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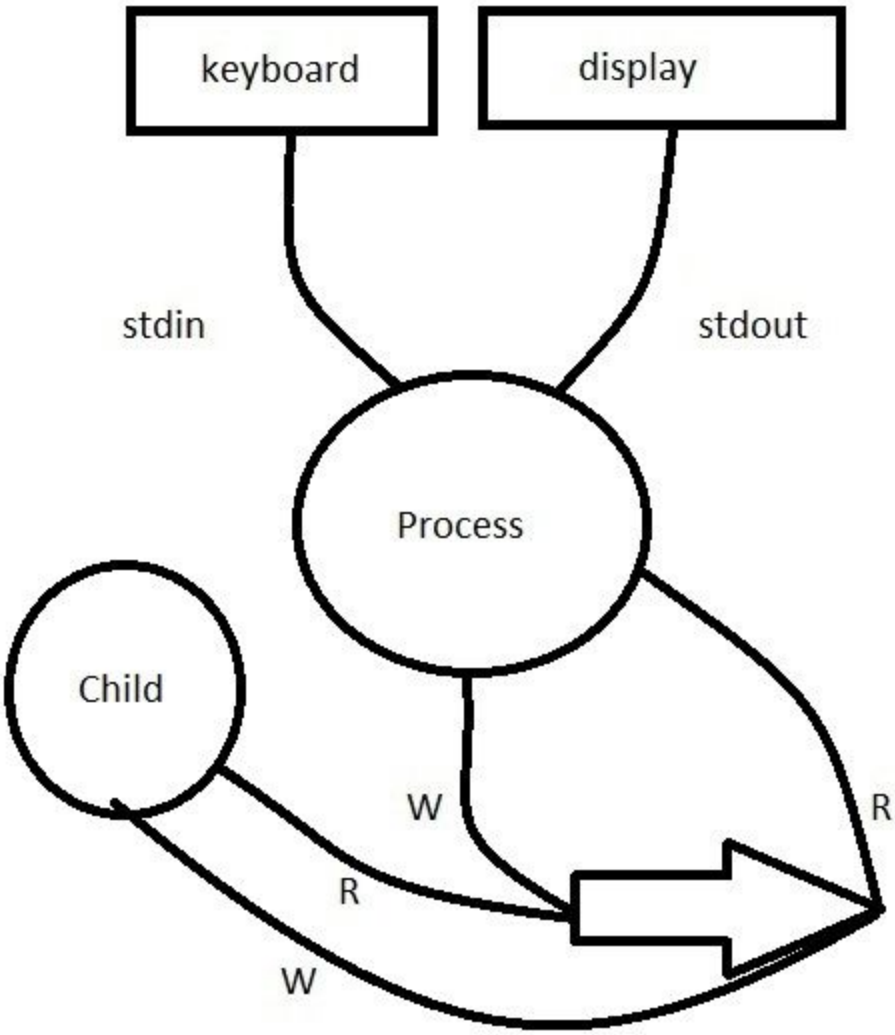
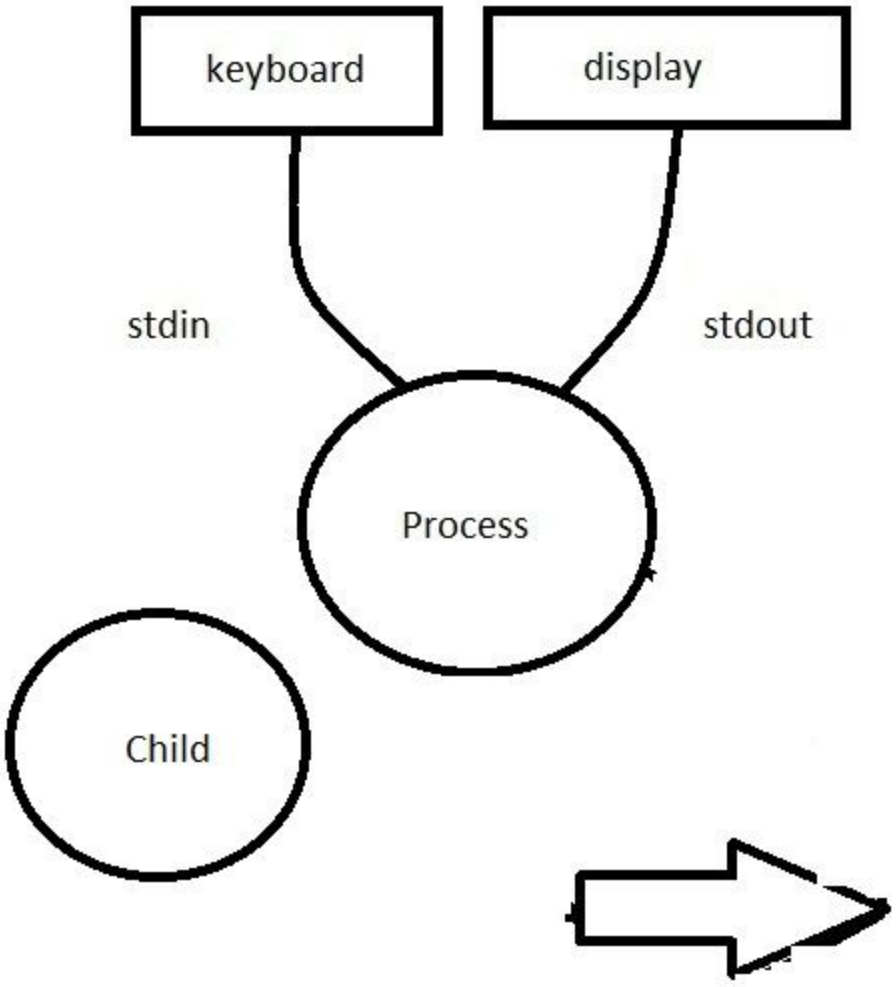
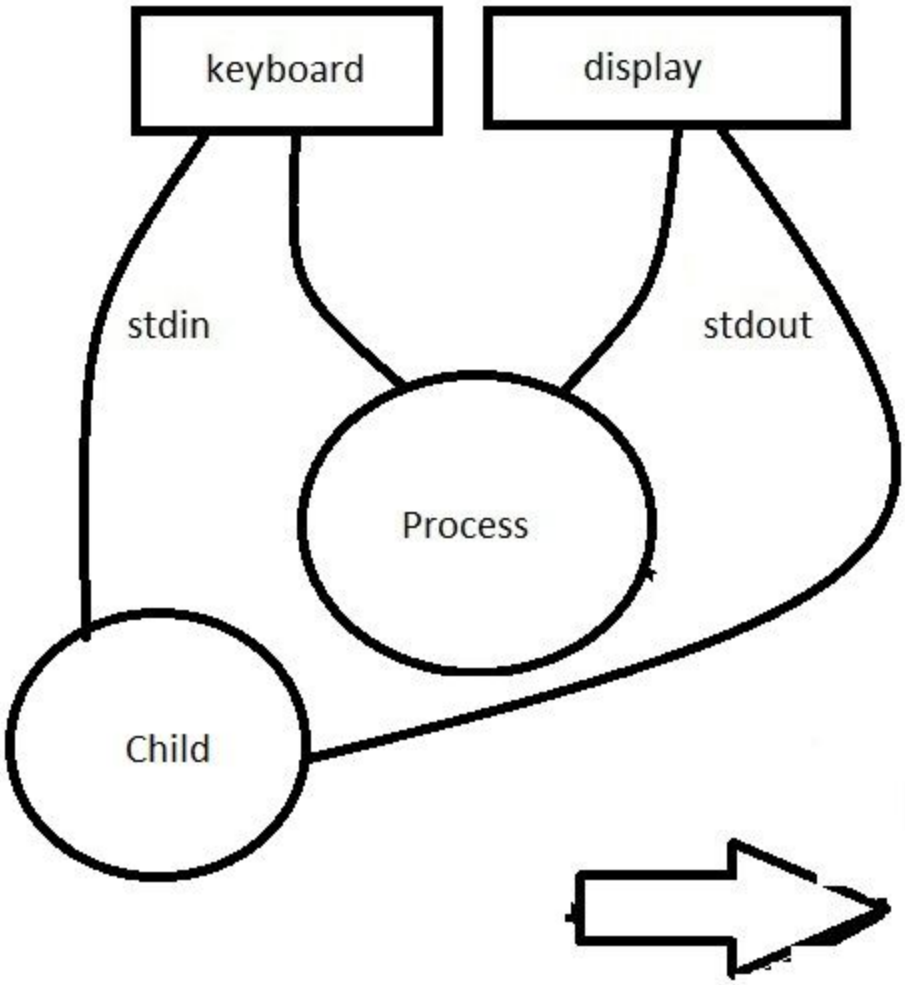
CIS 452
Lab 3

