1. (12 p)

   (a) (4 p) Write the code of a program that can be used to make a copy of a certain file (specified by the user). This program should be run by two threads T1 and T2 belonging to two different processes P1 and P2 (T1 belongs to P1, T2 belongs to P2). T1 is the thread responsible for asking which file to copy (and the file name of the copy) while T2 is the thread responsible for making the actual copy.

   [**HINT:** process with fork, parent asks for file names and child does the copy (or the opposite), they can communicate with a pipe (among other alternatives).]

   (b) (4 p) Why does the OS define a "terminated" state for a process and does not simply end the process? Provide an example of when this is useful.

   [**HINT:** share information about this process with other processes (e.g., for zombie processes).]