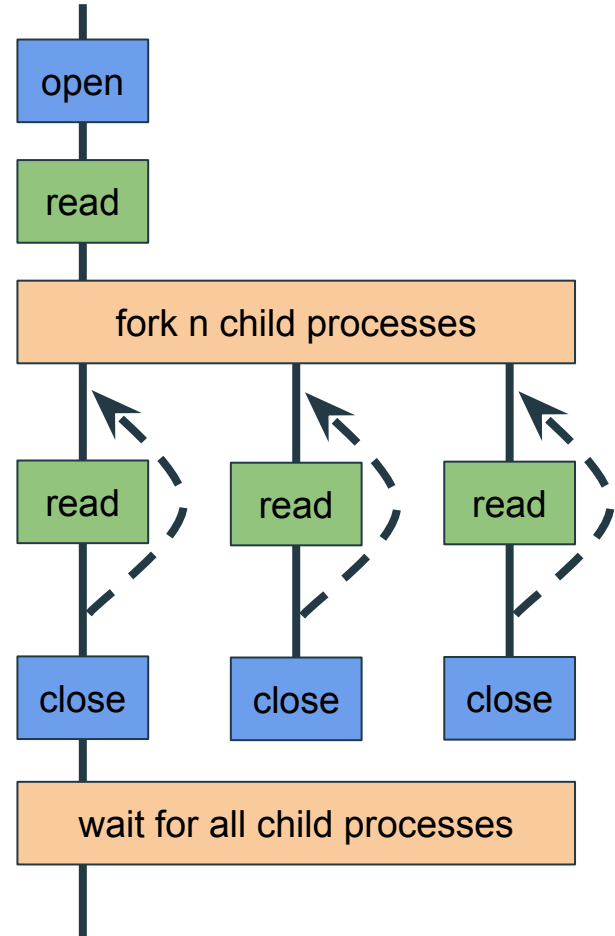# CS2106 Assignment 2

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Exercise 1

- ## Use system calls directly
  - open/read/write/close
- ## Use C library wrappers
  - fopen/fread/fwrite/fclose

Exercise 2

- Use fgets() (C standard) or getline() (POSIX) to read the whole line from standard input
- Use stat() to check if the file exists
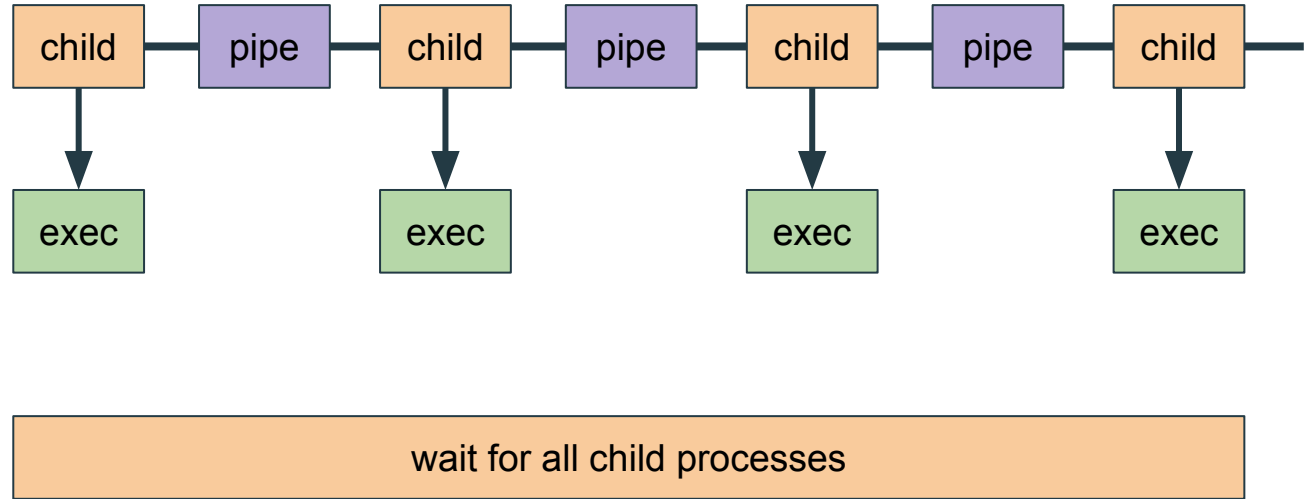- Look at manpage for execv() - it allows you to pass the command args in an array

Exercise 3

- Need to pipe output from one child to the input of the next child

Exercise 3

Example with 4 commands
- Create 3 pipes
- fork() 4 times
- Connect pipes on the 4 children
- exec() each child
- Wait for all children to complete

child	pipe	child	pipe	child	pipe	child

| exec | | exec | | exec | | exec |

| wait for all child processes |

Exercise 4

- "Bonus" marks… sort of?
- Read up on environment variables if you have not heard about them
- Look at manpage for getenv() and setenv()

General notes

- It is good practice to check the return values of functions that might fail
  - e.g. malloc(), fork(), exec()
  - For your own debugging purposes

For exercise 1 demo

- Create a file with five characters inside: "abcde", and show the output of ex1 to me
- Explain to me why the output of read() and fread() versions are different
- Show me that you are using wait()/waitpid() correctly
- Answer any other questions that I ask