

<table> <tr><th>O₁</th><th>O₂</th><th>Orientation</th></tr> <tr><td>0</td><td>0</td><td>N</td></tr> <tr><td>0</td><td>1</td><td>E</td></tr> <tr><td>1</td><td>0</td><td>S</td></tr> <tr><td>1</td><td>1</td><td>W</td></tr> </table>	O ₁	O ₂	Orientation	0	0	N	0	1	E	1	0	S	1	1	W	<table> <tr><th>C₁</th><th>C₂</th><th>Change</th></tr> <tr><td>0</td><td>0</td><td>$\Delta x = +1$</td></tr> <tr><td>0</td><td>1</td><td>$\Delta x = -1$</td></tr> <tr><td>1</td><td>0</td><td>$\Delta y = +1$</td></tr> <tr><td>1</td><td>1</td><td>$\Delta y = -1$</td></tr> </table>	C ₁	C ₂	Change	0	0	$\Delta x = +1$	0	1	$\Delta x = -1$	1	0	$\Delta y = +1$	1	1	$\Delta y = -1$	<table> <tr><th>D₁</th><th>D₂</th><th>Direction</th></tr> <tr><td>0</td><td>0</td><td>F</td></tr> <tr><td>0</td><td>1</td><td>B</td></tr> <tr><td>1</td><td>0</td><td>R</td></tr> <tr><td>1</td><td>1</td><td>L</td></tr> </table>	D ₁	D ₂	Direction	0	0	F	0	1	B	1	0	R	1	1	L
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Input				Output			
O ₁	O ₂	C ₁	C ₂	D ₁	D ₂	O ₁ '	O ₂ '
0	0	0	0	1	0	0	1
0	0	0	1	1	1	1	1
0	0	1	0	0	0	0	0
0	0	1	1	0	1	0	0
0	1	0	0	0	0	0	1
0	1	0	1	0	1	0	1
0	1	1	0	1	1	0	0
0	1	1	1	1	0	1	0
1	0	0	0	1	1	0	1
1	0	0	1	1	0	1	1
1	0	1	0	0	1	1	0
1	0	1	1	0	0	1	0
1	1	0	0	0	1	1	1
1	1	0	1	0	0	1	1
1	1	1	0	1	0	0	0
1	1	1	1	1	1	1	0

$$D_1 = \overline{O_2} \cdot \overline{C_1} + O_2 \cdot C_1$$

$$D_2 = \overline{O_1} \cdot \overline{O_2} \cdot C_2 + \overline{O_1} \cdot \overline{C_1} \cdot C_2 + O_1 \cdot \overline{O_2} \cdot \overline{C_2} + O_1 \cdot \overline{C_1} \cdot \overline{C_2} + \overline{O_1} \cdot O_2 \cdot C_1 \cdot \overline{C_2} + O_1 \cdot O_2 \cdot C_1 \cdot C_2$$

$$O_1' = \overline{O_2} \cdot \overline{C_1} \cdot C_2 + O_2 \cdot C_1 \cdot C_2 + O_1 \cdot \overline{O_2} \cdot C_1 + O_1 \cdot O_2 \cdot \overline{C_1}$$

$$O_2' = \overline{C_1}$$