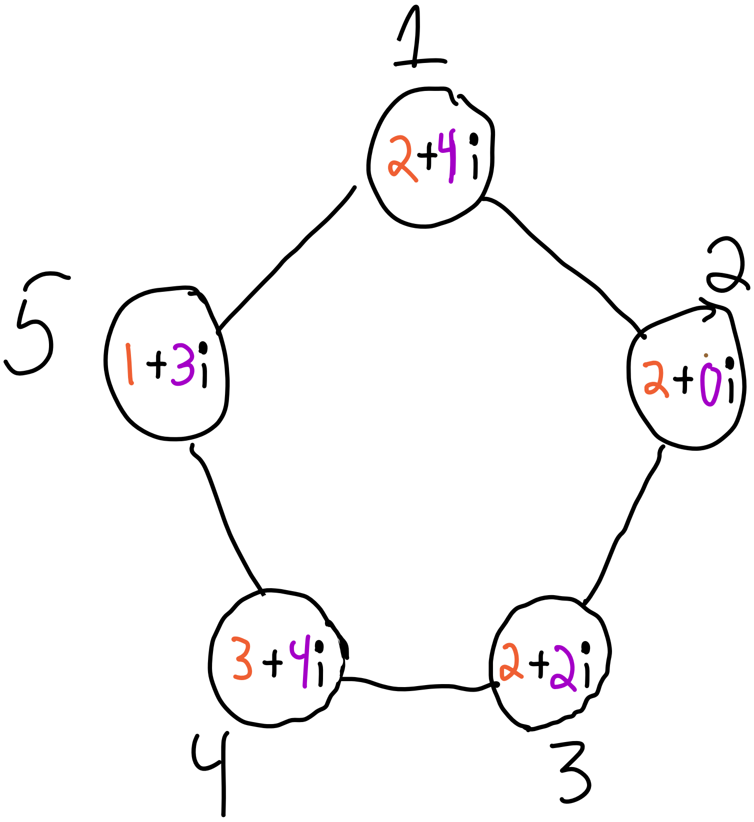
We can encode a configuration as a $\mathbb{Z}^{10}$ vector in the following way:



$$\begin{bmatrix} 2 \\ 2 \\ 2 \\ 3 \\ 1 \\ 4 \\ 0 \\ 2 \\ 4 \\ 3 \end{bmatrix}$$

(Start with real parts, then imaginary parts in the same order)

