Some examples typesetting finite automata in LaTeX

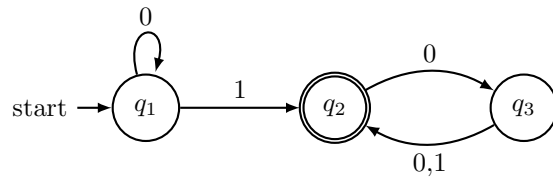Geoffrey Matthews

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Put the following in your preamble:

```
\usepackage{tikz}
\usetikzlibrary{arrows,automata}
```

```
\begin{tikzpicture}[->,>=latex,thick,auto,node distance=2.5cm]
  \node[state,initial] (q1) {$q_1$};
  \node[state,accepting] (q2) [right of=q1] {$q_2$};
  \node[state] (q3) [right of=q2] {$q_3$};
  \path (q1) edge [loop above] node {0} (q1);
  \path (q1) edge node {1} (q2);
  \path (q2) edge [bend left] node {0} (q3);
  \path (q3) edge [bend left] node {0,1} (q2);
\end{tikzpicture}
```
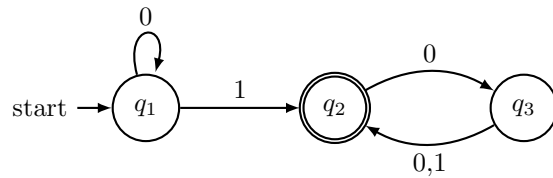


```
\begin{tikzpicture}[->,>=latex,thick,auto,node distance=2.5cm]
  \node[state,initial] (q1) {$q_1$};
  \node[state,accepting] (q2) [right of=q1] {$q_2$};
  \node[state] (q3) [right of=q2] {$q_3$};
  \path (q1) edge [loop above] node {0} (q1)
        (q1) edge node {1} (q2)
        (q2) edge [bend left] node {0} (q3)
        (q3) edge [bend left] node {0,1} (q2);
\end{tikzpicture}
```
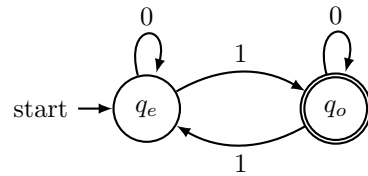
```
\begin{tikzpicture}[->,>=latex,thick,auto,node distance=2.5cm]
  \node[state,initial] (e) {$q_e$};
  \node[state,accepting] (o) [right of=e] {$q_o$};
  \path (e) edge [loop above] node {0} (e)
        (e) edge [bend left] node {1} (o)
        (o) edge [bend left] node {1} (e)
        (o) edge [loop above] node {0} (e);
\end{tikzpicture}
```



```
\begin{tikzpicture}[->,>=latex,thick,auto,node distance=2.5cm]
  \node[state,initial] (q) {$q$};
  \node[state] (1) [right of=q] {$q_1$};
  \node[state] (10) [below of=1] {$q_{10}$};
  \node[state,accepting] (101) [right of=10] {$q_{101}$};
  \path (q) edge [loop above] node {0} (q)
        (q) edge node {1} (1)
        (1) edge [loop above] node {1} (1)
        (1) edge node {0} (10)
        (10) edge node {0} (q)
        (10) edge node {1} (101)
        (101) edge [loop above] node {0,1} (101);
\end{tikzpicture}
```