*TikZ*ische Erlebnisse

Dante Frühjahrstagung 2025

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26. März 2025

Inhalt

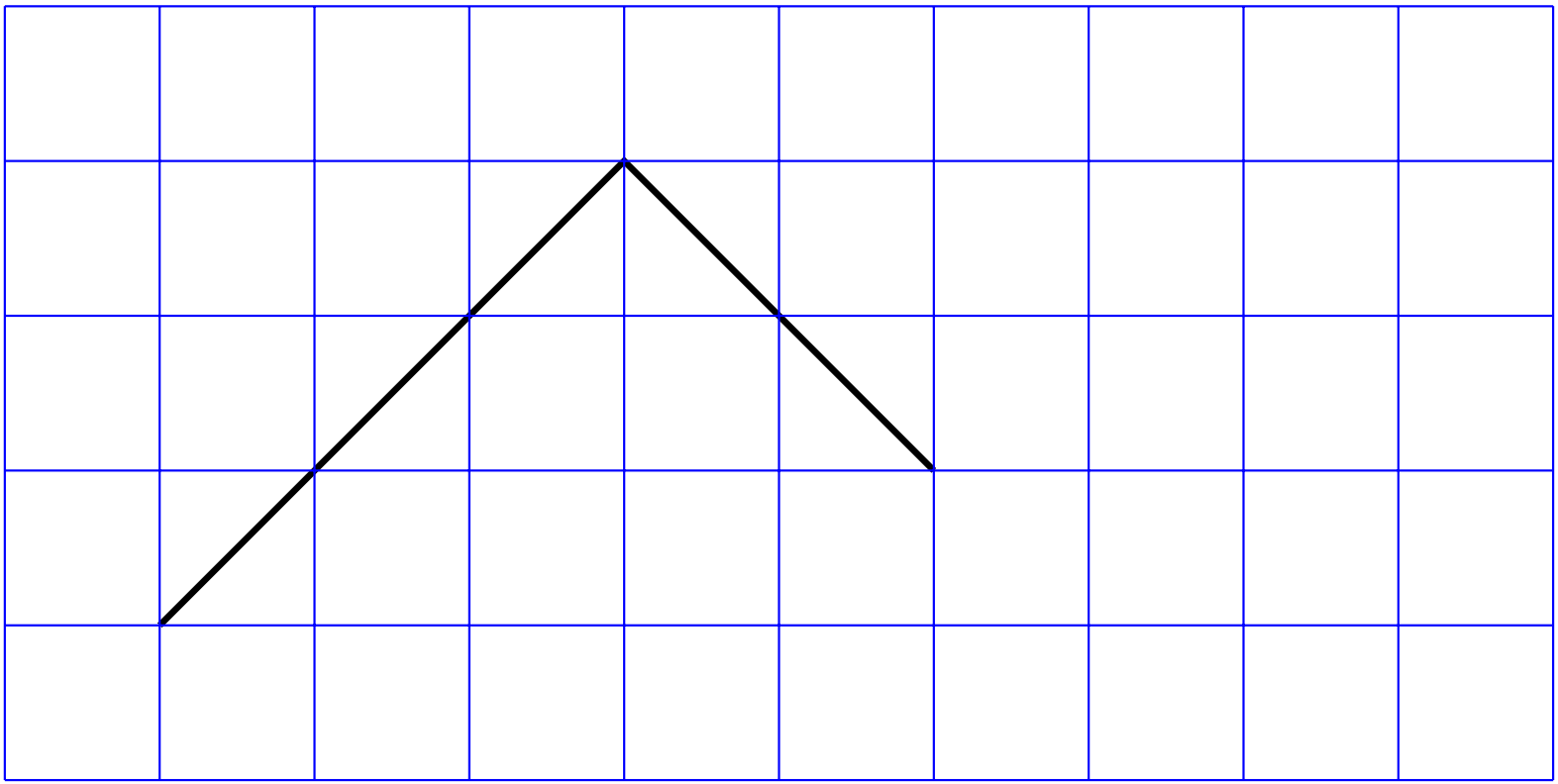
- Kurze (nicht vollständige) Vorstellung von TikZ-Grundlagen
- Beispiele, Beispiele, Beispiele. . .

Geschichte

- TikZ = „TikZ ist kein Zeichenprogramm“
- TikZ = „Frontend“ für PGF („portable graphics format“)
- Entwickler Till Tantau, Christian Feuersänger
- Erscheinungsjahr 2005

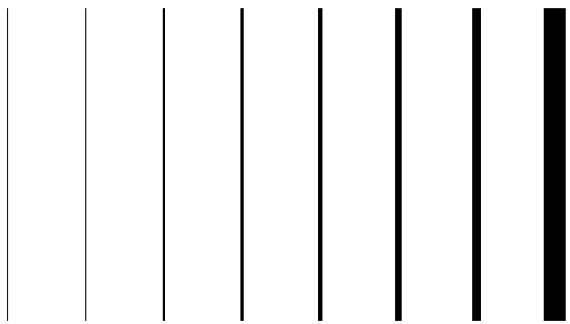
Einfache Linien

```
1 \begin{tikzpicture}
2 \draw[very thick] (1,1) -- (4,4) -- (6,2);
3 \draw[step=1cm,blue,thin] (0,0) grid (10,5);
4 \end{tikzpicture}
```



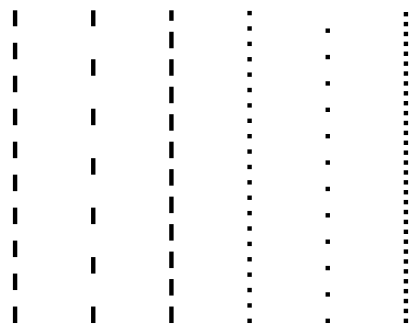
Liniendicken

```
\begin{tikzpicture}
\draw[ultra thin] (2,1) -- (2,3);
\draw[very thin] (2.5,1) -- (2.5,3);
\draw[thin] (3,1) -- (3,3);
\draw[semithick] (3.5,1) -- (3.5,3);
\draw[thick] (4,1) -- (4,3);
\draw[very thick] (4.5,1) -- (4.5,3);
\draw[ultra thick] (5,1) -- (5,3);
\draw[line width=4pt] (5.5,1) -- (5.5,3);
\end{tikzpicture}
```



Linienstile

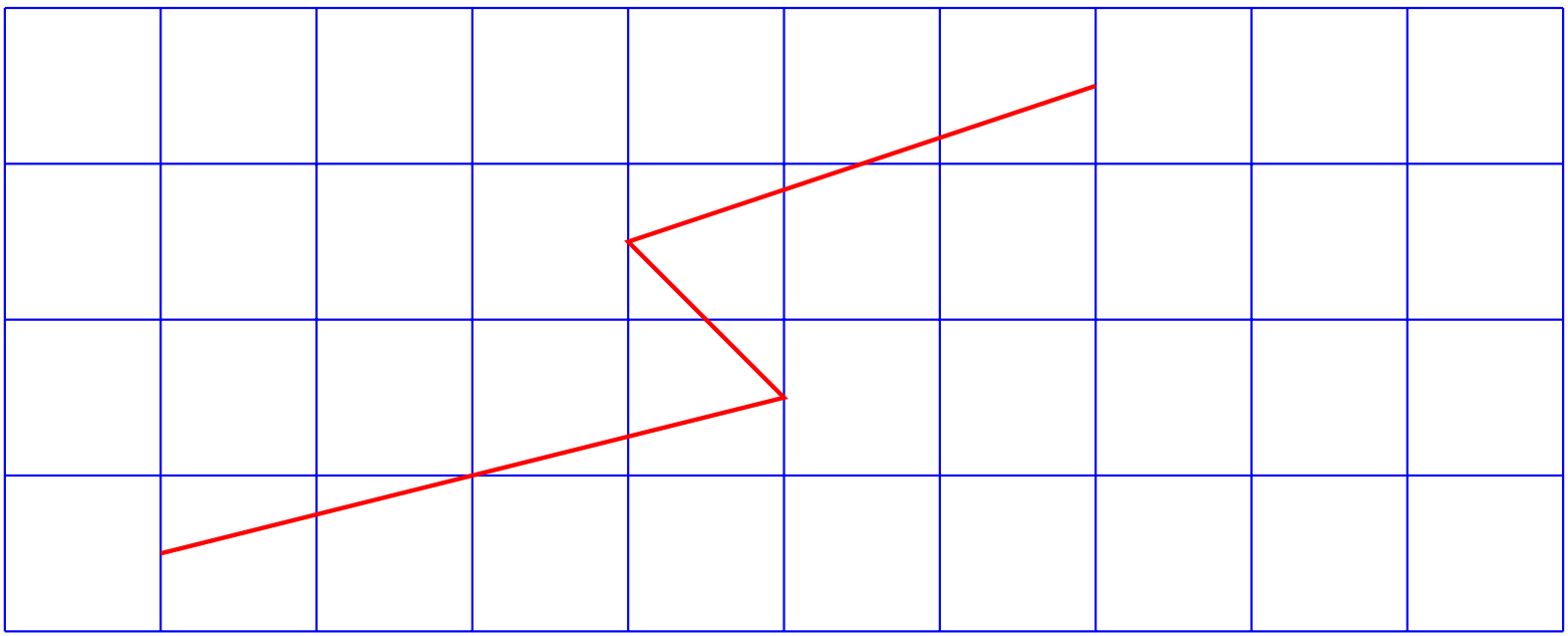
```
\begin{tikzpicture}
\draw[thick, dashed] (2,1) -- (2,3);
\draw[thick, loosely dashed] (2.5,1) -- (2.5,3);
\draw[thick, densely dashed] (3,1) -- (3,3);
\draw[thick, dotted] (3.5,1) -- (3.5,3);
\draw[thick, loosely dotted] (4,1) -- (4,3);
\draw[thick, densely dotted] (4.5,1) -- (4.5,3);
\end{tikzpicture}
```



