P2

1

8-6

a. ~~C^{n}_{2n}~~ $C^{n}_{2n} = \frac{2n\cdot(2n-1)(2n-2)\cdots n}{n(n-1)\cdots 1}$

b. ~~$\binom{2n}{n}$~~

since $C^{n}_{2n} \le 2^{h}$ (h is the number of comparisions)

~~C^{n}_{2n}~~

so $h \ge \lg \frac{2n(2n-1)(2n-2)\cdots n}{n(n-1)\cdots 1}$

~~$= \frac{\lg 2n(2n-1)(2n-2)\cdots n}{\lg n(n-1)\cdots 1}$~~

$= \lg \frac{(2n)!}{(n!)^2}$

~~$= \theta(2n\lg$~~

$= \lg(2n\cdot(2n-1)\cdots(1)) - 2\lg(n\cdot(n-1)\cdot(n-2)\cdots 1)$

$= \theta(2n\lg 2n) - 2\theta(n\lg n) = \theta(2n)$

8-7

a. since $A[p]$ is the smallest value in A, $A[q]$ is definitely greater than $A[p]$, $B[p]=0$. Because $A[p]=A[p]$

~~so the~~ satisfie the first condition.

$B[q]=1$ Because $A[q] > A[p]$, B

b. ~~Algorithm~~ fails to ~~sort A~~. Since ~~A[p] is~~ ~~in the~~ array location. ~~And the~~ original location ~~that A[p] should~~ ~~go~~ is taken by $A[q]$, ~~for an $i<p$. since $A[p]$~~ ~~is the~~ smaller value in A. ~~then $A[i] > A[p]$~~

so $B[i]=1$ ~~for an value~~ $j>i$, ~~then $A[j] > A$~~

$A[p]$ is the smallest value in A.

then B would be an array contain only ...

then I would ...