5.1:

MAX-INDEX(A, l, r)

max = 0

for j = 1 to A[l…r].length

if A[j] >= max

max = j

j = j + 1

return max

FIND-MAX-INDEX(A,p ,r)

max = 0

q = floor((p + r) /2)

if p = r then max = A[p]

else

n1 = MAX-INDEX(A, p ,q)

n2 = MAX-INDEX(A, q + 1, r)

if n1 > =n2

max = n1

else

max = n2

return max

5.2:

This algorithm should end up taking Θ(n) time, since the MAX-INDEX function needs to loop through the elements of each n/2 length list once to return the index of the maximum value. Everything else in the algorithm runs in constant time.