Rel. Koordinaten I

mit Update der Koordinaten

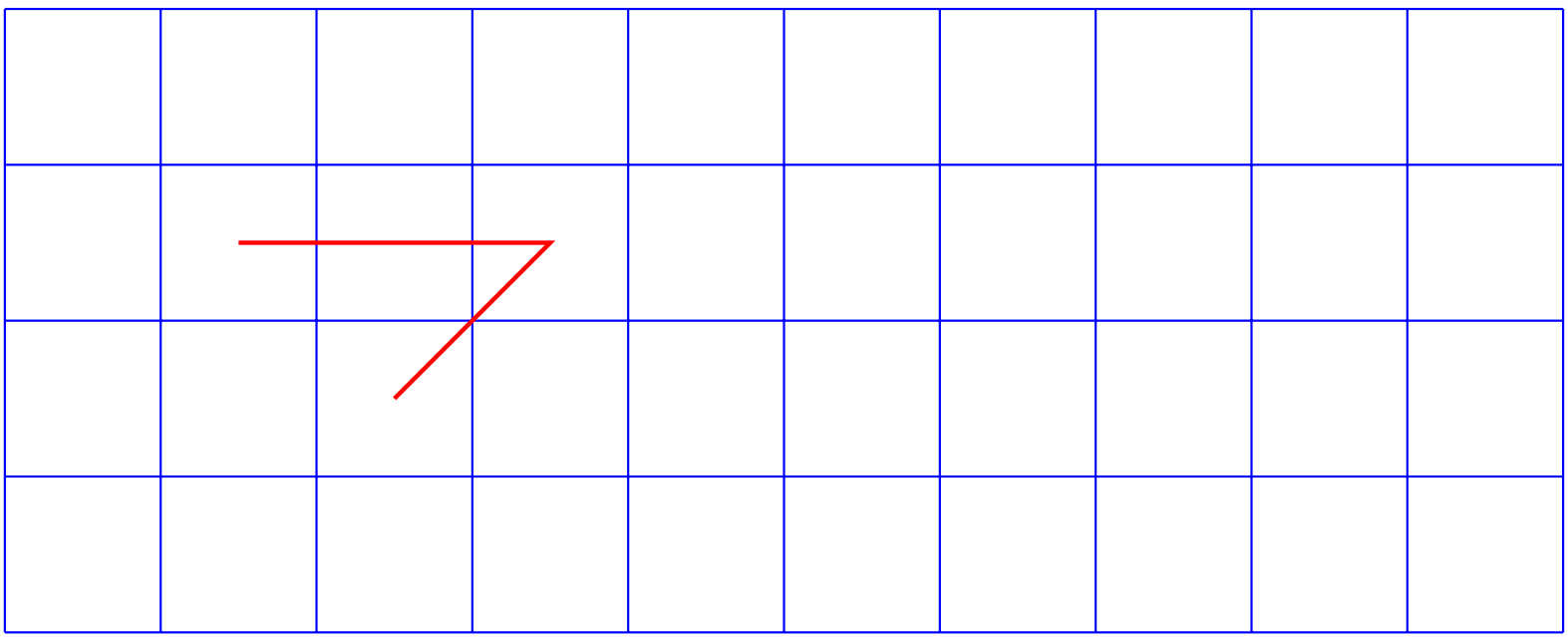
```
1 \begin{tikzpicture}
2 \draw[step=1cm,blue,thin] (0,0) grid (10,4);
3
4 \draw[thick, red] (1,0.5) -- ++(4,1) -- ++(-1,1) -- ++(3,1);
5 \end{tikzpicture}
```



Rel. Koordinaten II

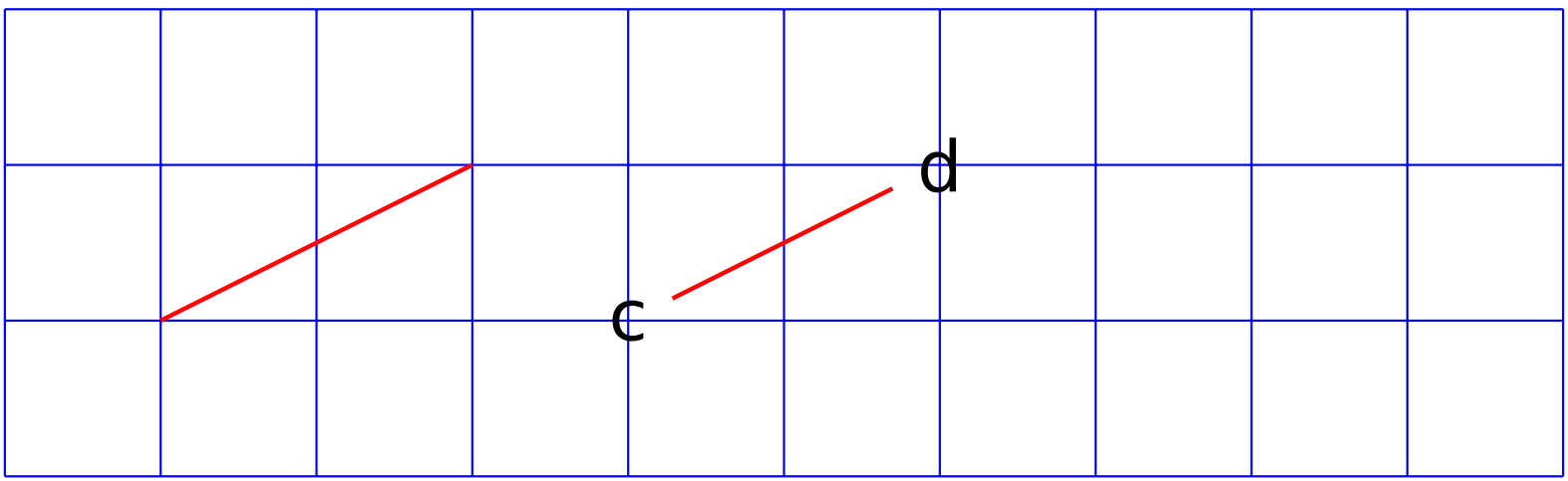
ohne Update der Koordinaten

```
1  \begin{tikzpicture}
2  \draw[step=1cm,blue,thin] (0,0) grid (10,4);
3
4  \draw[thick, red] (1,0.5) -- ++(4,1) -- ++(-1,1) -- ++(3,1);
5  \end{tikzpicture}
```



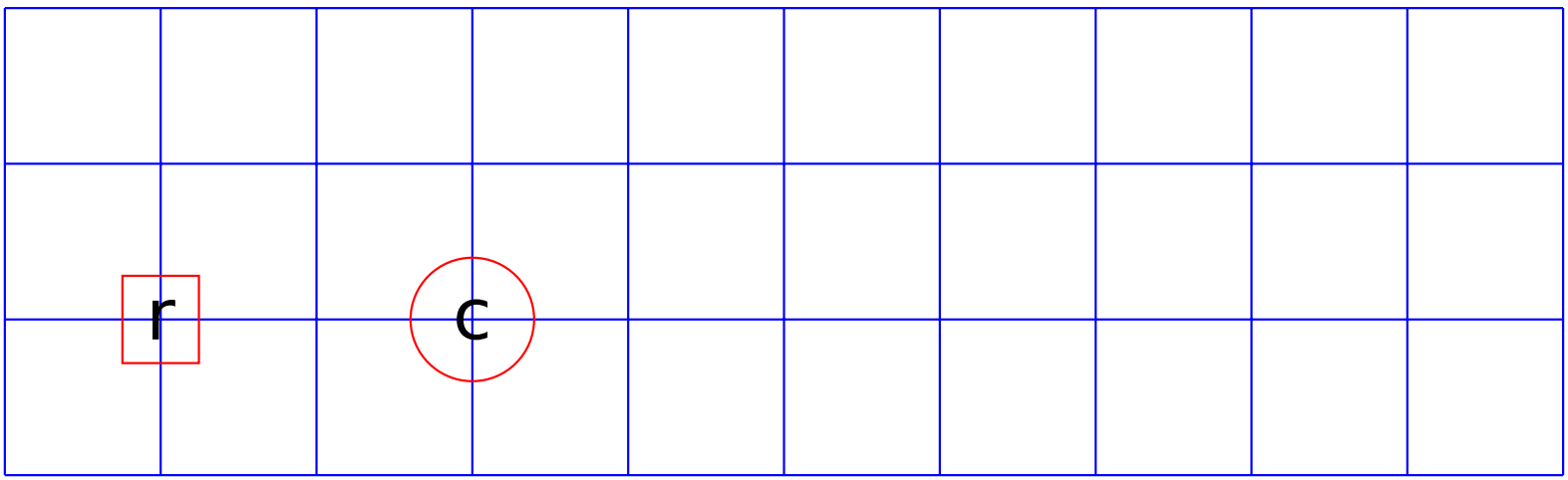
Nodes und Coordinates

```
1  \begin{tikzpicture}
2  \draw[step=1cm,blue,thin] (0,0) grid (10,3);
3
4  \coordinate (a) at (1,1);
5  \coordinate (b) at (5,3);
6  \draw[red, thick] (a) -- (b);
7
8  \node (c) at (3,1){c};
9  \node (d) at (7,3){d};
10 \draw[red, thick] (c) -- (d);
11 \end{tikzpicture}
```



Node Shapes

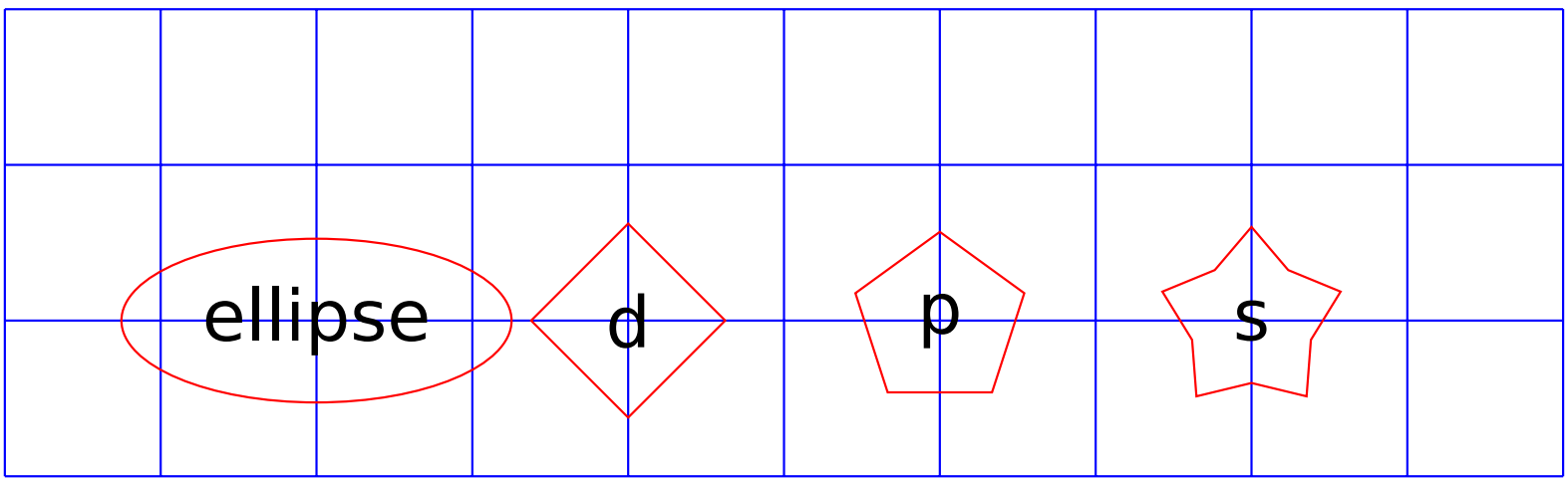
```
1 \begin{tikzpicture}
2 \draw[step=1cm,blue,thin] (0,0) grid (10,3);
3
4 \node[rectangle,draw = red] (r) at (1,1){r};
5 \node[circle,draw = red] (c) at (3,1){c};
6 \end{tikzpicture}
```