1. What does the program print, and in what order?
    a. The program prints
        i. Waiting….
        ii. Received an interrupt.
        iii. Outta here.
2. Describe exactly what is happening to produce the answer observed for the above question
    a. Main() calls signal, passing the parameters SIGINT, and the function sigHandler.
        i. SIGINT is the variable for the interrupt command, available to the user with Ctrl + C
        ii. From calling this function, if the process receives the SIGINT signal, then it will go to sigHandler as defined from the parameters.
    b. The code then prints “waiting…\n”, then calls pause() to wait.
    c. We interrupt the code by sending it an interrupt via Ctrl + C
    d. sigHandler is then called, which prints “ received an interrupt.\n”
    e. It sleeps for 1 second, before printing “outta here.\n” and exiting

3. Where does the standard output of the child process go?
    a. Since the dup2() is called before the fork, the child process will still go to the file named temp, as defined by the parent. The fd table is inherited by the parent.
4. Where does the standard output of the child process go if dup2() was called after the fork?
    a. The standard output of the child will not go to temp since dup2() was called after the fork. This is because the fd table gets copied to the child, and it doesn’t check for any changes during execution unless manually done so.
5. This code takes the user input after it is inputted, and prints it back to the screen. This is done with a few steps. First, the pipe() function is called, which provides 2 file descriptors to the fd array. Then, the dup2 call in both blocks (inside the if and outside) will replace STDIN or STDOUT with either the read or write fd provided by pipe earlier. Next, we close the fd provided, so that our process receives input or output from the fd array. Lastly, it calls read or write to work with the data, and inputs/outputs the result.
6. Diagram A was given to us, here are the diagrams for points B, C, and D.


keyboard
display
stdin
stdout
Process
Child
W
R
R
W


keyboard
display
stdin
stdout
Process
Child


keyboard
display
stdin
stdout
Process
Child