CSC180 – Lab 10 (and last)

NOTE: We'll cover examples similar to the ones here on Monday.

Reminder: submitting a lab that another team completed is a serious academic offense. Letting another team copy or read your code is also an academic offense. Students caught submitting labs that are not their own, as well as the students from whom the code was copied, will be penalized severely.

As usual, do as many questions as you can, starting from the first.

For this lab, define the following structure:

```c
struct node{
    int value;
    struct node *next;
    //no prev
};
```

1. Without using loops, write a function that returns the length of a linked list.

2. Without using loops, implement a function with the signature double powRecursive(double x, int n) which returns x raised to the power of n. Assume n is non-negative.

3. Without using loops, implement the function strcmpRecursive(), which works like strcmp().

   `strcmp` can be implement iteratively as follows:
   ```c
   int strcmp(char *str1, char *str2)
   {
       int i;
       for(i = 0; str1[i] == str2[i]; i++){
           if(str1[i] == '"0"){
               return 0;
           }
       }
       return str1[i]-str2[i];
   }
   ```

4. Without using loops, write a function that, given an array arr of size n (assume n is odd), prints the elements in the following order:

   `arr[n/2] arr[n/2-1] arr[n/2+1] arr[n/2-2] arr[n/2+2] arr[n/2-3] arr[n/2+3] ... arr[n-1]`

   Hint: here is a recursive program that prints the following sequence for an array arr of size n:


   ```c
   int printArr1(int *arr, int size)
   {
       if(size == 0){
           printf("n");
       } else if(size == 1){
           printf("%d\n", arr[0]);
       } else{
           printf("%d %d ", arr[0], arr[size-1]);
           printArr1(arr+1, size-2);
       }
   }
   ```
5. (Just for fun: this is tricky) Complete the function call in printArr3 so that it prints

```
arr[0] arr[n-1] arr[1] arr[n-2] ... arr[n/2]
```

, as in Problem 3. Assume size is odd

```c
void printArr3(int a[], int size)
{
    if(size == 0){
        return;
    }
    printf("%d", arr[0]);
    printArr3;/*EDIT HERE*/;
    printArr3;/*EDIT HERE*/;
}
```