Chapter 1

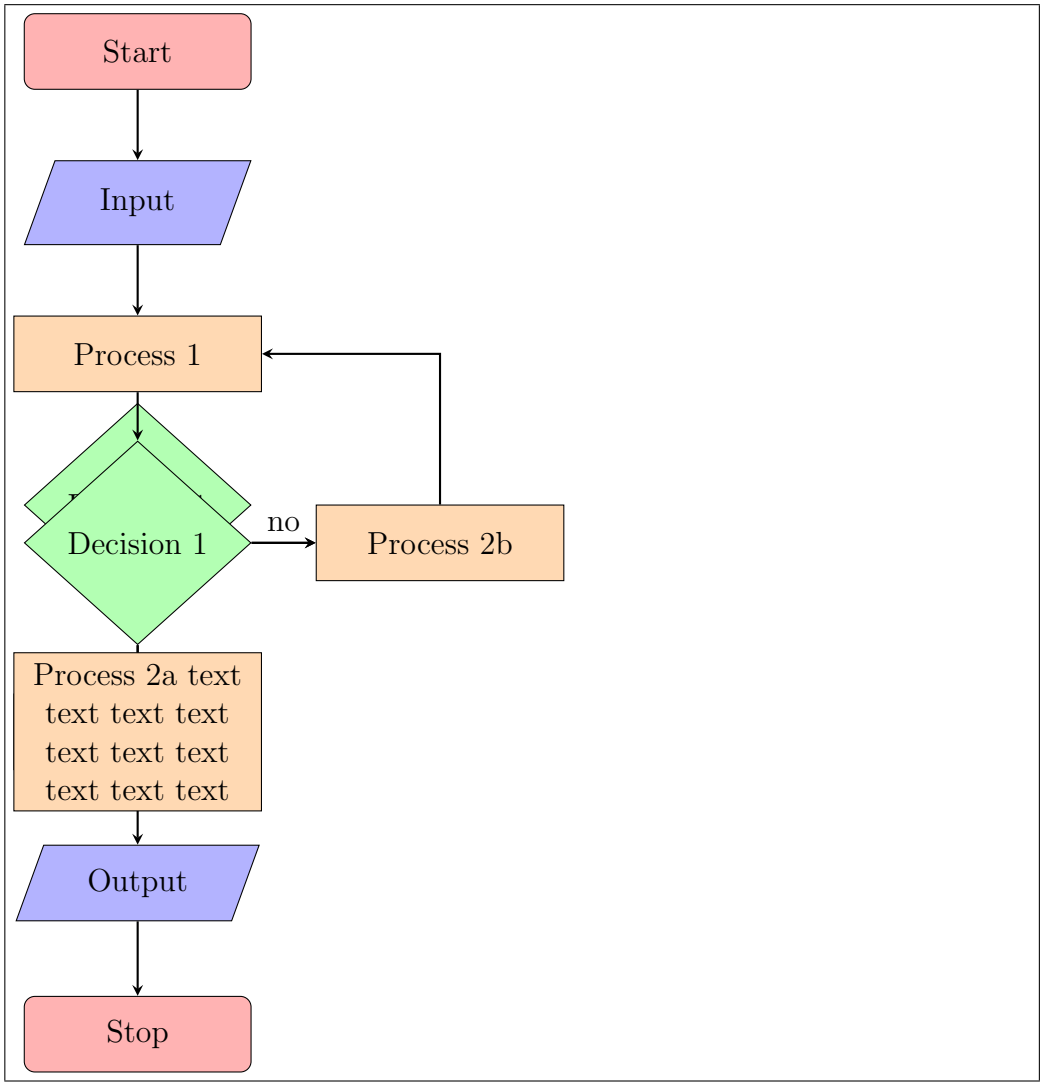
References for complex Latex commands

1.1 Basic Flowchart

All flowcharts related latex commands can be followed here.
Reference: https://www.sharelatex.com/blog/2013/08/29/tikz-series-pt3.html

```
% Create Tikz style, something like typedef in C,
where we can specify the shape, color, size, text details
    etc

\tikzstyle{startstop} = [rectangle, rounded corners,
   minimum width=3cm,
minimum height=1cm,text centered, draw=black, fill=red
   !30]
\tikzstyle{io} = [trapezium, trapezium left angle=70,
   trapezium right angle=110, minimum width=3cm, minimum
   height=1cm, text centered, draw=black, fill=blue!30]
%\tikzstyle{process} = [rectangle, minimum width=3cm,
   minimum height=1cm, text centered, draw=black, fill=
   orange!30]
\tikzstyle{process} = [rectangle, minimum width=3cm,
   minimum height=1cm, text centered, text width=3cm,
   draw=black, fill=orange!30]
\tikzstyle{decision} = [diamond, minimum width=3cm,
   minimum height=1cm, text centered, draw=black, fill=
   green!30]
\tikzstyle{arrow} = [thick,->,>=stealth]
```




```
\begin{figure}[h!] %Create figure holder
\begin{tikzpicture}[node distance=2cm] %use the
     tikzpicture  environment

% Nodes are very powerful as we can easily position them,
    make them draw a shape, heavily format them and give
    them some text. In square brackets at the end of the
    begin command we specify a node distance of 2cm. This
    is so that the nodes we use to build the blocks are
    automatically spaced 2cm apart from their centres.
```

```
%      node_var  style   display text
\node (start) [startstop] {Start};
\node (in1) [io, below of=start] {Input};
\node (pro1) [process, below of=in1] {Process 1};
\node (dec1) [decision, below of=pro1] {Decision 1};
\node (dec1) [decision, below of=pro1, yshift=-0.5cm] {
   Decision 1};
\node (pro2a) [process, below of=dec1, yshift=-0.5cm] {
   Process 2a};
\node (pro2b) [process, right of=dec1, xshift=2cm] {
   Process 2b};
\node (out1) [io, below of=pro2a] {Output};
\node (stop) [startstop, below of=out1] {Stop};

\draw [arrow] (start) -- (in1);
\draw [arrow] (in1) -- (pro1);
\draw [arrow] (pro1) -- (dec1);
\draw [arrow] (dec1) -- (pro2a);
\draw [arrow] (dec1) -- (pro2b);
\draw [arrow] (dec1) -- node[anchor=east] {yes} (pro2a);
\draw [arrow] (dec1) -- node[anchor=south] {no} (pro2b);

\draw [arrow] (pro2b) |- (pro1);
\draw [arrow] (pro2a) -- (out1);
\draw [arrow] (out1) -- (stop);

\node (pro2a) [process, below of=dec1, yshift=-0.5cm] {
   Process 2a text text text text text text text text
   text text};

\end{tikzpicture}
\end{figure}
```

1.2 Tikz

A library to draw graphics in LaTeX. We will cover the basics here, most of the stuff are explained in the code.

```
\draw[] - command draws what comes next. Takes options
    in []
```