- more with `\usetikzlibrary{shapes}`

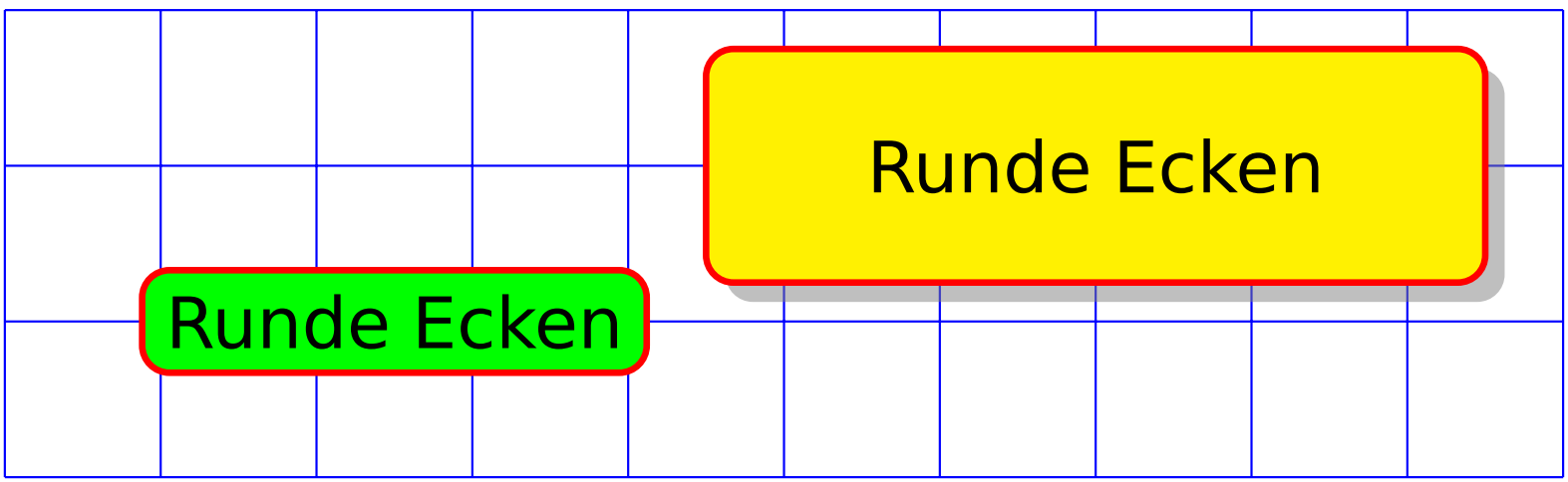
Mehr Node Shapes

```
\begin{tikzpicture}
\draw[step=1cm,blue,thin] (0,0) grid (10,3);

\node[ellipse,draw = red] (e) at (2,1){ellipse};
\node[diamond,draw = red] (d) at (4,1){d};
\node[regular polygon,regular polygon sides=5,draw=red](p) at (6,1){p
    };
\node[star,star points=5,draw = red] (s) at (8,1){s};
\end{tikzpicture}
```



Shapes formatieren

```
1 \begin{tikzpicture}
2 \draw[step=1cm,blue,thin] (0,0) grid (10,3);
3
4 \node[rectangle,draw = red,very thick,rounded corners=5pt,fill=green]
      (r) at (2.5,1){Runde Ecken};
5
6 \node[rectangle,draw = red,very thick,rounded corners=5pt,minimum
      width=5cm, minimum height=15mm, fill=yellow] (r) at (7,2){Runde
      Ecken};
7 \end{tikzpicture}
```



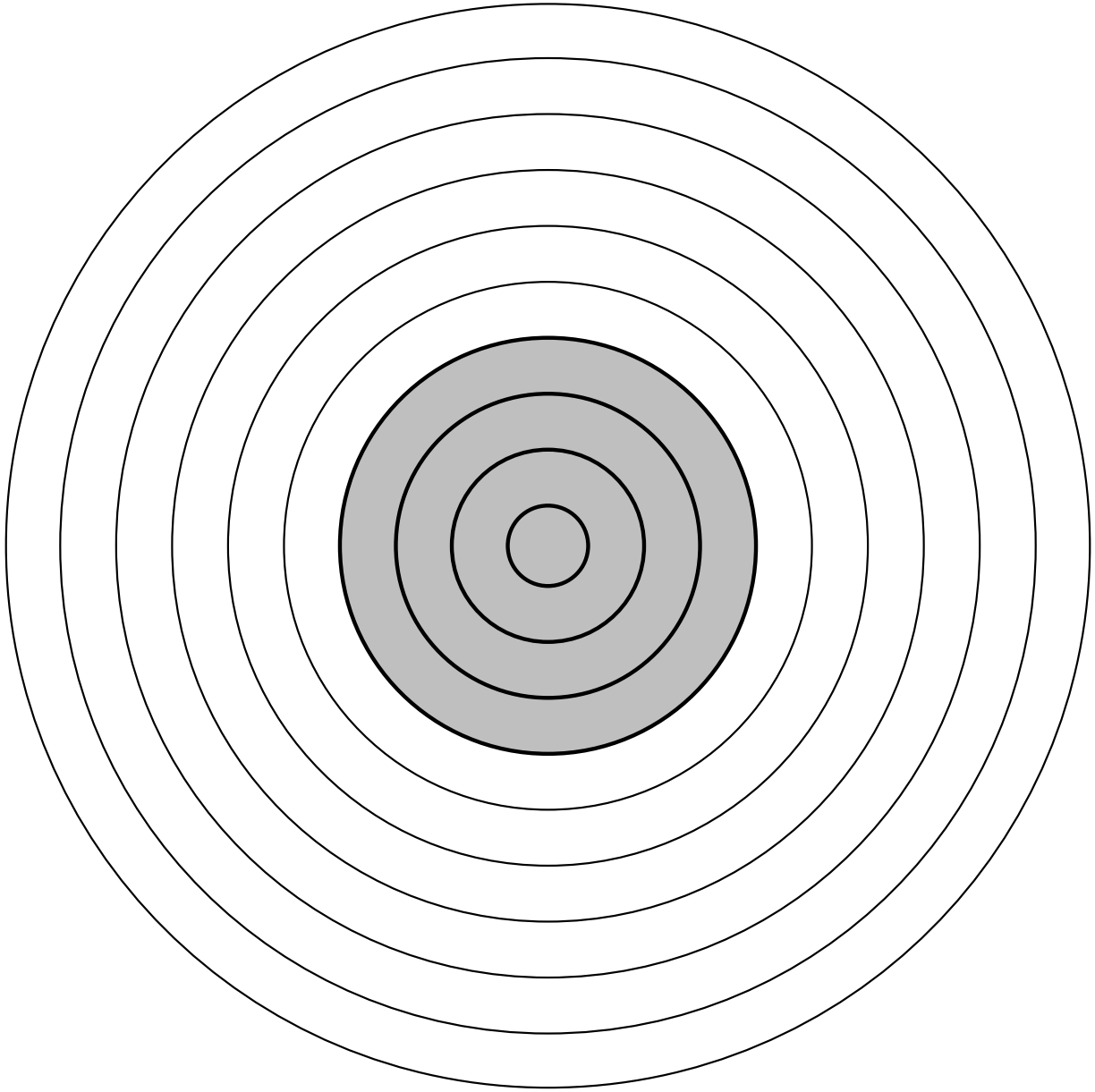
Anwendungen

- Zielscheibe 10m Luftpistole
- Weihnachtszahlen
- Kalender
- Synthesizer-Diagramm

Zielscheibe Luftpistole I

```
\begin{tikzpicture}
\coordinate (o) at (8,8);
\draw[black] (o) circle (77.5mm);
\draw[black] (o) circle (69.75mm);
\draw[black] (o) circle (61.75mm);
\draw[black] (o) circle (53.75mm);
\draw[black] (o) circle (45.75mm);
\draw[black] (o) circle (37.75mm);
\draw[black,thick,fill=lightgray] (o) circle (29.75mm);
\draw[black,thick] (o) circle (21.75mm);
\draw[black,thick] (o) circle (13.75mm);
\draw[black,thick] (o) circle (5.75mm);
\end{tikzpicture}
```

Zielscheibe Luftpistole II



Zielscheibe Luftpistole III

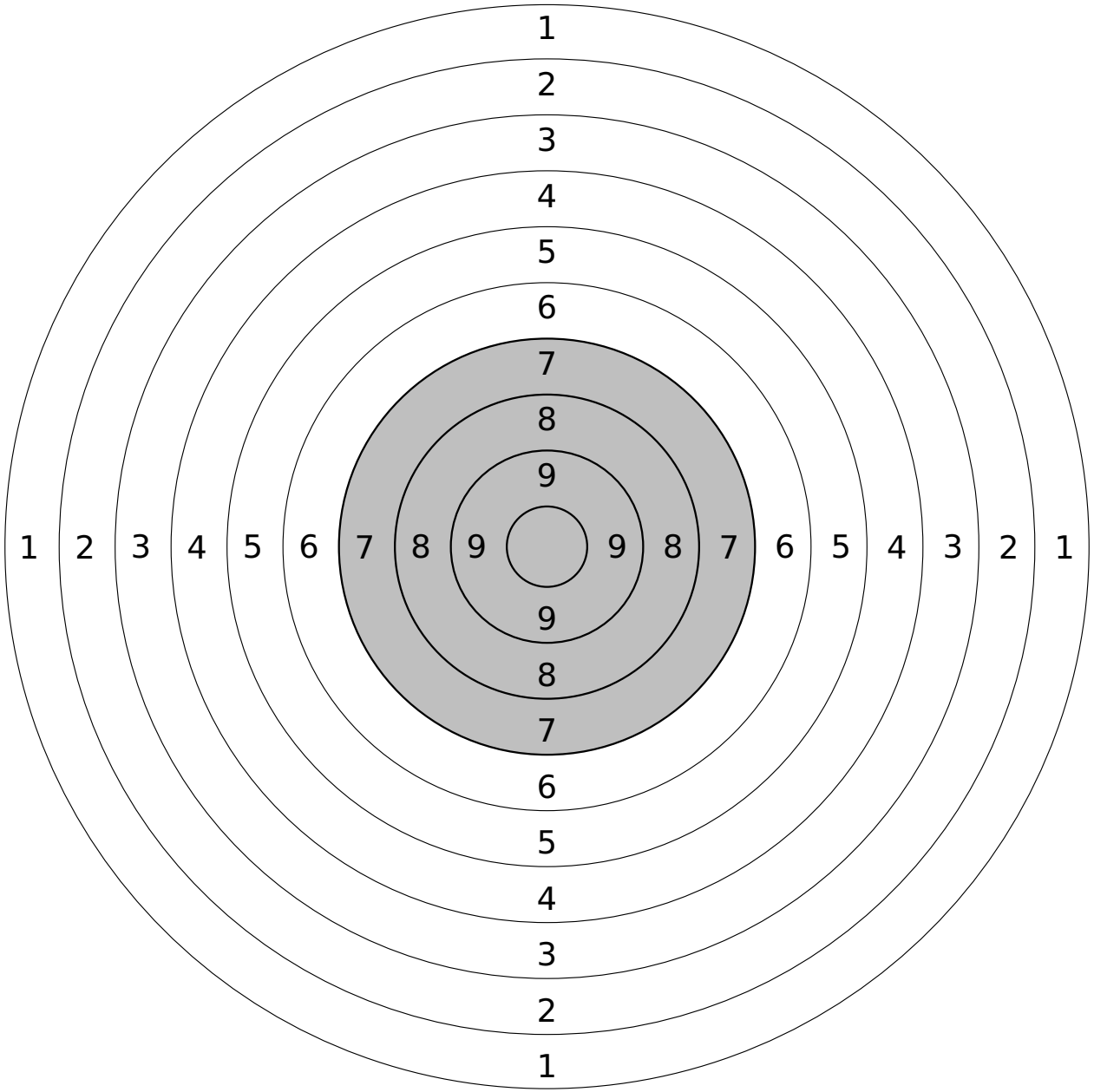
- Positioning-Bibliothek laden

```
\usetikzlibrary{positioning}
```

```
\begin{tikzpicture}
\node[right=0.7cm of o] {9};
\node[right=1.5cm of o] {8};
\node[right=2.3cm of o] {7};
\node[right=3.1cm of o] {6};
\node[right=3.9cm of o] {5};
\node[right=4.7cm of o] {4};
\node[right=5.5cm of o] {3};
\node[right=6.3cm of o] {2};
\node[right=7.1cm of o] {1};
\end{tikzpicture}
```