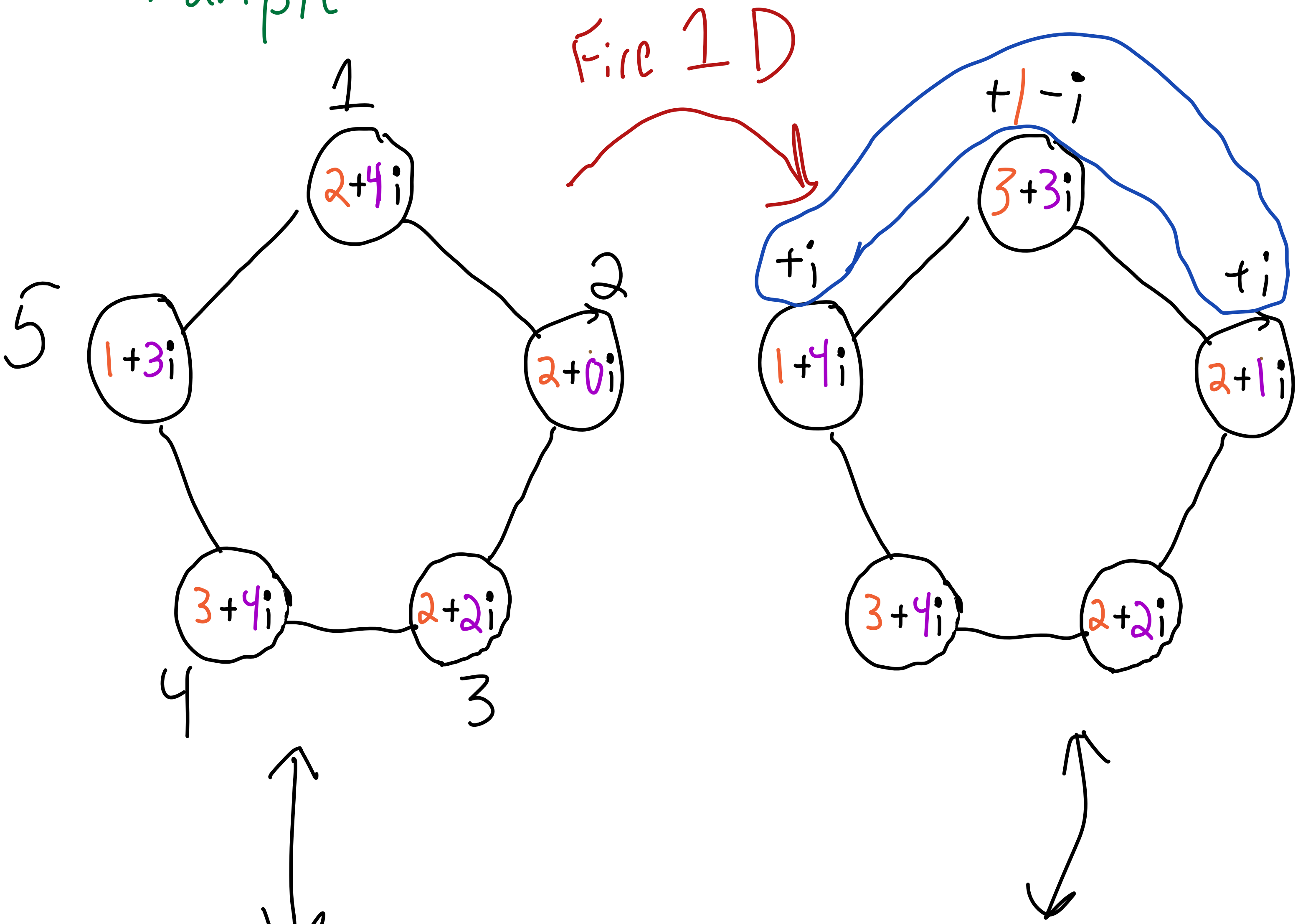
Consider the following matrix

$$\left[\begin{array}{ccccc|ccccc}
1 & 0 & 0 & 0 & 0 & -1 & 1 & 0 & 0 & 1 \\
0 & 1 & 0 & 0 & 0 & 1 & -1 & 1 & 0 & 0 \\
0 & 0 & 1 & 0 & 0 & 0 & 1 & -1 & 1 & 0 \\
0 & 0 & 0 & 1 & 0 & 0 & 0 & 1 & -1 & 1 \\
0 & 0 & 0 & 0 & 1 & 1 & 0 & 0 & 1 & -1 \\
\hline
-1 & 1 & 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 \\
1 & -1 & 1 & 0 & 0 & 0 & -1 & 0 & 0 & 0 \\
0 & 1 & -1 & 1 & 0 & 0 & 0 & -1 & 0 & 0 \\
0 & 0 & 1 & -1 & 1 & 0 & 0 & 0 & -1 & 0 \\
1 & 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & -1
\end{array}\right]$$

Adding a Column of this matrix is just like "doing a move"!

$\boxed{\text{First 5 Columns are "D" moves, last 5 are "C" moves in our current convention}}$

Example



$$\begin{bmatrix} 2 \\ 2 \\ 2 \\ 3 \\ 1 \\ 4 \\ 0 \\ 2 \\ 4 \\ 3 \end{bmatrix} + \begin{bmatrix} 1 \\ 0 \\ 0 \\ 0 \\ 0 \\ -1 \\ 1 \\ 0 \\ 0 \\ 1 \end{bmatrix} = \begin{bmatrix} 3 \\ 2 \\ 2 \\ 3 \\ 1 \\ 3 \\ 1 \\ 2 \\ 4 \\ 4 \end{bmatrix}$$

$$
\left[\begin{array}{ccccc|ccccc}
1 & 0 & 0 & 0 & 0 & -1 & 1 & 0 & 0 & 1 \\
0 & 1 & 0 & 0 & 0 & 1 & -1 & 1 & 0 & 0 \\
0 & 0 & 1 & 0 & 0 & 0 & 1 & -1 & 1 & 0 \\
0 & 0 & 0 & 1 & 0 & 0 & 0 & 1 & -1 & 1 \\
0 & 0 & 0 & 0 & 1 & 1 & 0 & 0 & 1 & -1 \\
\hline
-1 & 1 & 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 \\
1 & -1 & 1 & 0 & 0 & 0 & -1 & 0 & 0 & 0 \\
0 & 1 & -1 & 1 & 0 & 0 & 0 & -1 & 0 & 0 \\
0 & 0 & 1 & -1 & 1 & 0 & 0 & 0 & -1 & 0 \\
1 & 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & -1
\end{array}\right]
\cdot
\begin{bmatrix} 3 \\ 2 \\ 0 \\ 0 \\ 6 \\ 0 \\ 0 \\ 1 \\ -1 \\ 2 \end{bmatrix}
$$

gives the Change after doing three 1D firings, two 2D firings, one 3C firing, One 4A firing, and two 5C firings.

To figure out how to get to a particular configuration C, just take

$$
\left[\begin{array}{ccccc|ccccc}
1 & 0 & 0 & 0 & 0 & -1 & 1 & 0 & 0 & 1 \\
0 & 1 & 0 & 0 & 0 & 1 & -1 & 1 & 0 & 0 \\
0 & 0 & 1 & 0 & 0 & 0 & 1 & -1 & 1 & 0 \\
0 & 0 & 0 & 1 & 0 & 0 & 0 & 1 & -1 & 1 \\
0 & 0 & 0 & 0 & 1 & 1 & 0 & 0 & 1 & -1 \\
\hline
-1 & 1 & 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 \\
1 & -1 & 1 & 0 & 0 & 0 & -1 & 0 & 0 & 0 \\
0 & 1 & -1 & 1 & 0 & 0 & 0 & -1 & 0 & 0 \\
0 & 0 & 1 & -1 & 1 & 0 & 0 & 0 & -1 & 0 \\
1 & 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & -1
\end{array}\right]^{-1} \cdot C
$$