Tikz Basics
Graphics in LaTeX

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Introduction

The *tikz* package is used when we want to draw some diagrams in LaTeX.
In order to use it, we first need to include it using the the `\usepackage{}` command like so:

Listing 1.1: Format

```
\documentclass{.....}
....
....
....
\usepackage{tikz}
....
....
....
```

To be able to draw using this package, we need to use an environment called `tikzpicture` like so:

Listing 1.2: Syntax

```
\begin{tikzpicture}
% write your code here
\end{tikzpicture}
```

1.1 Drawing a simple line

To draw a simple line, use the following command:

Listing 1.3: Draw a simple line

```
\begin{tikzpicture}
        \draw(0,0)--(3,3);
\end{tikzpicture}
```

The dashes -- between $(0, 0)$ and $(3, 3)$ indicate that we want a line.
NOTE: Don't forget the *semicolon* ;
Here's the Code.
Here's the Output.

1.2 Drawing zig-zag lines

Now, we will use the same code that we used in **Drawing a simple line**, but will be longer now.

Listing 1.4: Draw a zig-zag line

```
\begin{tikzpicture}
        \draw(0,0)--(1,1)--(2,0)--(3,1)--(4,0)--(5,1)--(6,0);
\end{tikzpicture}
```

Here's the code.
Here's the output.
Notice the *semicolon* being used at the end.

1.3 Drawing triangle

A triangle is a closed figure, so we need to use an extension `--cycle` to close the figure. Basically it will draw a line from the last coordinate to the first coordinate, thus adding the last side to the figure.

Listing 1.5: Draw a triangle

```
\begin{tikzpicture}
        \draw(0,0)--(3,0)--(3,3)--cycle;
\end{tikzpicture}
```

Notice that we first join $(0,0)$ with $(3,0)$ and then we join $(3,0)$ with $(3,3)$. Finally, we use `--cycle` to join $(3,3)$ with $(0,0)$ which eventually forms a triangle.
Here's the code.
Here's the output.