- wiederholen für left, above, below

Zielscheibe Luftpistole IV



Zielscheibe Luftpistole V

- Code vereinfachen mit `listofitems` Paket

```
\usepackage{listofitems}
\setsepchar{;}
\coordinate (o) at (8,8);
\draw[black,thick,fill=lightgray] (o) circle (29.75mm);
\readlist\distances
    {77.5;69.75;61.75;53.75;45.75;37.75;21.75;13.75;5.75}
\foreachitem\distance\in\distances{
  \draw[black] (o) circle (\distance mm);
}
\readlist\distances{7.1;6.3;5.5;4.7;3.9;3.1;2.3;1.5;0.7}
\readlist\directions{right;above;left;below}
\foreachitem\direction\in\directions{
  \foreachitem\distance\in\distances{
    \node[\direction=\distance cm of o] {\distancecnt};
   }}
```

Weihnachtszahlen I

- Zahlen 1–24 für Weihnachten
- DIN A4 Blatt gut ausfüllen
- (Manuelle) Matrix von Nodes

```
\node at (0,0) {1};
\node at (1,0) {2};
\node at (2,0) {3};
\node at (3,0) {4};

\node at (0,-1) {5};
\node at (1,-1) {6};
\node at (2,-1) {7};
\node at (3,-1) {8};
```

Weihnachtszahlen II

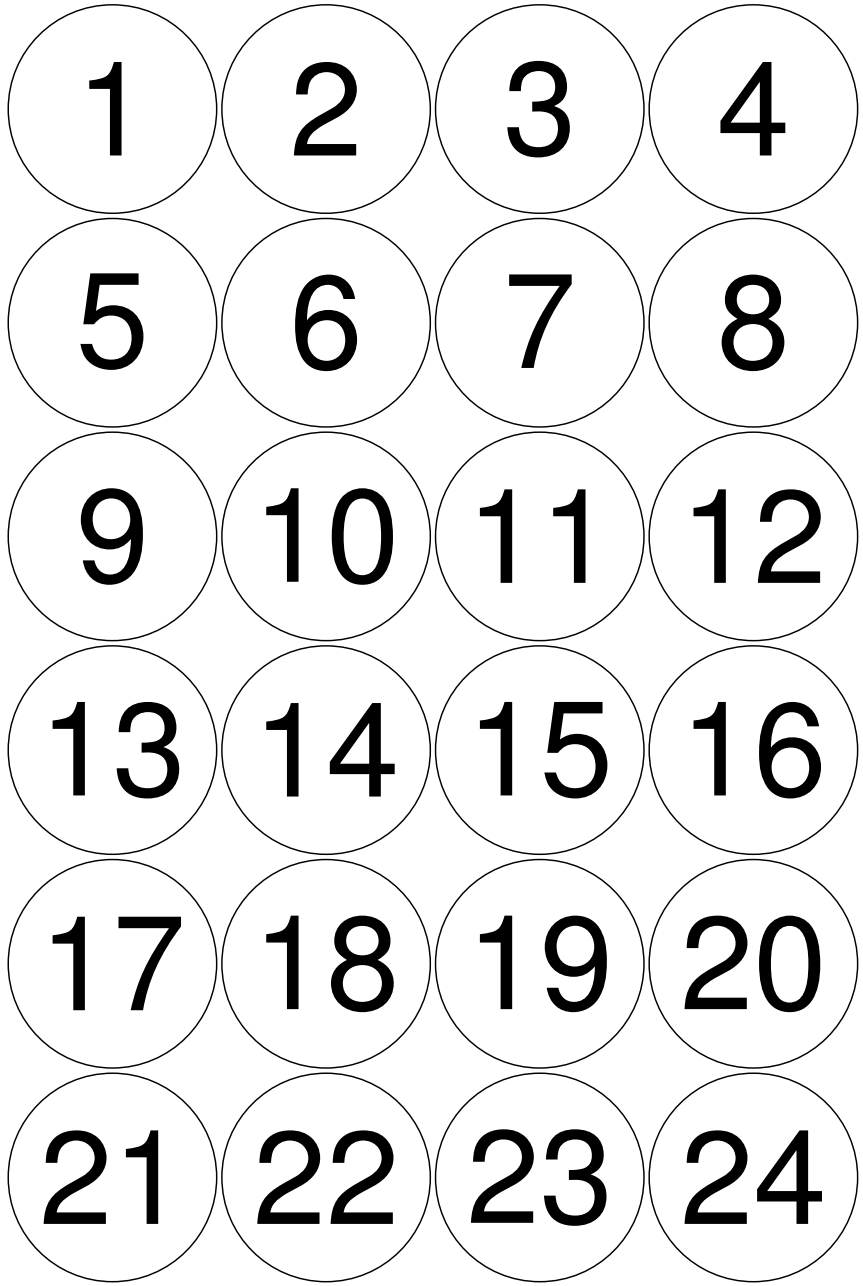
1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24

Weihnachtszahlen III

```
\tikzstyle{every node}=[circle,draw=black]

\node at (0,0) {1};
\node at (1,0) {2};
\node at (2,0) {3};
\node at (3,0) {4};

\node at (0,-1) {5};
\node at (1,-1) {6};
\node at (2,-1) {7};
\node at (3,-1) {8};
```

Weihnachtszahlen IV

```
1  \tikzstyle{every node}=[circle,draw=black,font=\fontsize
       {80}{80}\selectfont,x=41mm,y=41mm,minimum width=40mm,
       thick]
2
3  \node at (0,0) {1};
4  \node at (1,0) {2};
5  \node at (2,0) {3};
6  \node at (3,0) {4};
7
8  \node at (0,-1) {5};
9  \node at (1,-1) {6};
10 \node at (2,-1) {7};
11 \node at (3,-1) {8};
```


1 2 3 4
5 6 7 8
9 10 11 12
13 14 15 16
17 18 19 20
21 22 23 24

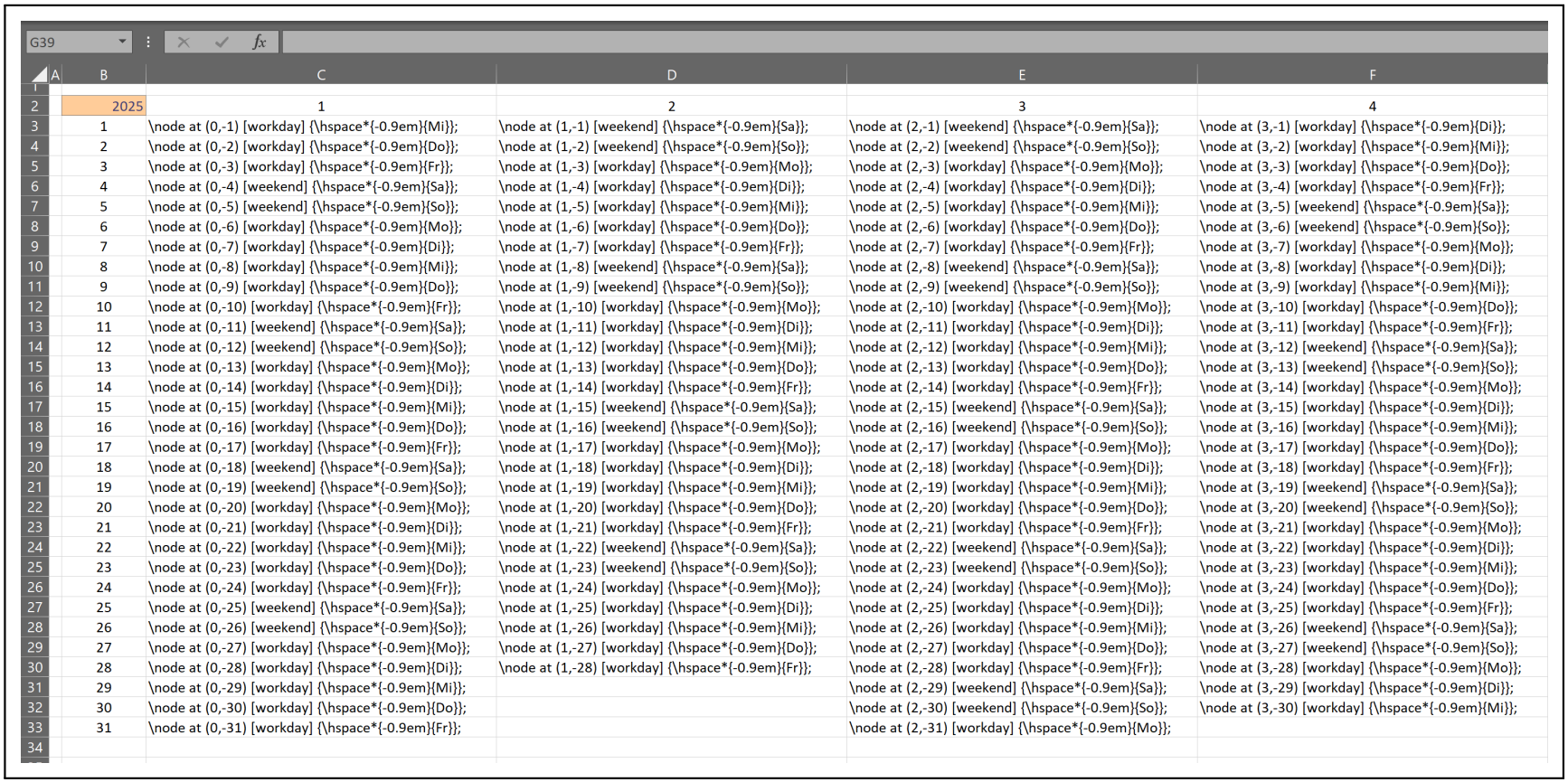
Kalender I

- Excel nutzen, um Kalender zu „bauen“
- Gleiches Konzept wie bei den Weihnachtszahlen: viele Nodes

```
=WENNFEHLER("\node at (" & C$2-1 &"," & -1* $B3 & ") ["
    & WENN(LINKS(TEXT(DATWERT($B3&"."&C$2&"."&$B$2);"TTT
    ");1)="S";"weekend";"workday") & "] {\hspace*{-0.9em
    }{" & TEXT(DATWERT($B3&"."&C$2&"."&$B$2);"TTT") &
    "}};";"")
```

Kalender II

- Excel = Lebensnotwendigkeit für BWLer
- `\node at (0,-1)[workday] {\hspace*{-0.9em}{Mi}};`



