CS2134 Homework 2 Spring 2016

February 5, 2016

Programming Part:

Written Part

1. In programming part 1 of this assignment, you are asked to write a generic function template called perform_if.

• Perform_if will loop from the start iterator to the end iterator.
in the loop it will check to see if pred is true for that iteration
if pred is true it will call op on that iteration and add one to a counter
it will lastly output the counter as the amount of matches there were

Preconditions:
start and end are the beginning and ending of the desired vector
the pred functor outputs a bool and takes in the vector type

Postconditions:
output the amount of matches found and each individual match

• O(n)

2)Show the recursion tree and the runtime for:

. (a) O(nlog(n))
30,42
42,30
30,12
12,6
6,0

. (b) O(n)

. {1,2,3,4}

. {1,2} {3,4}

. {1}{2}{3}{4}
10

3)Assign values to the iterators, itrStart, itrMid, itrEnd, so that:

itrStart = a.begin();
itrMid = a.begin() +(a.end()/2)

```
itrEnd = a.end();
```

4)What is printed by the following function call: myRecFunc(4)

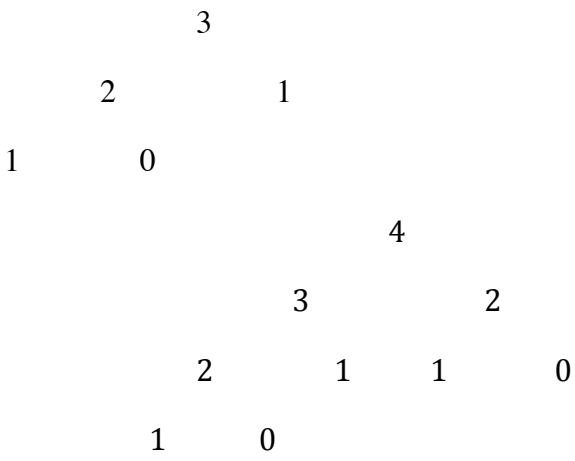
```
4: 2: 1: 0: 0:
1: 0: 0:
*
2: 1: 0: 0:
1: 0: 0:
*
***
```

What is the running time of myRecFunc(n).

O(n^2)

5. For this recursive Fibonacci function, fib, how many function calls are made if n=3; how about if n=4? Using the the number of function calls fib made when when n=3 and when n= 4, compute how many function calls are made when n=5. Show your work.

```
int fib( int n )
{
   if( n <= 1 )
      return 1;
   else
      return fib( n - 1 ) + fib( n - 2 );
}
```



2^(n-1) + 1

O(2^n)