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Program 2: Concurrent Text Search

This program is written in C and takes advantage of multiple features in order to achieve a fully functional application. The goal of the application is to correctly calculate the number of occurrences an entered word has in N files.

Assumptions
- Text Files do not contain punctuation
- A file exists with one text file name on each line

Startup
- Parent reads in list of filenames from a hard coded file
- Parents keeps counter of number of files and creates that many child processes
- Child process opens pipes and goes into their own function

Pipes
- Pipes are created immediately after children are created
- Each child open a pipe to and from the parent
- Filename will be first message sent from parent to child
- All messages sent to children are sent as text
- All messages sent to parent are sent as int

Word Search
- Done by Child processes
- Each child goes through each line in their file
- Each line is searched by window size determined by the length of word to search for
- After a match is found, the child checks if the occurrence is its own word
- After going through entire file, children send the number of occurrences they found as an int through a pipe.
- After the number of occurrences is sent, the child repeats their loop waiting for input

Cleanup/Termination
- Exits when the input contains a non alpha character
- Uses user defined interrupt handler
- Interrupt handler flips a flag, indicating the processes to exit.
  - Both child and parent process use same flag
- Parent process waits until all children finish calculations and finish their own cleanup.