

	0	1	2	3
0			Q_1	
1	Q_2			
2				Q_3
3		Q_4		

$Q_1 = (2, 0)$
 $Q_2 = (0, 1)$
 $Q_3 = (3, 2)$
 $Q_4 = (1, 3)$

(a) Y-axis mirror

	0	1	2	3
0			Q_1	
1	Q_2			
2				Q_3
3		Q_4		

$Q_1 = (2, 0)$
 $Q_2 = (0, 1)$
 $Q_3 = (3, 2)$
 $Q_4 = (1, 3)$

	0	1	2	3
0		Q_1		
1				Q_2
2	Q_3			
3			Q_4	

$Q_1 = (1, 0)$
 $Q_2 = (3, 1)$
 $Q_3 = (0, 2)$
 $Q_4 = (2, 3)$

Rule: $Q_{old} = (x, y)$

$$\Rightarrow Q_{new} = (\text{len}(\text{bd}) - 1 - x, y)$$

$$\text{i.e. } Q_{new}[\text{len}(\text{bd}) - 1 - x] = y$$

(b) mirror x-axis

	0	1	2	3
0			Q_1	
1	Q_2			
2				Q_3
3		Q_4		

$Q_1 = (2, 0)$
 $Q_2 = (0, 1)$
 $Q_3 = (3, 2)$
 $Q_4 = (1, 3)$

	0	1	2	3
0		Q_4		
1				Q_3
2	Q_2			
3			Q_1	

$Q_1 = (2, 3)$
 $Q_2 = (0, 2)$
 $Q_3 = (3, 1)$
 $Q_4 = (1, 0)$

Rule: $Q_{old} = (x, y)$

$$\Rightarrow Q_{new} = (x, \text{len}[\text{bd}] - 1 - y)$$

$$\Rightarrow Q_{new}[x] = \text{len}[\text{bd}] - 1 - y$$

	0	1	2	3
0			Q_1	
1	Q_2			
2				Q_3
3		Q_4		

$Q_1 = (2, 0)$
 $Q_2 = (0, 1)$
 $Q_3 = (3, 2)$
 $Q_4 = (1, 3)$

90°

	0	1	2	3
0			Q_3	
1	Q_1			
2				Q_4
3		Q_2		

$Q_1 = (0, 1)$
 $Q_2 = (1, 3)$
 $Q_3 = (2, 0)$
 $Q_4 = (3, 2)$

Rule: $Q_{old} = (x, y)$

$$Q_{new} = (y, \text{len}[\text{bd}] - 1 - x)$$

Rotation around $y=x$

	0	1	2	3
0			Q_1	
1	Q_2			
2				Q_3
3		Q_4		

$Q_1 = (2, 0)$
 $Q_2 = (0, 1)$
 $Q_3 = (3, 2)$
 $Q_4 = (1, 3)$

	0	1	2	3
0		Q_2		
1				Q_4
2	Q_1			
3			Q_3	

$Q_1 = (0, 2)$
 $Q_2 = (1, 0)$
 $Q_3 = (2, 3)$
 $Q_4 = (3, 1)$

	0	1	2	3
0			Q_1	
1	Q_2			
2				Q_3
3		Q_4		

$Q_1 = (2, 0)$
 $Q_2 = (0, 1)$
 $Q_3 = (3, 2)$
 $Q_4 = (1, 3)$

	0	1	2	3
0		Q_3		
1				Q_1
2	Q_4			
3			Q_2	

$Q_1 = (3, 1)$
 $Q_2 = (2, 3)$
 $Q_3 = (1, 0)$
 $Q_4 = (0, 2)$

Rule: $Q_{old} = (x, y)$

$$\Rightarrow Q_{new} = (\text{len}(\text{bd}) - 1 - y, \text{len}(\text{bd}) - 1 - x)$$

Result = list(bds, size)