

Data Structures: Homework Ch.3:

1) initial variable = 0, $i = [0, n]$

The i term = $a_i \times (\text{initial Variable} + i)$

Return initial Variable

$$0 + 1 + 2 + \dots + n = n \left(\frac{n+1}{2} \right) = \Theta(n^2)$$

2) Array [10, -1, 20, -2, 15]

10 -1 20 -2 15 \rightarrow initial

-2 | -1 20 10 15 $\rightarrow i=1$

-2 -1 | 20 10 15 $\rightarrow i=2$

-2 -1 10 | 20 15 $\rightarrow i=3$

-2 -1 10 15 | 20 $\rightarrow i=4$

Sorted Array [-2, -1, 10, 15, 20]

3) Array [10, -1, 20, -2, 15]

10 -1 20 -2 15 \rightarrow initial

-1 10 20 -2 15 $\rightarrow i=1$

-1 10 -2 20 15 $\rightarrow i=2$

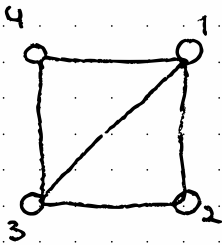
-1 10 -2 15 20 $\rightarrow i=3$

-1 -2 10 15 20 $\rightarrow i=4$

-2 -1 10 15 20 $\rightarrow i=5$

Sorted Array [-2, -1, 10, 15, 20]

4)



$1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 1$ ✓
 $1 \rightarrow 4 \rightarrow 3 \rightarrow 2 \rightarrow 1$ ✓

BFS

$1 \rightarrow 3 \rightarrow 4 \rightarrow 1$ x
 $1 \rightarrow 3 \rightarrow 2 \rightarrow 1$ x

DFS

No weight given so assume = 1
 So, each circuit ==

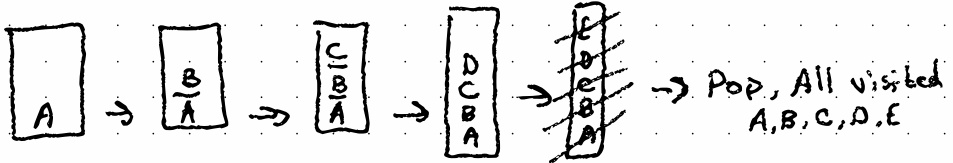
5)

Rows Columns

	A	B	C	D	E
A	0	1	1	0	0
B	1	0	1	1	0
C	1	1	0	1	1
D	0	1	1	0	1
E	0	0	1	1	0

$A \rightarrow B \rightarrow C$
 $B \rightarrow A \rightarrow C \rightarrow D$
 $C \rightarrow A \rightarrow B \rightarrow D \rightarrow E$
 $D \rightarrow B \rightarrow C \rightarrow E$
 $E \rightarrow C \rightarrow D$

6)
DFS



7)
BFS