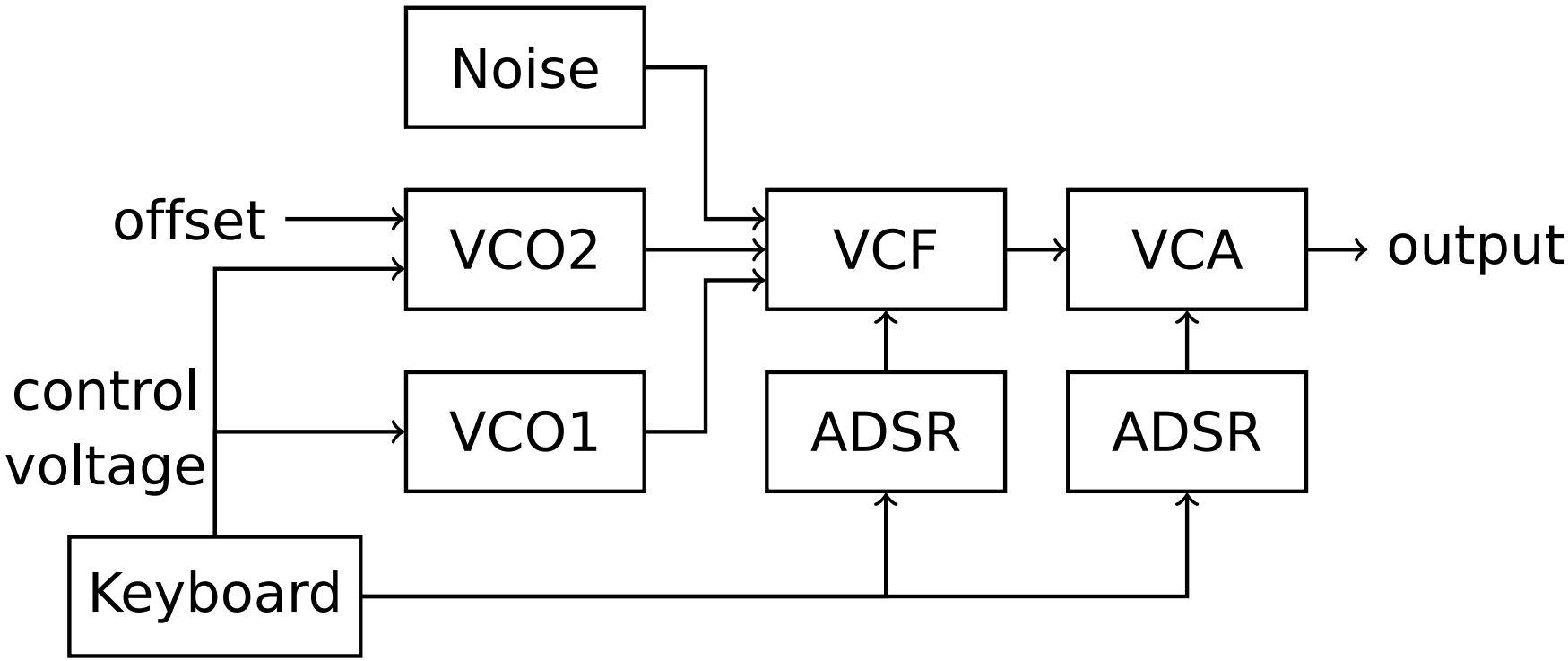
	B	C	D	E	F
2	2025	1	2	3	4
3	1	\node at (0,-1) [workday] {\hspace*{-0.9em}{Mi}};	\node at (1,-1) [weekend] {\hspace*{-0.9em}{Sa}};	\node at (2,-1) [weekend] {\hspace*{-0.9em}{Sa}};	\node at (3,-1) [workday] {\hspace*{-0.9em}{Di}};
4	2	\node at (0,-2) [workday] {\hspace*{-0.9em}{Do}};	\node at (1,-2) [weekend] {\hspace*{-0.9em}{So}};	\node at (2,-2) [weekend] {\hspace*{-0.9em}{So}};	\node at (3,-2) [workday] {\hspace*{-0.9em}{Mi}};
5	3	\node at (0,-3) [workday] {\hspace*{-0.9em}{Fr}};	\node at (1,-3) [workday] {\hspace*{-0.9em}{Mo}};	\node at (2,-3) [workday] {\hspace*{-0.9em}{Mo}};	\node at (3,-3) [workday] {\hspace*{-0.9em}{Do}};
6	4	\node at (0,-4) [weekend] {\hspace*{-0.9em}{Sa}};	\node at (1,-4) [workday] {\hspace*{-0.9em}{Di}};	\node at (2,-4) [workday] {\hspace*{-0.9em}{Di}};	\node at (3,-4) [workday] {\hspace*{-0.9em}{Fr}};
7	5	\node at (0,-5) [weekend] {\hspace*{-0.9em}{So}};	\node at (1,-5) [workday] {\hspace*{-0.9em}{Mi}};	\node at (2,-5) [workday] {\hspace*{-0.9em}{Mi}};	\node at (3,-5) [weekend] {\hspace*{-0.9em}{Sa}};
8	6	\node at (0,-6) [workday] {\hspace*{-0.9em}{Mo}};	\node at (1,-6) [workday] {\hspace*{-0.9em}{Do}};	\node at (2,-6) [workday] {\hspace*{-0.9em}{Do}};	\node at (3,-6) [weekend] {\hspace*{-0.9em}{So}};
9	7	\node at (0,-7) [workday] {\hspace*{-0.9em}{Di}};	\node at (1,-7) [workday] {\hspace*{-0.9em}{Fr}};	\node at (2,-7) [workday] {\hspace*{-0.9em}{Fr}};	\node at (3,-7) [workday] {\hspace*{-0.9em}{Mo}};
10	8	\node at (0,-8) [workday] {\hspace*{-0.9em}{Mi}};	\node at (1,-8) [weekend] {\hspace*{-0.9em}{Sa}};	\node at (2,-8) [weekend] {\hspace*{-0.9em}{Sa}};	\node at (3,-8) [workday] {\hspace*{-0.9em}{Di}};
11	9	\node at (0,-9) [workday] {\hspace*{-0.9em}{Do}};	\node at (1,-9) [weekend] {\hspace*{-0.9em}{So}};	\node at (2,-9) [weekend] {\hspace*{-0.9em}{So}};	\node at (3,-9) [workday] {\hspace*{-0.9em}{Mi}};
12	10	\node at (0,-10) [workday] {\hspace*{-0.9em}{Fr}};	\node at (1,-10) [workday] {\hspace*{-0.9em}{Mo}};	\node at (2,-10) [workday] {\hspace*{-0.9em}{Mo}};	\node at (3,-10) [workday] {\hspace*{-0.9em}{Do}};
13	11	\node at (0,-11) [weekend] {\hspace*{-0.9em}{Sa}};	\node at (1,-11) [workday] {\hspace*{-0.9em}{Di}};	\node at (2,-11) [workday] {\hspace*{-0.9em}{Di}};	\node at (3,-11) [workday] {\hspace*{-0.9em}{Fr}};
14	12	\node at (0,-12) [weekend] {\hspace*{-0.9em}{So}};	\node at (1,-12) [workday] {\hspace*{-0.9em}{Mi}};	\node at (2,-12) [workday] {\hspace*{-0.9em}{Mi}};	\node at (3,-12) [weekend] {\hspace*{-0.9em}{Sa}};
15	13	\node at (0,-13) [workday] {\hspace*{-0.9em}{Mo}};	\node at (1,-13) [workday] {\hspace*{-0.9em}{Do}};	\node at (2,-13) [workday] {\hspace*{-0.9em}{Do}};	\node at (3,-13) [weekend] {\hspace*{-0.9em}{So}};
16	14	\node at (0,-14) [workday] {\hspace*{-0.9em}{Di}};	\node at (1,-14) [workday] {\hspace*{-0.9em}{Fr}};	\node at (2,-14) [workday] {\hspace*{-0.9em}{Fr}};	\node at (3,-14) [workday] {\hspace*{-0.9em}{Mo}};
17	15	\node at (0,-15) [workday] {\hspace*{-0.9em}{Mi}};	\node at (1,-15) [weekend] {\hspace*{-0.9em}{Sa}};	\node at (2,-15) [weekend] {\hspace*{-0.9em}{Sa}};	\node at (3,-15) [workday] {\hspace*{-0.9em}{Di}};
18	16	\node at (0,-16) [workday] {\hspace*{-0.9em}{Do}};	\node at (1,-16) [weekend] {\hspace*{-0.9em}{So}};	\node at (2,-16) [weekend] {\hspace*{-0.9em}{So}};	\node at (3,-16) [workday] {\hspace*{-0.9em}{Mi}};
19	17	\node at (0,-17) [workday] {\hspace*{-0.9em}{Fr}};	\node at (1,-17) [workday] {\hspace*{-0.9em}{Mo}};	\node at (2,-17) [workday] {\hspace*{-0.9em}{Mo}};	\node at (3,-17) [workday] {\hspace*{-0.9em}{Do}};
20	18	\node at (0,-18) [weekend] {\hspace*{-0.9em}{Sa}};	\node at (1,-18) [workday] {\hspace*{-0.9em}{Di}};	\node at (2,-18) [workday] {\hspace*{-0.9em}{Di}};	\node at (3,-18) [workday] {\hspace*{-0.9em}{Fr}};
21	19	\node at (0,-19) [weekend] {\hspace*{-0.9em}{So}};	\node at (1,-19) [workday] {\hspace*{-0.9em}{Mi}};	\node at (2,-19) [workday] {\hspace*{-0.9em}{Mi}};	\node at (3,-19) [weekend] {\hspace*{-0.9em}{Sa}};
22	20	\node at (0,-20) [workday] {\hspace*{-0.9em}{Mo}};	\node at (1,-20) [workday] {\hspace*{-0.9em}{Do}};	\node at (2,-20) [workday] {\hspace*{-0.9em}{Do}};	\node at (3,-20) [weekend] {\hspace*{-0.9em}{So}};
23	21	\node at (0,-21) [workday] {\hspace*{-0.9em}{Di}};	\node at (1,-21) [workday] {\hspace*{-0.9em}{Fr}};	\node at (2,-21) [workday] {\hspace*{-0.9em}{Fr}};	\node at (3,-21) [workday] {\hspace*{-0.9em}{Mo}};
24	22	\node at (0,-22) [workday] {\hspace*{-0.9em}{Mi}};	\node at (1,-22) [weekend] {\hspace*{-0.9em}{Sa}};	\node at (2,-22) [weekend] {\hspace*{-0.9em}{Sa}};	\node at (3,-22) [workday] {\hspace*{-0.9em}{Di}};
25	23	\node at (0,-23) [workday] {\hspace*{-0.9em}{Do}};	\node at (1,-23) [weekend] {\hspace*{-0.9em}{So}};	\node at (2,-23) [weekend] {\hspace*{-0.9em}{So}};	\node at (3,-23) [workday] {\hspace*{-0.9em}{Mi}};
26	24	\node at (0,-24) [workday] {\hspace*{-0.9em}{Fr}};	\node at (1,-24) [workday] {\hspace*{-0.9em}{Mo}};	\node at (2,-24) [workday] {\hspace*{-0.9em}{Mo}};	\node at (3,-24) [workday] {\hspace*{-0.9em}{Do}};
27	25	\node at (0,-25) [weekend] {\hspace*{-0.9em}{Sa}};	\node at (1,-25) [workday] {\hspace*{-0.9em}{Di}};	\node at (2,-25) [workday] {\hspace*{-0.9em}{Di}};	\node at (3,-25) [workday] {\hspace*{-0.9em}{Fr}};
28	26	\node at (0,-26) [weekend] {\hspace*{-0.9em}{So}};	\node at (1,-26) [workday] {\hspace*{-0.9em}{Mi}};	\node at (2,-26) [workday] {\hspace*{-0.9em}{Mi}};	\node at (3,-26) [weekend] {\hspace*{-0.9em}{Sa}};
29	27	\node at (0,-27) [workday] {\hspace*{-0.9em}{Mo}};	\node at (1,-27) [workday] {\hspace*{-0.9em}{Do}};	\node at (2,-27) [workday] {\hspace*{-0.9em}{Do}};	\node at (3,-27) [weekend] {\hspace*{-0.9em}{So}};
30	28	\node at (0,-28) [workday] {\hspace*{-0.9em}{Di}};	\node at (1,-28) [workday] {\hspace*{-0.9em}{Fr}};	\node at (2,-28) [workday] {\hspace*{-0.9em}{Fr}};	\node at (3,-28) [workday] {\hspace*{-0.9em}{Mo}};
31	29	\node at (0,-29) [workday] {\hspace*{-0.9em}{Mi}};		\node at (2,-29) [weekend] {\hspace*{-0.9em}{Sa}};	\node at (3,-29) [workday] {\hspace*{-0.9em}{Di}};
32	30	\node at (0,-30) [workday] {\hspace*{-0.9em}{Do}};		\node at (2,-30) [weekend] {\hspace*{-0.9em}{So}};	\node at (3,-30) [workday] {\hspace*{-0.9em}{Mi}};
33	31	\node at (0,-31) [workday] {\hspace*{-0.9em}{Fr}};		\node at (2,-31) [workday] {\hspace*{-0.9em}{Mo}};	
34					

