forks a child.
   c. Both parent and child print their PID, PPID and GID.
   d. Parent process asks the user to enter a string of max length 256 characters and reads it in.
   e. Parent process sends the input string to the child process via the pipe.
   f. The child process reads this string from the pipe and prints it *backwards* on the terminal.