Some examples typesetting finite automata in LaTeX

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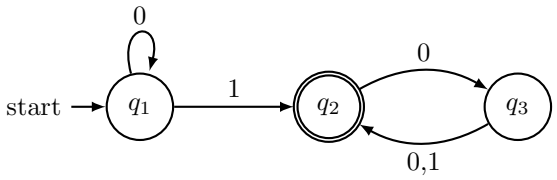
January 31, 2017

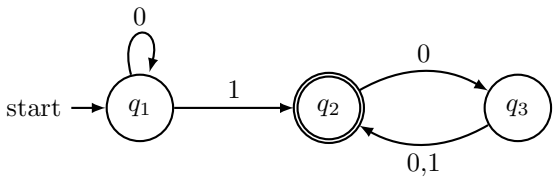
Put the following in your preamble:

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

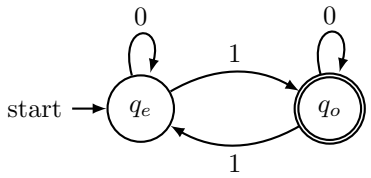
```
\begin{tikzpicture}[->,>=latex,thick,auto,node distance=2.5cm]
  \node[state,initial] (q1) {$q_1$};
  \node[state,accepting] (q2) [right of=q1] {$q_2$};
  \node[state] (q3) [right of=q2] {$q_3$};
  \path (q1) edge [loop above] node {0} (q1);
  \path (q1) edge node {1} (q2);
  \path (q2) edge [bend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



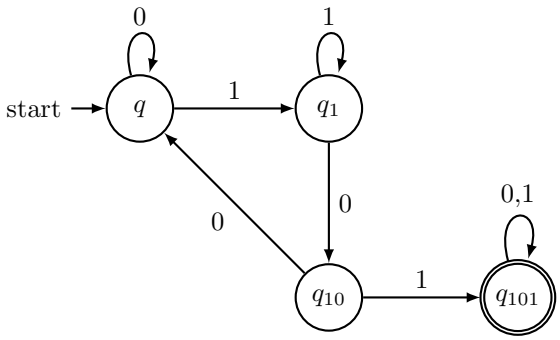

```
\begin{tikzpicture}[->,>=latex,thick,auto,node distance=2.5cm]
  \node[state,initial] (q1) {$q_1$};
  \node[state,accepting] (q2) [right of=q1] {$q_2$};
  \node[state] (q3) [right of=q2] {$q_3$};
  \path (q1) edge [loop above] node {0} (q1)
        (q1) edge node {1} (q2)
        (q2) edge [bend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



```
\begin{tikzpicture}[->,>=latex,thick,auto,node distance=2.5cm]
  \node[state,initial] (000) {$q_{000}$};
  \node[state,accepting] (100) [right of=000] {$q_{100}$};
  \node[state] (010) [right of=100] {$q_{010}$};
  \node[state,accepting] (110) [right of=010] {$q_{110}$};
  \node[state] (001) [below of=000] {$q_{001}$};
  \node[state,accepting] (101) [right of=001] {$q_{101}$};
  \node[state] (011) [right of=101] {$q_{011}$};
  \node[state,accepting] (111) [right of=011] {$q_{111}$};
  \path (000) edge [loop above] node {0} (000)
  (000) edge node {1} (001)
  (100) edge node {0} (000)
  (100) edge node [left] {1} (001)
  (010) edge node {0} (100)
  (010) edge [out=-140,in=50] node [left] {1} (101)
  (110) edge [out=90, in=90] node [above] {0} (100)
  (110) edge node [above] {1} (101)
  (001) edge node {0} (010)
  (001) edge [out=-90, in=-90] node {1} (011)
  (101) edge [out=40,in=-130] node [right] {0} (010)
  (101) edge node {1} (011)
  (011) edge node [below] {0} (110)
  (011) edge node {1} (111)
  (111) edge node {0} (110)
  (111) edge [loop below] node {1} (111);
\end{tikzpicture}
```