Kalender III

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember	
01	Mi	Sa	Sa	Di	Do	So	Di	Fr	Mo	Mi	Sa	Mo	01
02	Do	So	So	Mi	Fr	Mo	Mi	Sa	Di	Do	So	Di	02
03	Fr	Mo	Mo	Do	Sa	Di	Do	So	Mi	Fr	Mo	Mi	03
04	Sa	Di	Di	Fr	So	Mi	Fr	Mo	Do	Sa	Di	Do	04
05	So	Mi	Mi	Sa	Mo	Do	Sa	Di	Fr	So	Mi	Fr	05
06	Mo	Do	Do	So	Di	Fr	So	Mi	Sa	Mo	Do	Sa	06
07	Di	Fr	Fr	Mo	Mi	Sa	Mo	Do	So	Di	Fr	So	07
08	Mi	Sa	Sa	Di	Do	So	Di	Fr	Mo	Mi	Sa	Mo	08
09	Do	So	So	Mi	Fr	Mo	Mi	Sa	Di	Do	So	Di	09
10	Fr	Mo	Mo	Do	Sa	Di	Do	So	Mi	Fr	Mo	Mi	10
11	Sa	Di	Di	Fr	So	Mi	Fr	Mo	Do	Sa	Di	Do	11
12	So	Mi	Mi	Sa	Mo	Do	Sa	Di	Fr	So	Mi	Fr	12
13	Mo	Do	Do	So	Di	Fr	So	Mi	Sa	Mo	Do	Sa	13
14	Di	Fr	Fr	Mo	Mi	Sa	Mo	Do	So	Di	Fr	So	14
15	Mi	Sa	Sa	Di	Do	So	Di	Fr	Mo	Mi	Sa	Mo	15
16	Do	So	So	Mi	Fr	Mo	Mi	Sa	Di	Do	So	Di	16
17	Fr	Mo	Mo	Do	Sa	Di	Do	So	Mi	Fr	Mo	Mi	17
18	Sa	Di	Di	Fr	So	Mi	Fr	Mo	Do	Sa	Di	Do	18
19	So	Mi	Mi	Sa	Mo	Do	Sa	Di	Fr	So	Mi	Fr	19
20	Mo	Do	Do	So	Di	Fr	So	Mi	Sa	Mo	Do	Sa	20
21	Di	Fr	Fr	Mo	Mi	Sa	Mo	Do	So	Di	Fr	So	21
22	Mi	Sa	Sa	Di	Do	So	Di	Fr	Mo	Mi	Sa	Mo	22
23	Do	So	So	Mi	Fr	Mo	Mi	Sa	Di	Do	So	Di	23
24	Fr	Mo	Mo	Do	Sa	Di	Do	So	Mi	Fr	Mo	Mi	24
25	Sa	Di	Di	Fr	So	Mi	Fr	Mo	Do	Sa	Di	Do	25
26	So	Mi	Mi	Sa	Mo	Do	Sa	Di	Fr	So	Mi	Fr	26
27	Mo	Do	Do	So	Di	Fr	So	Mi	Sa	Mo	Do	Sa	27
28	Di	Fr	Fr	Mo	Mi	Sa	Mo	Do	So	Di	Fr	So	28
29	Mi		Sa	Di	Do	So	Di	Fr	Mo	Mi	Sa	Mo	29
30	Do		So	Mi	Fr	Mo	Mi	Sa	Di	Do	So	Di	30
31	Fr		Mo		Sa		Do	So		Fr		Mi	31

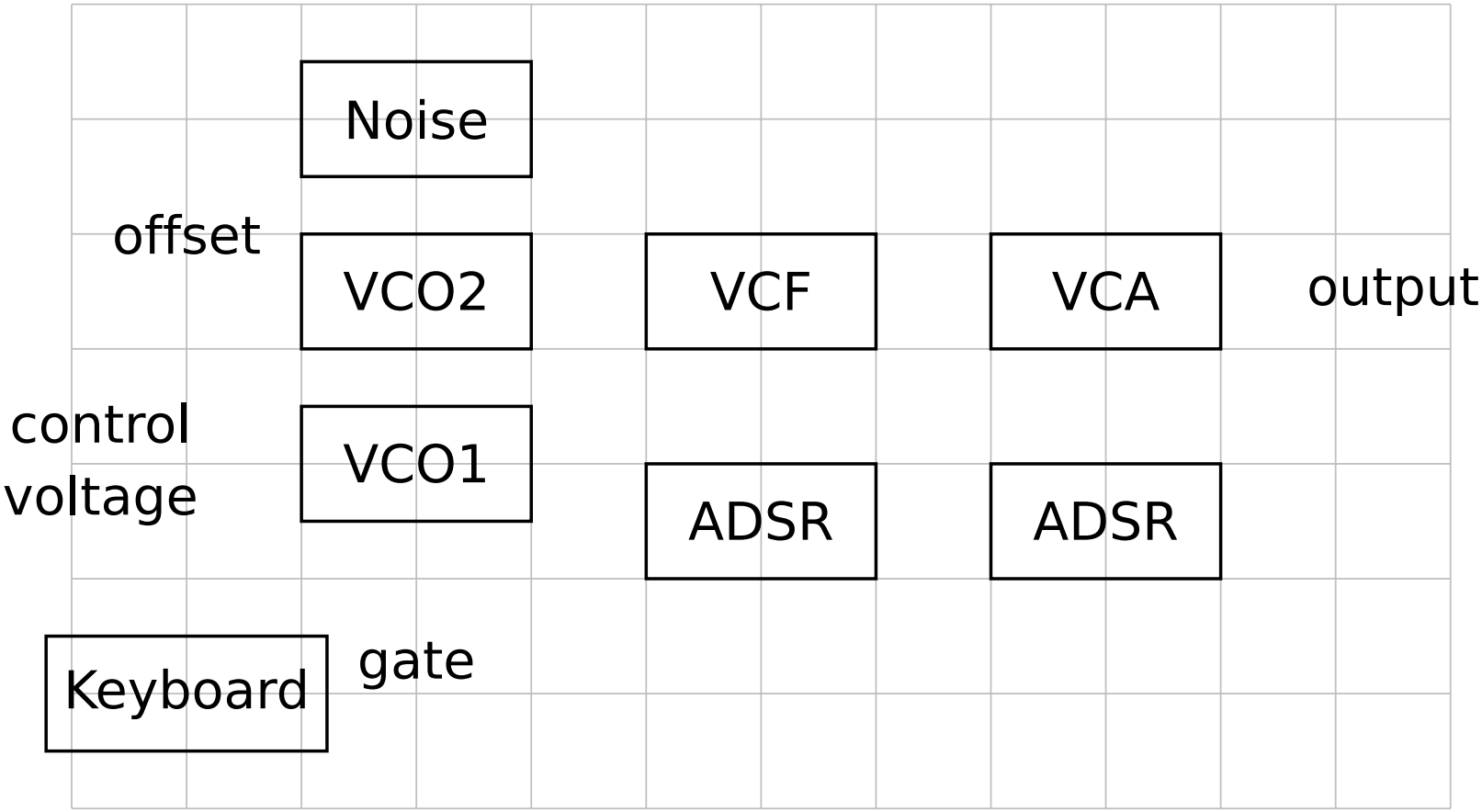
Synthesizer-Diagramm I

- Bisher mein komplexestes TikZ-Diagramm
- Beschreibt den Signalweg in Synthesizer
- Steile Lernkurve!