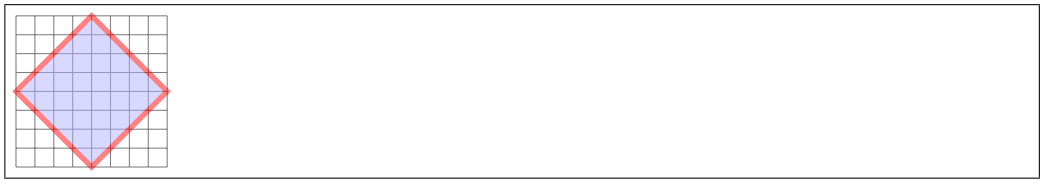


Figure 1.1: Basics 1

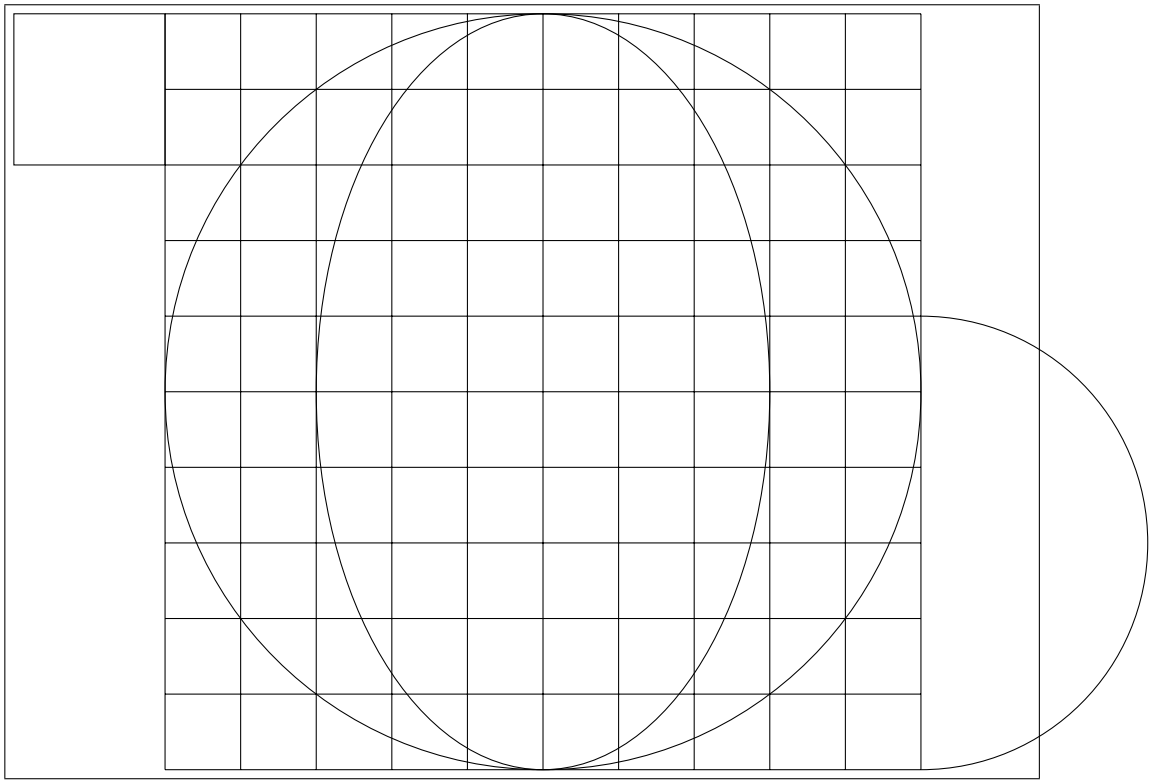


Figure 1.2: Basics 2

Figure 1.3: Basics 3

1.3 Neural Nets

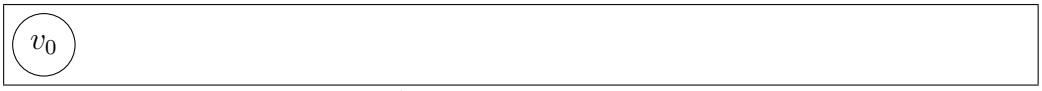


Figure 1.4: Basics 4

