Assignment 4

WRITEUP: The Tower of Brahma

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CSE 13S - Fall 2019

Date:10/27/2019

1 Recursion

Function Recursion is just simply call itself to achieve the goal of moving disks from peg A to peg B. During the program, the reason we flip peg B and C is because odd disks and even disks have different moving direction. And the second flip is because peg “C” (in fact it may not), will be the current place of disk. So, if we named parameters in Function find_solution as origin, destination, temp could be better for understanding. By doing this recursion, we can get the solution we want.

2 Iteration

Function Iteration(stack) actually use the same idea to achieve the goal of moving disks. The work of binary counter is exactly same as recursion. The basic thing we need to do is create n-digit binary counter. For example, we have 5 disks. So, the counter will start at 00000 to 11111. During this process, we need to watch the change of 0 and 1 (e.g. from 00000 to 00001, which means the last disk (the smallest one) should be moved. I think what I do for this solution is to show the process more straightforward. But when we achieve the goal, it is a little bit complicated because I need to think about how to show the flip process which mentioned on “Recursion” part.

3 Compare

If we compare the length of code to achieve both solutions, definitely recursion is easier and simpler, while the code of iteration could be clearer to show the process of getting the solution. I believe the solution of recursion should be faster than iteration because I uses too much if condition to determine the thing, which can be simply achieved by recursion. Recursion is also a kind of iteration, so their solutions should be exactly same and actually the process of moving disks is also same.

4 Improvement

I believe the part of recursion is kind of good and I think it may does not have the space of improve because it is simple enough. As for the part of iteration, currently I cannot find a better way to simplifier the complicated if-else conditions. I believe it should be existed

by using some smarter method. The part of binary counter is simple, and I think it should be easy to understand and it can work quickly.