Math 2794W An Interactive Introduction to LaTeX

Part 3: Not Just Papers: Presentations & More

Original slides written by Dr John D. Lees-Miller (modified with permission)
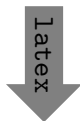
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LATEX Recap

- ▶ You write your document in `plain text` with `commands` that describe its structure and meaning.
- ▶ The `latex` program processes your text and commands to produce a beautifully formatted document.

```
The rain in Spain falls \emph{mainly} on the plain.
```

latex

The rain in Spain falls *mainly* on the plain.

LATEX Recap: Commands & Arguments

- ▶ A command starts with a *backslash* \ .
- ▶ Some commands take an *argument* in curly braces { } .
- ▶ Some commands also take *optional arguments* in square brackets [ ] .

```
\includegraphics[
  width=0.5\textwidth]{gerbil}

\includegraphics[
  width=0.3\textwidth,
  angle=270]{gerbil}
```


Image license: CC0

LaTeX Recap: Environments

- The `\begin` and `\end` commands are used to create many different environments — contexts.
- The `itemize` and `enumerate` environments make lists.

```
\begin{itemize} % for bullet points
\item Biscuits
\item Tea
\end{itemize}

\begin{enumerate} % for numbers
\item Biscuits
\item Tea
\end{enumerate}
```

- Biscuits
- Tea

1. Biscuits
2. Tea

(For students comfortable with LaTeX) Drawings with TikZ

- TikZ is a package for drawing figures in LaTeX.
- It defines a powerful drawing language inside LaTeX. Short programs can draw surprisingly complicated things.
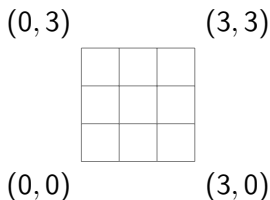

- We'll start with simple things. To draw a line in TikZ:

```
\begin{tikzpicture}
\draw (0,0) -- (1,1); % a line
\end{tikzpicture}
```
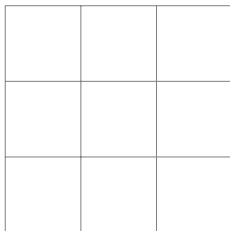
(For students comfortable with LaTeX) Drawings with TikZ: Coordinates

▶ The default coordinates are centimeters, with the usual sense:

$(0, 3)$ .... $(3, 3)$

$(0, 0)$ .... $(3, 0)$

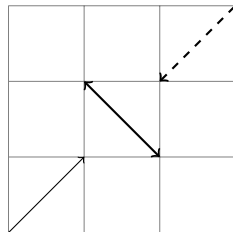▶ It helps to draw a grid when you are working with TikZ:

```
\begin{tikzpicture}
\draw[help lines] (0,0) grid (3,3);
\end{tikzpicture}
```

(For students comfortable with LaTeX) Drawings with TikZ: Lines

- ▶ Arrow heads and line styles are specified as options to the `\draw` command.
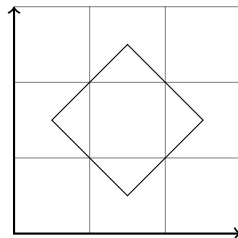- ▶ End each draw command with a `;` semicolon.

```
\begin{tikzpicture}
\draw[help lines] (0,0) grid (3,3);
\draw[->] (0,0) -- (1,1);
\draw[<->, thick] (2,1) -- (1,2);
\draw[<-, thick, dashed] (2,2)--(3,3);
\end{tikzpicture}
```

- ▶ You can specify multiple points to form a path.
- ▶ Arrows will appear only at the ends of the path.
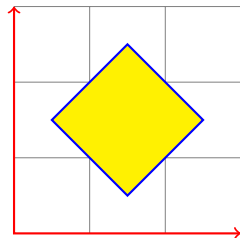
```
\begin{tikzpicture}
\draw[help lines] (0,0) grid (3,3);
% axes:
\draw[<->, thick] (0,3)--(0,0)--(3,0);
% diamond:
\draw (1.5,0.5) -- (2.5,1.5) --
      (1.5,2.5) -- (0.5,1.5) --
      cycle; % close the path
\end{tikzpicture}
```

(For students comfortable with LaTeX) Drawings with TikZ: Colours

▶ Colours are also specified as options to `\draw`.

```latex
\begin{tikzpicture}
\draw[help lines] (0,0) grid (3,3);
% axes
\draw[<->, thick, red]
  (0,3)--(0,0)--(3,0);
% diamond
\draw[thick, blue, fill=yellow]
  (1.5,0.5) -- (2.5,1.5) --
  (1.5,2.5) -- (0.5,1.5) --
  cycle;
\end{tikzpicture}
```

(For students comfortable with LaTeX) Drawings with TikZ: Shapes

- TikZ has built-in commands for simple shapes.

```
\begin{tikzpicture}
\draw[help lines] (0,0) grid (3,3);
\draw (1.5,2.0) circle (0.5);
\draw (0.5,0.5) rectangle (2.5,1.5);
\end{tikzpicture}
```
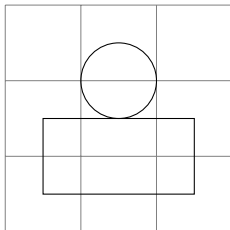
(For students comfortable with LaTeX) Drawings with TikZ: Nodes & Labels

▶ Use nodes to place text (and math) in TikZ drawings.

