0.1 Creating a node in the main text body

Here's a node: DEFGHI.
I used `\tikzmarknode{a}{DEFGHI}`. The name of the node is `a`.

Here's a node: DEFGHI.
I used `\tikzmarknode[tikzmarknode red]{a}{DEFGHI}`.

Here's a node: DEFGHI.
I used `\tikzmarknode[tikzmarknode thickred]{a}{DEFGHI}`.

Here's a node: DEFGHI.
I used `\tikzmarknode[tikzmarknode roundedthickred]{a}{DEFGHI}`.

Here's a node: **DEFGHI**.
I used `\tikzmarknode{a}{{\textcolor{red}{\textbf{\Huge DEFGHI}}}}`.

0.2 Create a node in the margin with boxed text

I'm going to create a tikz node in the margin using with a boxed text.

ABCDEF

I used `\sidebox{b}{ABCDEF}`. This is a tikz node named `b`.

ABCDEF

GHIJKL

Here's how to create paragraphs.
I used `\sidebox{b}{ABCDEF \\ \\ GHIJKL}`.

TEST TEST TEST:

I'm going to create a tikz node in the margin using with a boxed text.

ABCDEF

TEST TEST TEST: I'm going to create a tikz node in the margin

ABCDEF

using with a boxed text.

0.3 Draw arrow

Here’s a node: ABCDEF.
There’s a sidebox pointing to the above node. The `\DrawArrow{b}{a}` draws an arrow from node `b` to node `a`.
LaTeX:

Point to ABCDEF

```
Here’s a node: \tikzmarknode{a}{ABCDEF}.\sidebox{b}{Point to ABCDEF}
\DrawArrow{b}{a}
```

Example. Sidebox is lower.

ABCDEF dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text

Point to ABCDEF

LaTeX:

```
\tikzmarknode{a}{ABCDEF}
dummy text dummy text dummy text dummy text dummy text dummy text
dummy text dummy text dummy text dummy text dummy text dummy text
dummy text dummy text dummy text dummy text dummy text dummy text
\sidebox{b}{Point to ABCDEF}\DrawArrow{b}{a}
```

Example. Sidebox is higher.

dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text ABCDEF

LaTeX:

```
\tikzmarknode{a}{ABCDEF}
dummy text dummy text dummy text dummy text dummy text dummy text
dummy text dummy text dummy text dummy text dummy text dummy text
dummy text dummy text dummy text dummy text dummy text dummy text
\sidebox{b}{Point to ABCDEF}\DrawArrow{b}{a}
```

Point to ABCDEF

Example. Sidebox is tall.
ABCDEF

dummy text dummy text

You can force the arrow to be horizontal using `DrawArrowH`

ABCDEF
LaTeX:

```
\tikzmarknode{a}{ABCDEF}\sidebox{b}{Point to ABCDEF. dummy text dummy text dummy text}
\DrawArrowH{b}{a}
```

Point to ABCDEF. dummy text dummy text dummy text

Point to ABCDEF. dummy text dummy text dummy text

Example. You can draw an arrow vertical-then-horizontal.

dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text

Here’s a node: ABCDEF.
LaTeX:

```
\sidebox{a}{Point to ABCDEF}

dummy text dummy text dummy text dummy text
dummy text dummy text dummy text dummy text
dummy text dummy text dummy text dummy text

Here’s a node: \tikzmarknode{b}{ABCDEF}.
\DrawArrowVH{a}{b}
```

Point to ABCDEF

Example. You can draw an arrow horizontal-then-vertical.

dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text

Here's a node: ABCDEF.
LaTeX:

```
\sidebox{a}{Point to ABCDEF}

dummy text dummy text dummy text dummy text
dummy text dummy text dummy text dummy text
dummy text dummy text dummy text dummy text

Here's a node: \tikzmarknode{b}{ABCDEF}.
\DrawArrowHV{a}{b}
```

Point to ABCDEF

Example. You can specify displacement points for the arrow to follow using `DrawArrowPoints`. Here's an example:

Here's a node: CCCC.

DDDD

LaTeX:

```
Here's a node: \tikzmarknode{cccc}{CCCC}.\sidebox{dddd}{DDDD}
\DrawArrowPoints{dddd}{cccc}{-- ++(1,2.5) -- ++(-1.5,-1)}
```

The `--` means "line". The `++` means "displace by". The `-- ++(1,2.5)` means "draw a line up to a point that is $(1, 2.5)$ from the previous point".

Instead of displacements, the points can be nodes. Here's an example:

Here's a node: CCCC.

Here's another node .... EEEE.

