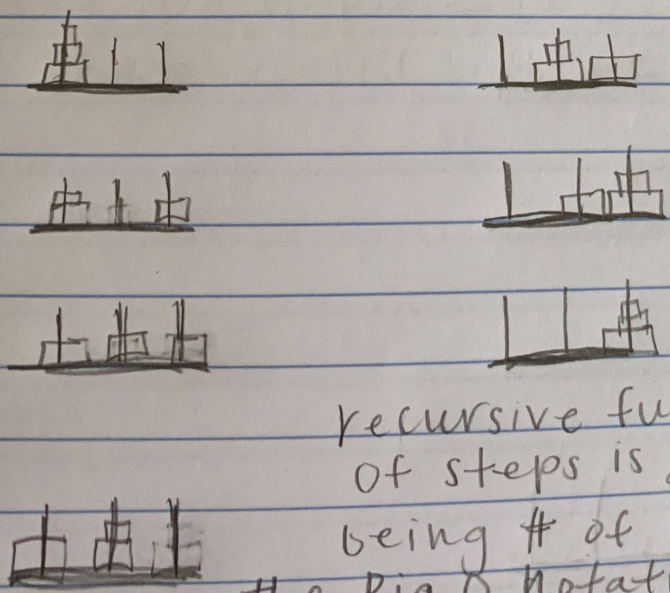
CS 303 HW 4 - Evens

② Write a recursive function to_number that forms the integer sum of all digit characters in a string.

```
int to_number (string word, int sum=0, int word_length);
{
  if (word_length == 0) {
    return sum;
  if (is_digit(next) == True) {
    sum += digit->next;
    return to_number (word, sum, word_length -1);
```

④ What is the big-O for the Towers of Hanoi as a function of n, where n represents the number of disks?



recursive function for # of steps is $2^n - 1$ with n being # of plates so the Big O notation is $O(2^n)$

(6) Modify the source code for the insertion sort so it can sort a list of integers. Is there a difference in performance?

```
Void Insert_sort(int arr[], int size){
    int lower_idx, compare_num;
    if (size > 1){
        for(int i=1; i<size; i++){
            lower_idx = i-1;
            compare_num = arr[i];
            while (j >= 0 && arr[j] > arr[i]){
                arr[j+1] = arr[j];
                j = j-1;
            }
            arr[j+1] = compare_num;
```

This is how I'd change the source code so it can sort a list of integers with this function. I don't believe there is a significant difference in performance as they're still both insertion sorts