▶ You can also use nodes as coordinates — useful for diagrams.

```latex
\begin{tikzpicture}
\draw[help lines] (0,0) grid (3,3);
\node (h) at (0,0) {H};
\node (x) at (1.5,1.5) {$\xi$};
\node (t) at (3,0) {T};
\draw[->] (x) -- (h);
\draw[->] (x) -- (t);
\end{tikzpicture}
```
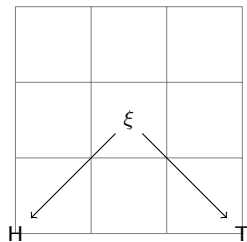
(For students comfortable with LaTeX) Drawings with TikZ: Functions

▶ You can even plot some simple functions.

```
\begin{tikzpicture}[scale=0.5]
% y axis
\draw[<->, thick] (0,2) -- (0,-2);
% x axis
\draw[ ->, thick] (0,0) -- (7, 0);
% curves
\draw[cyan,domain=0:2*pi]
  plot (\x, {sin(\x r)});
\draw[magenta,domain=0:2*pi]
  plot (\x, {cos(\x r)});
\end{tikzpicture}
```
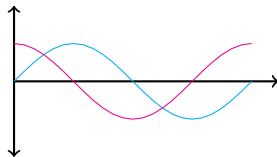
(For students comfortable with LaTeX) Drawings with TikZ: Examples

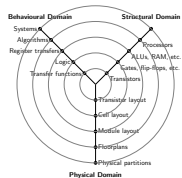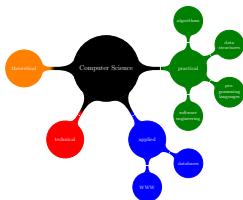- Check out TeXample.net for many TikZ examples:

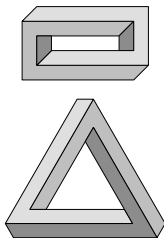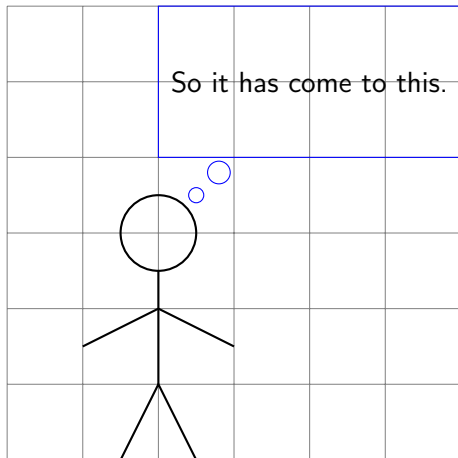Figure 1: Gajski-Kuhn Y-chart

(For students comfortable with LaTeX) Drawings with TikZ: Exercise

Draw this in TikZ:[1]

So it has come to this.

---
[1]Based on http://xkcd.com/1022

Notes with `todonotes`

▶ The `\todo` command from the `todonotes` package is great for leaving notes to yourself and your collaborators.

```
\todo{add results}
\todo[color=blue!20]{fix method}
```

> add results

> fix method

▶ Pro Tip: define your own commands with `\newcommand`

```
\newcommand{\alice}[1]{\todo[color=green!40]{#1}}
\newcommand{\bob}[1]{\todo[color=purple!40]{#1}}
```

This can save a lot of typing:

```
\alice{add results}
\bob{fix method}
```

> add results

> fix method

Notes with `todonotes`

- Only inline notes are supported with beamer, but margin notes are supported for normal documents.

- There is also a handy `\listoftodos` command.

Towards the Confusing Unification of Rasterization and Local-Area Networks in State Machines

Alice Bob, Carol David, Edward Fredrick

Todo list

Abstract

Rasterization and Smalltalk, while important in theory, have not until recently been considered important. Given the current status of wearable methodologies, analysts clearly desire the refinement of IPv4. Purr, our new heuristic for the producer-consumer problem [1], is the solution to all of these problems.

1 Introduction

Recent advances in certifiable symmetries and Bayesian technology synchronize in order to realize access points. This is a direct result of the construction of multicast algorithms. This is a direct result of the analysis of active networks. The emulation of suffix trees would profoundly improve congestion control [4].

To our knowledge, our work in our research marks the first method analyzed specifically for scalable models. Existing interactive and permutable methodologies use Smalltalk to measure the construction of the partition table. The disadvantage of this type of method, however, is that hash tables can be made real-time, cooperative, and reliable. Existing "fuzzy" and concurrent algorithms use the evaluation of multicast frameworks to request access points. On the other hand, distributed archetypes might not be the

Spreadsheets with `spreadtab`

- ▶ Now that you've seen how LaTeX can replace Word and PowerPoint, what about Excel?
- ▶ Homework: try the `spreadtab package` !

Thanks, and happy T_EXing!