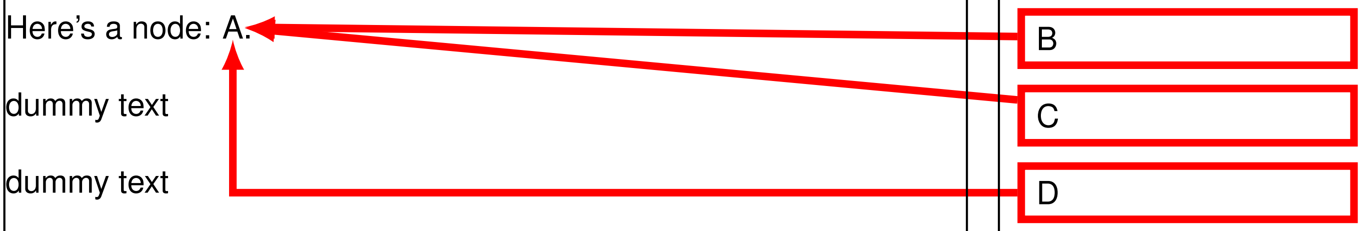
And another node FFFF.

DDDD

LaTeX:

```
Here's a node: \tikzmarknode{cccc}{CCCC}.

Here's another node .................... \tikzmarknode{eeee}{EEEE}.

And another node \tikzmarknode{ffff}{FFFF}.\sidebox{dddd}{DDDD}
\DrawArrowPoints{dddd}{cccc}{-- ++(1,2.5) -- (eeee) -- (ffff)}
```

Example. You can have multiple sideboxes pointing to one node.



Here’s a node: A.

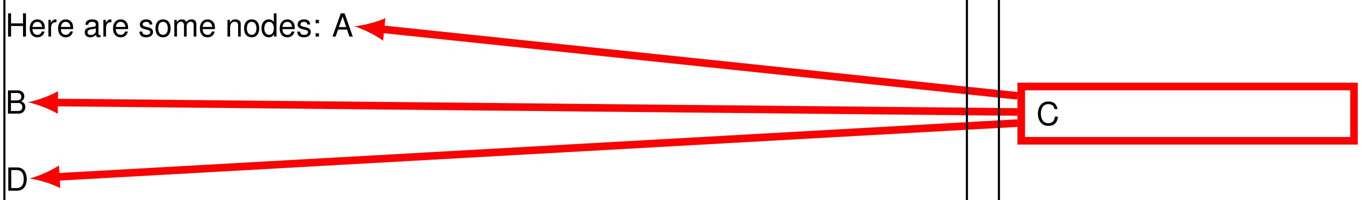
dummy text

dummy text

LaTeX:

```
Here’s a node: \tikzmarknode{a}{A}.\sidebox{b}{B}

dummy text

\sidebox{c}{C}

dummy text

\sidebox{d}{D}

\DrawArrow{b}{a}
\DrawArrow{c}{a}
\DrawArrowHV{d}{a}
```

Example. You can have a sidebox pointing to multiple nodes.



Here are some nodes: A

B

D

C

LaTeX:

```
Here are some nodes:
\tikzmarknode{a}{A}

\tikzmarknode{b}{B}\sidebox{c}{B}

\tikzmarknode{c}{C}.
\DrawArrow{c}{b}
\DrawArrow{c}{d}
```

0.4 Tikz node inside code

Here's an example where the tikz node is inside code:

```
#include <iostream>

int main()
{
    return 0; // a is a node containing return
}
```

CCC

LaTeX:

```
\sidebox{b}{CCC}
\begin{consolethree}[escapeinside=||]
#include <iostream>

int main()
{
    |\tikzmarknode{a}{return}| 0; // a is a node containing return
}
\end{consolethree}
\DrawArrow{b}{a}
\end{consolethree}
\DrawArrow[red]{start12}{end12}
```

NOTE: `console` and `Verbatim` cannot be used. `consolethree` uses the `listings` package. The `escapeinside||` basically means whatever is within `|...|` is treated as latex command. If the C++ or python code contains `|`, use another pair of characters.

Example: Here's an example with tikz node inside code and the node contains a backslash character:

```
#include <iostream>

int main()
{
    std::cout << "hello world\n";
    return 0;
}
```

Point to a string

LaTeX:

