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Hw05

Dt1462

1)

perform\_if ( start iterator, end iterator, boolean functor, void functor)

count = 0

for start iterator to end iterator -1

if Boolean functor of iterator value is true

void functor of iterator value

increase count

return count

preconditions: must give two iterators (beginning and ending of a range) and two functors, where one returns a Boolean and the other returns a void

postconditions: returns an int that is greater or equal to 0

O(n)

2)

myRecFunc( 4 )

myRecFunc( 2) myRecFunc (2)

myRecFunc(1) myRecFunc(1) myRecFunc(1) myRecFunc(1) myRecFunc(0) myRecFunc(0) myRecFunc(0) myRecFunc(0)

4: 2: 1: 0: 0:

1: 0: 0:

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2: 1: 0: 0:

1: 0: 0:

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running time: O(nlogn)

3)

myRecFunc( 4 )

myRecFunc( 2)

myRecFunc(1)

myRecFunc(0)

4: 2: 1: 0:

running time: O(logn)

4) fib(3) is 5 function call

fib (4) is 9 function call

fib (5) is 15 function call

5)

It prints out

8,9,-11,2,0,3

-11,8,9,2,0,3

-11,2,8,9,0,3

-11,0,2,8,9,3

-11,0,2,3,8,9

The content is changing

6)

It prints out

8,9,-11,2,0,3

-11,8,9,2,0,3

-11,8,9,2,0,3

-11,8,9,0,2,3

-11,0,2,3,8,9

The content is changing

7)

-11 8 3 2 0 9

-11 0 2 9 8 3

-11 0 2 3 8 9

The content is changing

8)

mergeSort

{28,10,2,27,5,1}

{28,10,2} {27,5,1}

{28,10} {2} {27,5} {1}

{28} {10} {27} {5}

quicksort:

{28,10,2,27,5,1} pivot 2

{1} {28,10,27,5} pivot 10

{5} {27,28} pivot 27

{28}

9)

insertionSort : O(n)

mergeSort : O(nlogn)

quicksort: O(nlogn)

10) average time is O(n)

11) When k = i+1 is called no recursive function will be called, recursion only happens when k <= 1 or when k > i + 1