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CSCI 470

Chapter 5

(Simulation)

1. Ran for step 1, pretty simple to get the hang of.
2. We can see, as the percentage increases, we see more forks, and therefore, a longer/larger tree. At 100%, we know all the leaves will fork and none will exit. At 0.1%, we know most leaves will exit, meaning the tree will remain very small as most leaves will leave shortly after being added.
3. Yes, this is fairly simple if you follow the tree.
   1. A branch B
   2. A branch C
   3. B branch D
   4. B branch E
   5. Exit C
4. When we C Exits, I was expecting to see the result of the -R command, where the children simply go to the next parent. However, without the -R command, we see all children are branched from the root, which I was not expecting.

(Code)

1. For program 1, we see that both the initial and the fork have x = 100. If we change the value of x, we see both the child and parent show the results of these changes. Since they are both identical before and after the branch, they will both resemble each other after any modification. If we used one like in the book, that has if statements that can differentiate the parent and child, then we can see differences between the two. Only the parent will add 5 to x, or only the child will subtract 5.
2. Both parent and child will be able to access the file for similar reasoning as #1. If they are both trying to write into the file at the same time, they may overwrite each other, or have both their responses in the file.
3. I don’t believe there is another way. If there is, I cannot find another way.
4. The main differences between all the different versions of the exec() functions appear to be in the arguments they take. I believe this is just in order to account for different situations. After some light searching, I found that calls with “v” take an array parameter specifying argv[] array. An “l” takes the arguments of the new program as a variable-length argument. There’s several more rules as well. So, I believe all of these versions of the exec() function are used to create a diverse function that can change parameters and have more diverse functionality.