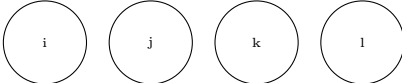

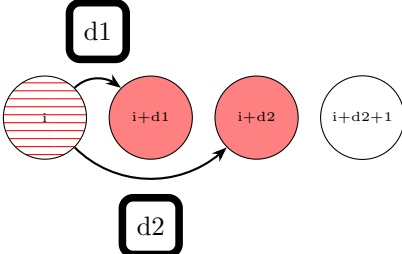
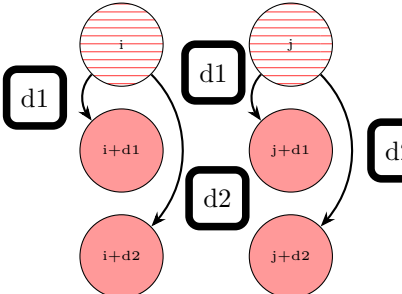
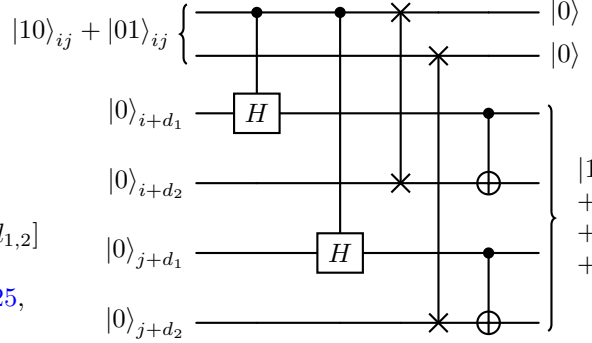
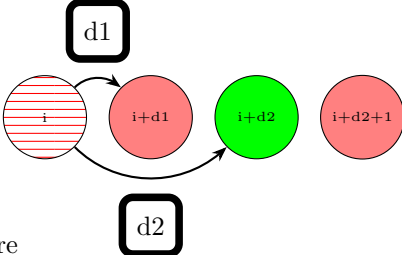


Move name	Move	Python list	Quantum array	Qiskit
Initialize		<code>board=[None] * 32</code>	$ 0\rangle_i$ — $ 0\rangle_j$ — $ 0\rangle_k$ — $ 0\rangle_l$ —	<code>q = QuantumRegister(10, 'q')</code> <code>circuit = QuantumCircuit(q)</code>
New pawn		<code>board[i] = {</code> <code> 'color': red,</code> <code> 'probability': 1,</code> <code> 'pawn': 1 }</code>	$ 0\rangle_i$ — X — $ 1\rangle_i$ $ 0\rangle_j$ — $ 0\rangle_k$ — $ 0\rangle_l$ —	<code>circuit.x[q[i]]</code>
First move		<code>board[i] = None</code> <code>board[i+d1, i+d2] = {</code> <code> 'color': red,</code> <code> 'probability': 0.5,</code> <code> 'pawn': 1 }</code>	$ 1\rangle_i$ — \bullet — \times — $ 0\rangle$ $ 0\rangle_{i+d1}$ — H — \times — \bullet — \times — $ 0\rangle$ $ 0\rangle_{i+d2}$ — \times — \oplus — \times — $ 0\rangle$ $\left. \begin{array}{l} 1\rangle_i \\ 0\rangle_{i+d1} \\ 0\rangle_{i+d2} \end{array} \right\} 01\rangle + 10\rangle$	<code>circuit.ch(q[i], q[i+d1])</code> <code>circuit.swap(q[i], q[i+d2])</code> <code>circuit.cx(q[i+d1], q[i+d2])</code>
Second move		<code>board[i, j] = None</code> <code>board[i + d1,2, j + d1,2] = {</code> <code> 'color': red,</code> <code> 'probability': 0.25,</code> <code> 'pawn': 1 }</code>	$ 10\rangle_{ij} + 01\rangle_{ij} \left\{ \begin{array}{l} 0\rangle \\ 0\rangle_{i+d1} \\ 0\rangle_{i+d2} \\ 0\rangle_{j+d1} \\ 0\rangle_{j+d2} \end{array} \right.$  $\left. \begin{array}{l} 0\rangle \\ 0\rangle_{i+d1} \\ 0\rangle_{i+d2} \\ 0\rangle_{j+d1} \\ 0\rangle_{j+d2} \end{array} \right\} \begin{array}{l} 1000\rangle \\ + 0100\rangle \\ + 0010\rangle \\ + 0001\rangle \end{array}$	<code>circuit.ch(q[i], q[i+d1])</code> <code>circuit.ch(q[j], q[j+d1])</code> <code>circuit.swap(q[i], q[i+d2])</code> <code>circuit.swap(q[j], q[j+d2])</code> <code>circuit.cx(q[i+d1], q[i+d2])</code> <code>circuit.cx(q[j+d1], q[j+d2])</code>
full-full capture		<code>board[i] = None</code> <code>board[i+d1, i+d2+1] = {</code> <code> 'color': red,</code> <code> 'probability': (1/2),</code> <code> 'pawn': 1 }</code>	$ 1\rangle_i$ — \bullet — \times — $ 0\rangle$ $ 0\rangle_{i+d1}$ — H — \times — \bullet — \times — $ 0\rangle$ $ 1\rangle_{i+d2}$ — \times — \oplus — \times — $ 0\rangle$ $ 0\rangle_{i+d2+1}$ — \times — \oplus — \times — $ 0\rangle$ $\left. \begin{array}{l} 1\rangle_i \\ 0\rangle_{i+d1} \\ 1\rangle_{i+d2} \\ 0\rangle_{i+d2+1} \end{array} \right\} 110\rangle + 001\rangle$	<code>circuit.ch(q[i], q[i+d1])</code> <code>circuit.swap(q[i], q[i+d2])</code> <code>circuit.cx(q[i+d1], q[i+d2])</code> <code>circuit.cx(q[i+d2+1], q[i+d2])</code>