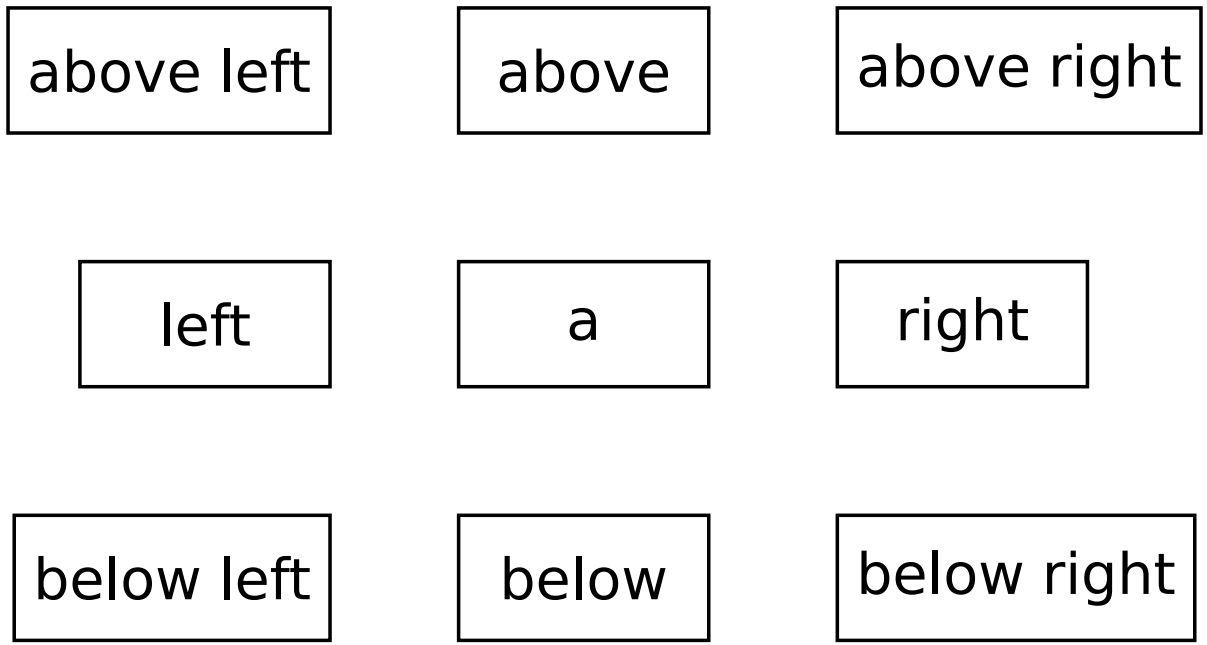
Synthesizer-Diagramm II

- Nodes mit absoluten Koordinaten



Synthesizer-Diagramm III

- Relative Koordinaten mit der `positioning` Library



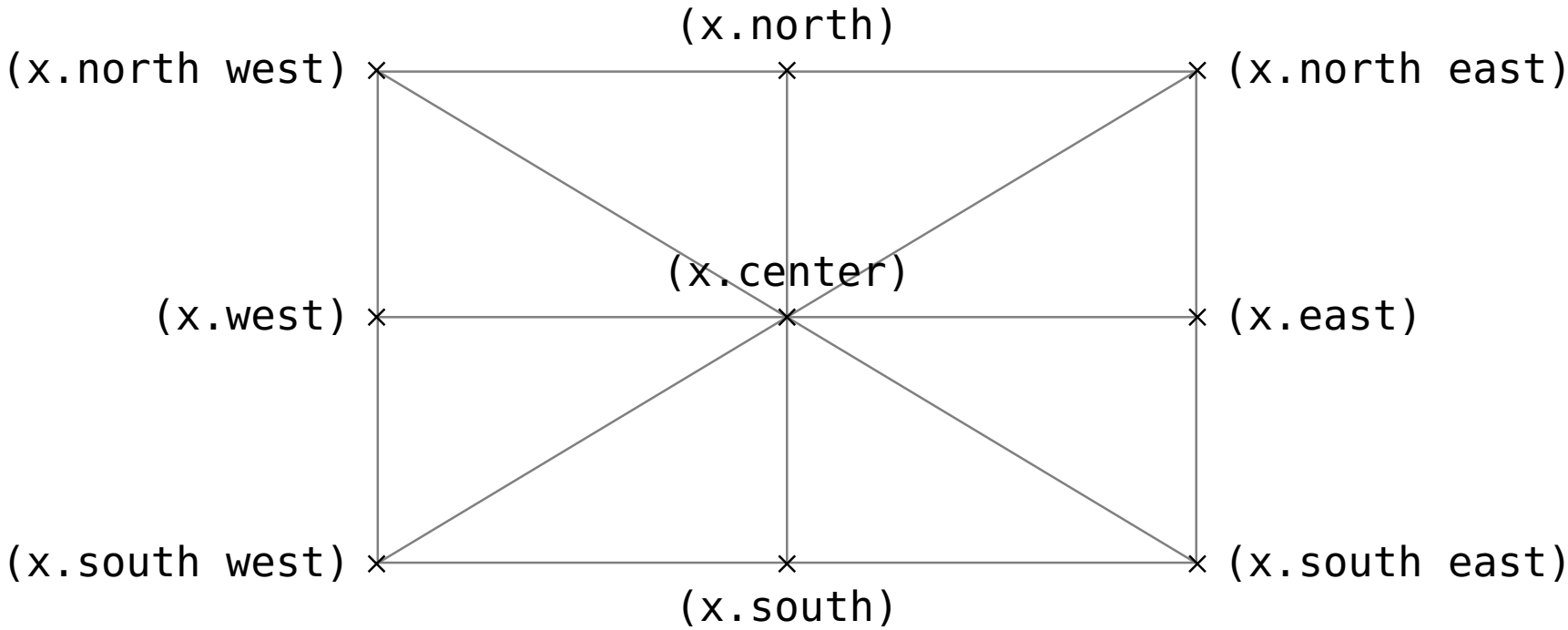
3d5r

Synthesizer-Diagramm IV

```
\node at (0,0) [box] (a) {a};
\node [below = of a,box] (b) {below};
\node [above = of a,box] (c) {above};
\node [left = of a,box] (d) {left};
\node [right = of a,box] (e) {right};
\node [below left = of a,box] (f) {below left};
\node [below right= of a,box] (g) {below right};
\node [above left = of a,box] (h) {above left};
\node [above right= of a,box] (i) {above right};
\node [below right = 3cm and 5cm of a] {3d5r};
```

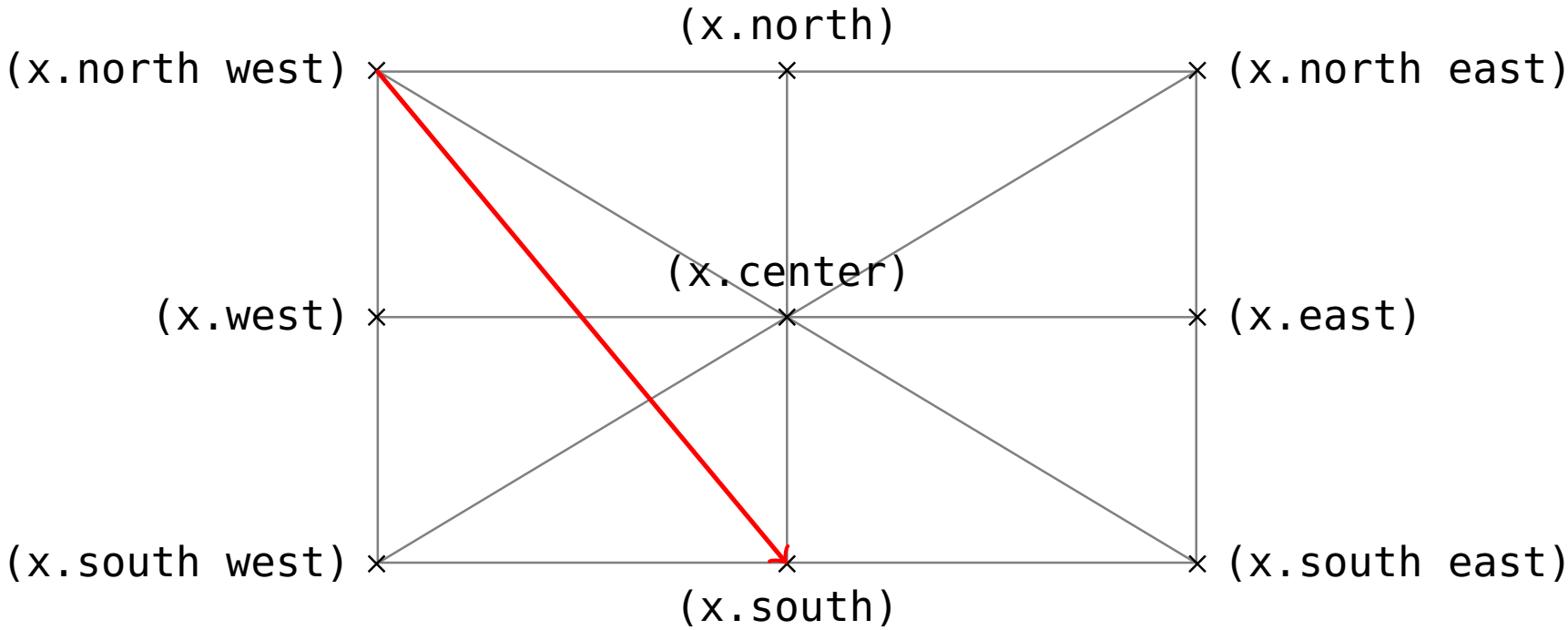
Synthesizer-Diagramm V

- Jeder Node hat vordefinierte Ankerpunkte



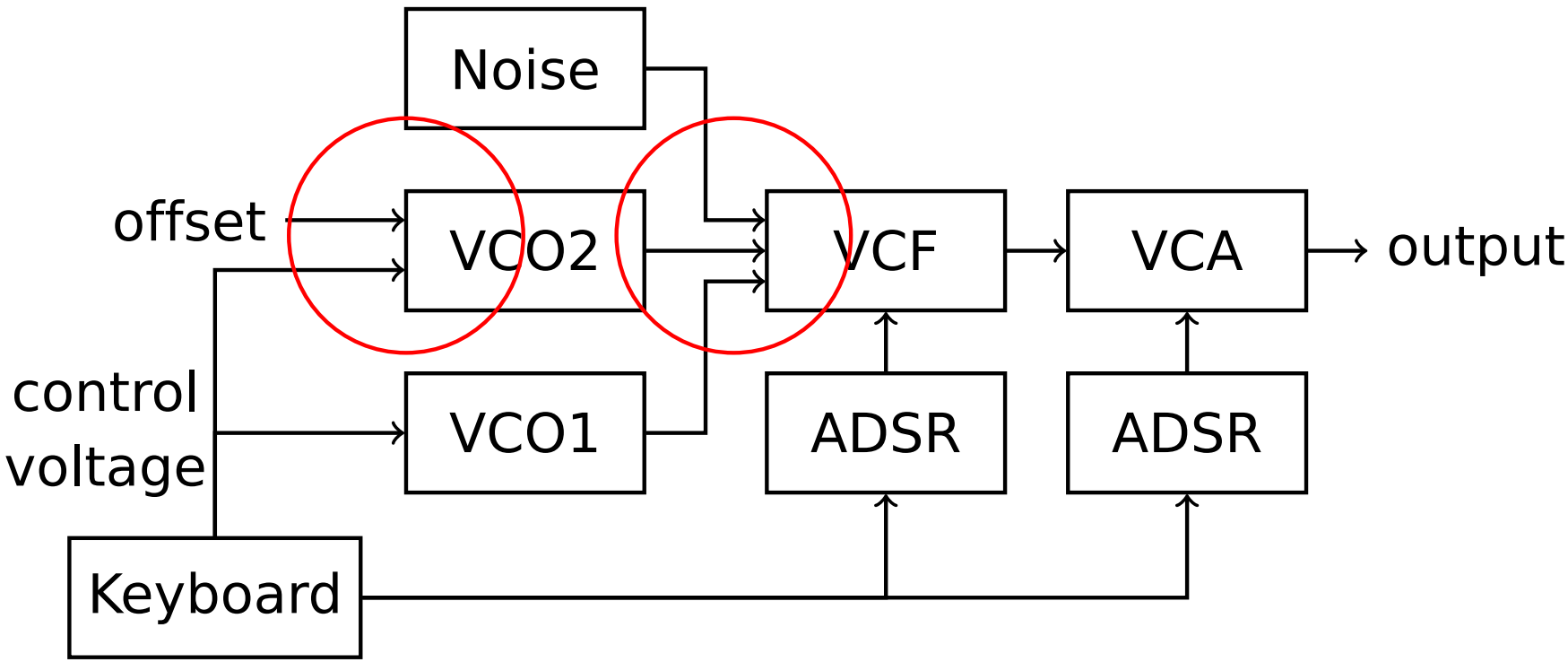
Synthesizer-Diagramm VI

- Pfeil von `x.north west` nach `x.south`



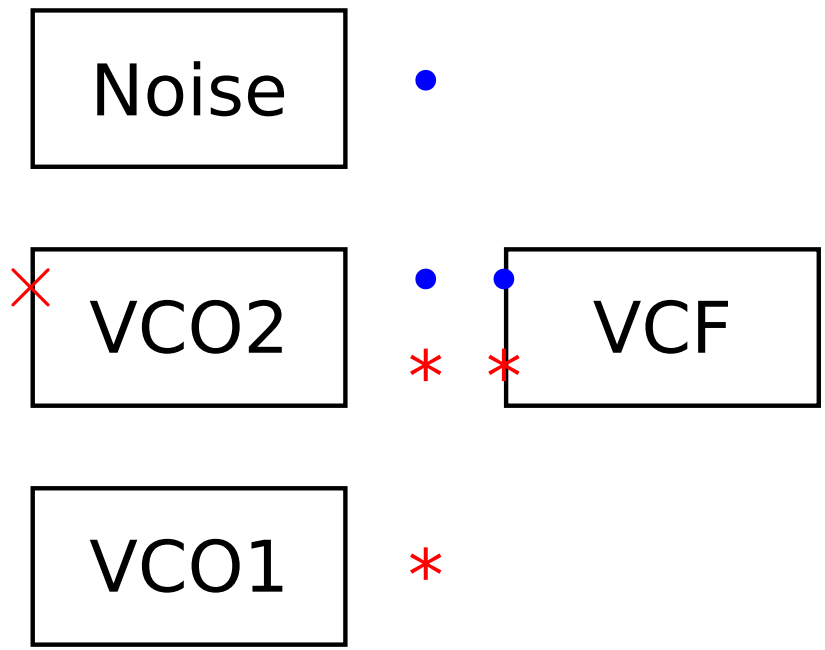
Synthesizer-Diagramm VII

- So weit, so gut, aber. . .
- Wir brauchen mehr Anker!