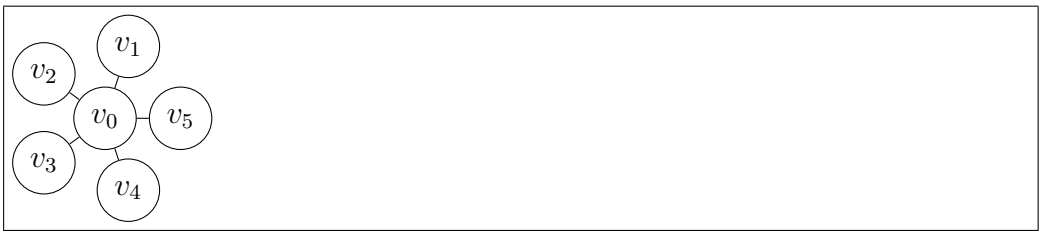


Figure 1.5: Basics 5

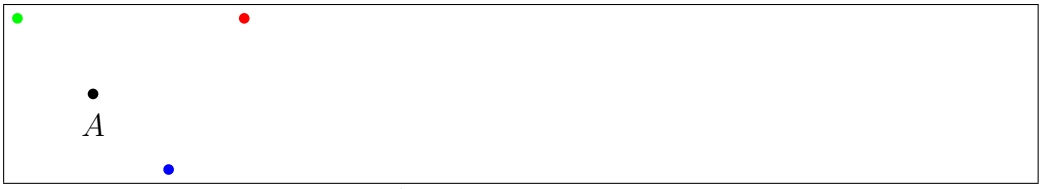


Figure 1.6: Basics 5

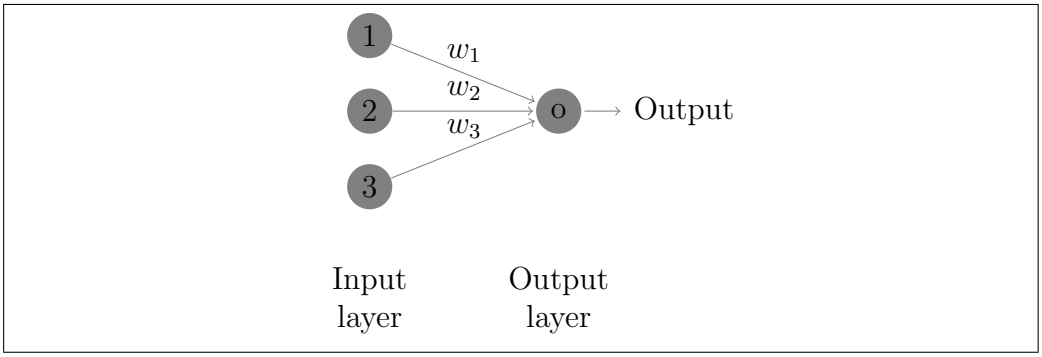


Figure 1.7: An artificial neuron as used in a Hopfield network