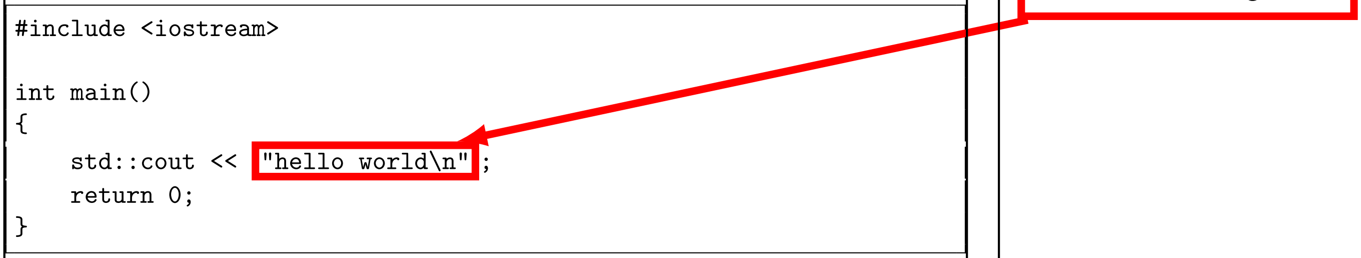
```
\sidebox{a}{Point to a string}
\begin{consolethree}[escapeinside=||]
#include <iostream>

int main()
{
    std::cout << |\tikzmarknode[tikzmarknode thickred]{b}{"hello world\char`\\n"}|;
    return 0;
}
\end{consolethree}
\DrawArrow{a}{b}
```

Note the proper way of inserting the backslash character for the newline character.

To make it easier, I have a macro for the backslash using typewriter font: `\bstt` (memory aid: bstt = backslash typewriter text).

Example. ABC\DEF is done using `ABC\bstt DEF`.

Example: Here's the earlier example using the `\bstt` macro:



```
#include <iostream>

int main()
{
    std::cout << "hello world\n";
    return 0;
}
```

Point to a string

LaTeX:

```
\sidebox{a}{Point to a string}
\begin{consolethree}[escapeinside=||]
#include <iostream>

int main()
{
    std::cout << |\tikzmarknode[tikzmarknode thickred]{b}{"hello world\bstt n"}|;
    return 0;
}
\end{consolethree}
\DrawArrow[{a}{b}]
```

Example: You might want to align a sidebox with a specific line of code. The best is to put the sidebox next to that line (and maybe put the draw arrow there as well).

```
#include <iostream>

int main()
{
    std::cout << "hello world\n";
    return 0;
}
```

Point to a string

LaTeX:

```
\begin{consolethree}[escapeinside=||]
#include <iostream>

int main()
{
    std::cout << |\tikzmarknode[tikzmarknode thickred]{b}{"hello world\bstt n"};||\sidebox{a}{Point to a string}
    return 0;
}
\end{consolethree}
\DrawArrow{a}{b}
```

It might not be completely aligned. You can then shift the sidebox vertically – see next section.

Also, note that since the sidebox is drawn inside `consolethree`, the font used is typewriter font. In the sidebox, you switch to normal font using `\textnormal`.

```
#include <iostream>

int main()
{
    std::cout << "hello world\n";
    return 0;
}
```

Point to a string

LaTeX:

```
\begin{consolethree}[escapeinside=||]
#include <iostream>

int main()
{
    std::cout << |\tikzmarknode[tikzmarknode thickred]{b}{"hello world\bstt n"}\sidebox{a}{\textnormal{Point to a string}}|;
    return 0;
}
\end{consolethree}
\DrawArrow{a}{b}
```

0.5 Shift sidebox vertically

You can move the sidebox vertically. Here's an example where the sidebox is not shifted:

Here's a node AAAA.

BBBB

dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text dummy text

BBBB

Here's the same example where the sidebox moved up by 1.5cm.

Here's a node AAAA.

LaTeX:

```
Here's a node \tikzmarknode{b}{AAAA}\sidebox[-1.5cm]{a}{BBBB}.
\DrawArrow{a}{b}
```

Note the `[-1.5cm]`.

Example:

```
#include <iostream>

int main()
{
    std::cout << "hello world\n";
    return 0;
}
```

Point to a string

LaTeX:

```
\begin{consolethree}[escapeinside=||]
#include <iostream>

int main()
{
    std::cout << |\tikzmarknode[tikzmarknode thickred]{b}{"hello world\bstt n"}\sidebox[-0.5cm]{a}{\textnormal{Point to a string}}|;
    return 0;
}
\end{consolethree}
\DrawArrow{a}{b}
```

0.6 Reuse tikz node names

You can reuse tikz node names.

0.7 Warning on disappearing tikz diagrams

Watch out: if a tikz diagram is too small and too close to the bottom of a page, the diagram might be accidentally truncated/removed by latex.

0.8 Minor variations on draw arrow

B

A

LaTeX:

```
\tikzmarknode{b}{B}\sidebox{a}{B}\DrawArrow[dashed]{a}{b}
```

B

A

LaTeX:

```
\tikzmarknode{b}{B}\sidebox{a}{A}\DrawArrow[dashed, red]{a}{b}
```

A

A

LaTeX:

```
\tikzmarknode{b}{A}\sidebox{a}{A}\DrawArrow[blue]{a}{b}
```