

WQ #12.

Dong Boyuan

$$A_1[1 \dots 5] = \{88, 86, 50, 21, 13\} \quad p=1 \quad r=5$$

1547489

$$\begin{array}{ccccccccc} 88 & 86 & 50 & 21 & 13 & \rightarrow & 88 & 86 & 50 & 21 & 13 \\ \uparrow & \uparrow & & & \uparrow & & \uparrow & & & \uparrow & \uparrow \\ i & j & & & \text{pivot} & & i & & & j & \text{pivot} \end{array}$$

keep sorting $A_1[2 \dots 5] = \{13, 86, 50, 21, 88\} \quad p=2 \quad r=5$

$$\begin{array}{ccccccccc} 13 & 86 & 50 & 21 & 88 & \rightarrow & 13 & 86 & 50 & 21 & 88 \\ \uparrow & \uparrow & & \uparrow & & & \uparrow & \uparrow & & \uparrow & \\ i & j & & \text{pivot} & & & i & j & & \text{pivot} & \end{array}$$

keep sorting $A_1[2, \dots, 4] = \{13, 86, 50, 21, 88\} \quad p=2 \quad r=4$

$$\begin{array}{ccccccccc} 13 & 86 & 50 & 21 & 88 & \rightarrow & 13 & 86 & 50 & 21 & 88 \\ \uparrow & \uparrow & & \uparrow & & & \uparrow & \uparrow & & \uparrow & \\ i & j & & \text{pivot} & & & i & j & & \text{pivot} & \end{array}$$

keep sorting $A_1[3, \dots, 4] = \{13, 21, 50, 86, 88\} \quad p=3 \quad r=4$

$$\begin{array}{ccccccccc} 13 & 21 & 50 & 86 & 88 & \rightarrow & 13 & 21 & 50 & 86 & 88 \\ \uparrow & \uparrow & \uparrow & & & & \uparrow & \uparrow & \uparrow & & \\ i & j & \text{pivot} & & & & i & j & \text{pivot} & & \end{array}$$

\rightarrow sorted. $\{13, 21, 50, 86, 88\} = A_1[1 \dots 5]$

$$A_2[1 \dots 7] = \{21, 24, 18, 9, 14, 10, 15\} \quad p=1 \quad r=7$$

$$\begin{array}{ccccccccccc} 21 & 24 & 18 & 9 & 14 & 10 & 15 & \rightarrow & 21 & 24 & 18 & 9 & 14 & 10 & 15 & \rightarrow & 9 & 24 & 18 & 21 & 14 & 10 & 15 \\ \uparrow & \uparrow & & & & & \uparrow & & \uparrow & & & \uparrow & & \uparrow & & \uparrow & \uparrow & & \uparrow & & \uparrow \\ i & j & & & & & \text{pivot} & & i & & & j & & \text{pivot} & & i & & j & & \text{pivot} & & \end{array}$$

$$\rightarrow \begin{array}{ccccccccccc} 9 & 24 & 18 & 21 & 14 & 10 & 15 & \rightarrow & 9 & 14 & 18 & 21 & 24 & 10 & 15 & \rightarrow & 9 & 14 & 18 & 21 & 24 & 10 & 15 \\ \uparrow & & & & \uparrow & & \uparrow & & \uparrow & & & \uparrow & & \uparrow & & \uparrow & \uparrow & & \uparrow & & \uparrow \\ i & & & & j & & \text{pivot} & & i & & & j & & \text{pivot} & & i & & j & & \text{pivot} & & \end{array}$$

$$\rightarrow \begin{array}{ccccccccccc} 9 & 14 & 10 & 21 & 24 & 18 & 15 & \rightarrow & 9 & 14 & 10 & 15 & 24 & 18 & 21 \\ \uparrow & & & & \uparrow & & \uparrow & & \uparrow & & & & & & \\ i & & & & j & & \text{pivot} & & i & & & & & & \end{array}$$

keep sorting $A_2[1 \dots 3] = \{9, 14, 10, 15, 24, 18, 21\} \quad p=1 \quad r=3$

$$\begin{array}{ccccccccccc} 9 & 14 & 10 & 15 & 24 & 18 & 21 & \rightarrow & 9 & 14 & 10 & 15 & 24 & 18 & 21 \\ \uparrow & \uparrow & \uparrow & & & & & & \uparrow & \uparrow & \uparrow & & & & \\ i & j & \text{pivot} & & & & & & i & j & \text{pivot} & & & & \end{array}$$

keep sorting $A_2[1]$ \rightarrow 9, 10, 14, 15, 24, 18, 21

keep sorting $A_2[3]$

keep sorting $A_2[5 \dots 7] = \{9, 10, 14, 15, 24, 18, 21\}$ $p=5$, $r=7$.

$9, 10, 14, 15, 24, 18, 21 \rightarrow 9, 10, 14, 15, 24, 18, 21 \rightarrow 9, 10, 14, 15, 18, 24, 21$
 $\begin{matrix} \uparrow & \uparrow & & & \uparrow & \uparrow & \uparrow \\ i & j & & & i & j & \text{pivot} \end{matrix}$

$\rightarrow 9, 10, 14, 15, 18, 21, 24.$

keep sorting $A[5]$

keep sorting $A[7]$

$\rightarrow \{9, 10, 14, 15, 18, 21, 24\} = A_2[1 \dots 7]$