Homework 4

Carson
Murray

	① 71	42	21	7	99	20	1	19	4
Swap	42	71	21	7	99	20	1	19	4
Swap	21	42	71	7	99	20	1	19	4
Swap	7	21	42	71	99	20	1	19	4
	7	21	42	71	99	20	1	19	4
Swap	7	20	21	42	71	99	1	19	4
Swap	1	7	20	21	42	71	99	19	4
Swap	1	7	19	20	21	42	71	99	4
Swap	1	4	7	19	20	21	42	71	99

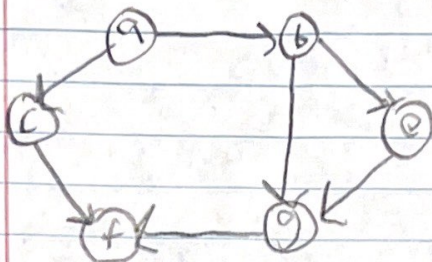Sorted with 7 swaps
and 29 comparisons
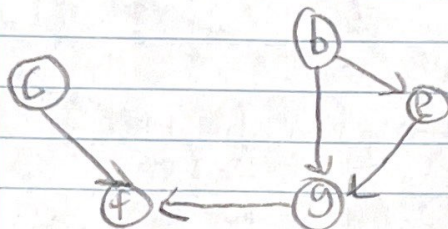
②   Original Graph
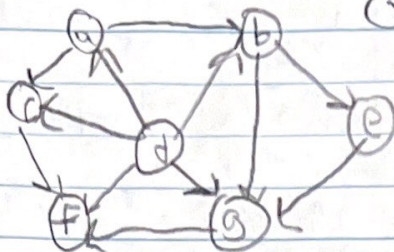
Step 1: remove d

Step 2: remove a

Step 3: remove b:

Step 4: remove c:

Step 5: remove e:
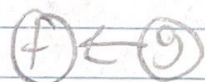
Step 6: remove g: Step 7: remove f

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② Continued...

Yes a topological Sorting solution
exists for this graph because it
is Directed and acyclic
The Topological Sorting Solution is:
d, a, b, c, e, g, f

③ $P = \boxed{17}$ $\quad 19 \quad 11 \quad -31 \quad 51 \quad 42 \quad -4 \qquad n = 7 \quad k = \frac{\boxed{7}}{2} = 4$

    Ⓢ   i $\uparrow 11 < 17$

      Ⓢ Swap

$P = \boxed{17}$ $\quad 11 \quad 19 \quad -31 \quad 51 \quad 42 \quad -4$

    Ⓢ   i $\nearrow \; -31 < 17$

      Ⓢ   Swap

$P = \boxed{17}$ $\quad 11 \quad -31 \quad 19 \quad 51 \quad 42 \quad -4$

      Ⓢ i $\nearrow \; -4 < 17$

        Ⓢ   Swap

$P = \boxed{17}$ $\quad 11 \quad -31 \quad -4 \quad 51 \quad 42 \quad 19$ $\qquad$ Swap A[P] and A[S]

       Ⓢ

0   1   2   3   4   5   6

-4   11   -31 $\boxed{17}$ 51   42   19

does $S = k-1$ $S = 3$ $k = 4$ $-3 = 4 - 1$ YES

17 is the 4th Smallest Element in this
array