Synthesizer-Diagramm VIII

- Zu berechnende Punkte



Synthesizer-Diagramm IX

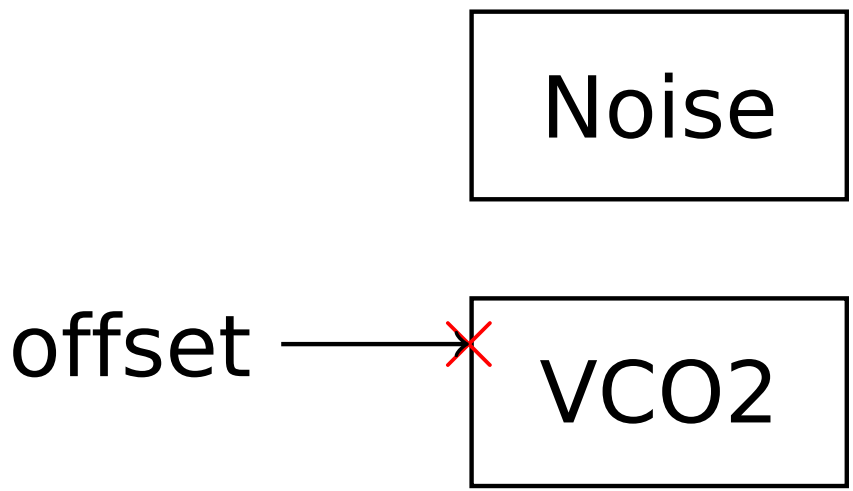
- Koordinatenberechnungen mit der `calc` Library

```
1 ($<coordinate>!<number>!<coordinate>$)
```

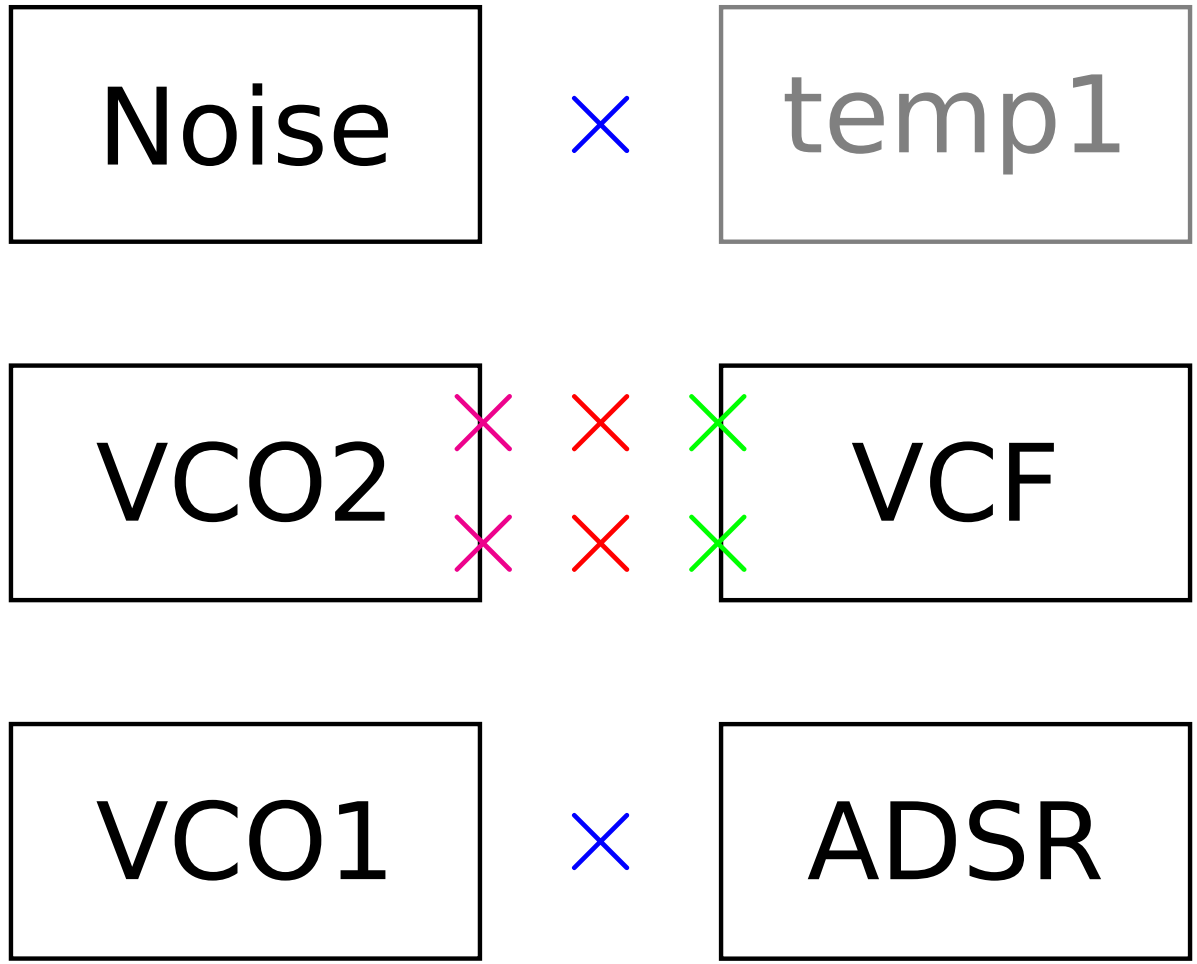
- `<coordinate>` steht dabei für eine Koordinate, die – vielleicht etwas vereinfachend erklärt – einfach nur ein Node ohne den (optionalen) Text ist.
- `<number>` ist Zahl zwischen 0 und 1 und gibt die Prozente an, um den wir uns von Koordinate 1 zu Koordinate 2 bewegen.
- `0.25` steht also für ein Viertel des Weges

Synthesizer-Diagramm X

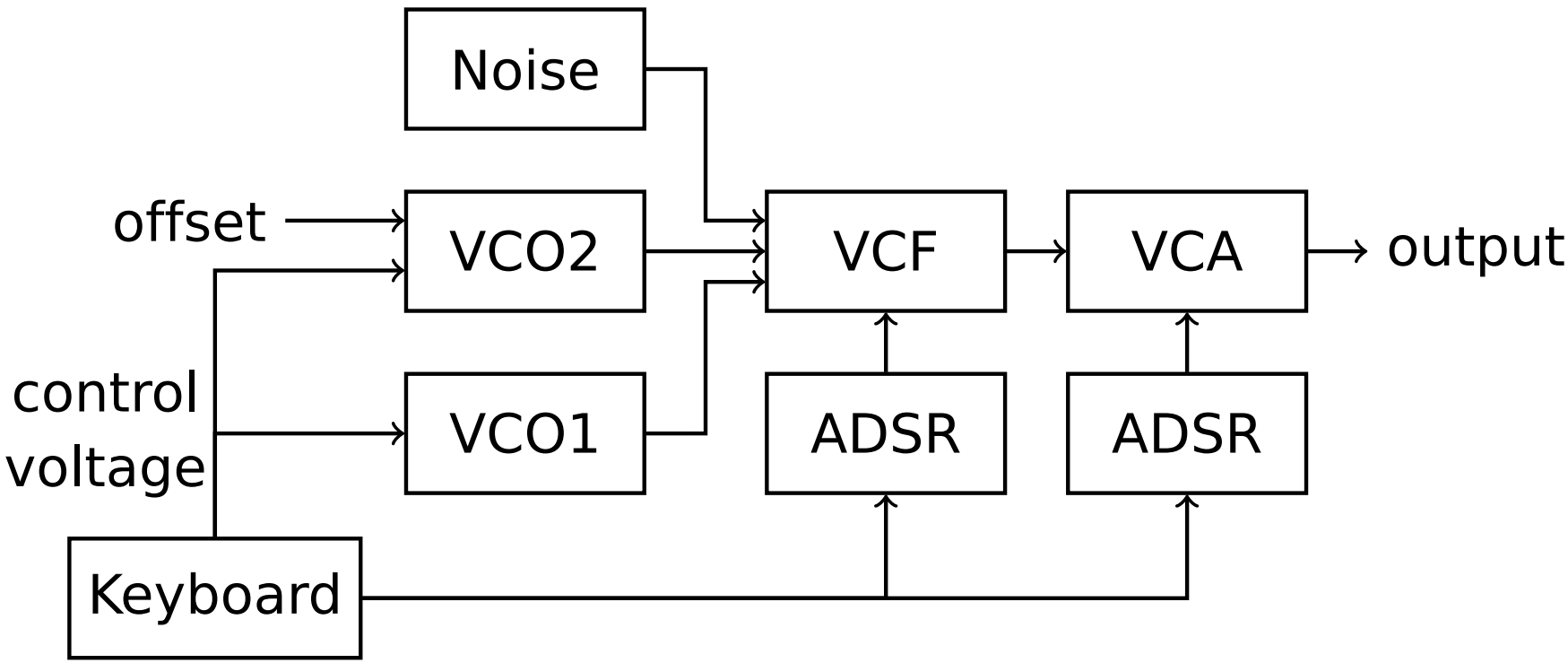
```
\node at (0,0) [box] (noise) {Noise};
\node [box, below = of noise] (vco2) {VCO2};
\coordinate (coordoffset) at ($(vco2.west)!0.5!(vco2.
    north west)$);
\node at (coordoffset){\textcolor{red}{$\times$}};

\node [left = of coordoffset](offset) {offset};
\draw [thick,->] (offset) -- (coordoffset);
```



Synthesizer-Diagramm XI



Synthesizer-Diagramm XII



Persönliches Fazit

- TikZ = Wow. . .
- Steile Lernkurve, Diagramme werden mehr „programmiert“
- Syntax ist speziell, wenn man von PS*Tricks etc. kommt
- Ergebnisse überzeugen aber