Session 3. Tables and figures

Digital Skills for Research

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Contents

1 Environments

1.1 LISTs!

Three predefined types of list environments: `\begin{itemize}`, `\begin{enumerate}`, `\begin{description}`

- simple bullets
- enumerated items (customisable with `\begin{enumerate}[a)]`, `[i]`, `[1.]`, `[A]`, `[I)]`, `[1)]` after importing `\usepackage{enumerate}`)
- `\begin{description}` use a list of terms as items and their definitions as values against each item (see an example of description-style list below)

1.2 Examples of other default environments

`\begin{center} ... \end{center}`

CENTRED TEXT
Environments are used to apply formatting to blocks of text.

`\begin{quote}` for short quotes separated by blank lines and `\begin{quotation}` for several indented paragraphs. See `\begin{quote}`:

> "Don't worry about a thing,
> 'Cause every little thing gonna be all right."

1.3 Examples of imported environments

```
==
This is a demo of an environment \begin{comment}.
It requires \usepackage{comment} in the preamble.
Text between == is printed inside \begin{verbatim} environment.

\begin{comment}
This is great for multi-line comments
such as this one.
It require \usepackage{comment} in the preamble.
\end{comment}
==

\usepackage{multicols}
\begin{multicols}{3} ... \columnbreak ... \end{multicols}
```

In Section 2 we will look at some principles of arranging tables. This is source code for a basic table:

```
\begin{tabular}{ c c c }
cell1 & cell2 & cell3 \\
cell4 & cell5 & cell6 \\
cell7 & cell8 & cell9 \\
\end{tabular}
```

This is how it compiles:

cell1	cell2	cell3
cell4	cell5	cell6
cell7	cell8	cell9

2 A special case: Tables

See Wizards and Latex tabs in your TEXeditor!

2.1 Basic commands for tables formatting

A) horisontal lines with `\hline`

B) vertical lines are lines in c

C) & is a column separator in code

D) each row ends with `\\`

2.2 Table environments and wizards

There are several environments to format tables (below is an example of a description-style list mentioned above, and it is a hyperlink to a specific word in the text above; see the source file at GitHub to see how it is coded):

tabular basic format to stack text horizontally and vertically; is placed as-is in the text, at the position where coded; the width of each column is set with `\begin{tabular}{p{4cm}|c|p{5cm}|}`; even columns with various text placement (left, centre, right): `\begin{tabular}{l|c|r|}`

table a float object that determines best position in text; it can contain virtually anything, but often used to wrap `\begin{tabular}`

tabularx uses X columns to f

longtable imported with `\usepackage{longtable}`; codes tables that span across the page boundary

This code generates Table 1.

```
\begin{table}[H] % H Places the float at precisely the location in the
   LATEX code. Requires the float package.
        \begin{center}
                \caption[Table 1 name for List of Tables]{This table does
                    not make much sense; it is created for demonstration
                   only}\label{tab:mytab}
                \begin{tabular}{|c|c|c|c||l|c|c|r|c|c|}
                        \hline
                        1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & 10 \\ \hline
                        first & second & \multicolumn{3}{|c|}{third --
                            fifth} &  &  & eight &  &  \\
                        \cline{1-7} \cline{9-10}%\usepackage{pgfplots}
                        %\usepackage{pgfplotstable}
                        1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & 10 \\ \hline
                        1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & 10 \\ \hline
                        \multirow{3}{*}{three rows}  & 2 & 3 & 4 & 5 & 6
                            & 7 & 8 & 9 & 10 \\ \cline{2-10}
                        & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & 10 \\ %\cline
                            {2-10}
                        & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & 10 \\ \hline
                \end{tabular}
        \end{center}
        %\caption{You can place the caption below the table}
\end{table}
```

Table 1. This floating table does not make much sense; it is created for demonstration only

1	2	3	4	5	6	7	8	9	10
first	second	third – fifth					eight		
1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10
three rows	2	3	4	5	6	7	8	9	10
	2	3	4	5	6	7	8	9	10
	2	3	4	5	6	7	8	9	10

3 Graphics and drawing

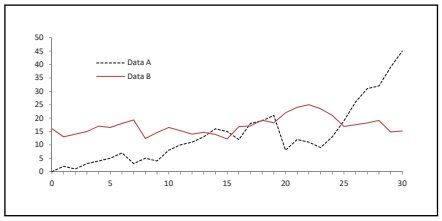
3.1 Simple commands

(for raster (.png, .jpg) or vector (.eps) graphics)

Use scaling: `\includegraphics[scale=.2]{raster-vs-vectors.jpg}`

Use size (and a frame around the graphics): `\fbox{\includegraphics[width=50mm]{lines.eps}}`

Notice how you can change `\fbox{}` parameters inside the main code: `\setlength\fboxsep{10pt}`



3.2 Figure environment

```
\begin{figure}[h] % htbp - position preferences (here, top, bottom, page)
        \includegraphics[scale=1]{cup}
        \caption{Publisher's logo}
        \label{fig:logo}
\end{figure}
```

Figure 1. Publisher's logo

Use `\begin{wrapfigure}{r}{0.3333\linewidth}` to use Figures inline (wrapped with the text). For example:

Vector graphics are also known as scalable vector graphics (SVG). These graphics consist of anchored dots and connected by lines and curves, similar to the connect-the-dot activities you may have done as a kid. Because these graphics are not based on pixels, they are known as resolution independent, which makes them infinitely scalable. Their lines are sharp, without any loss in quality or detail, no matter what their size. These graphics are also device-independent, which means their quality doesn't depend on the number of dots available on a printer or the number of pixels on a screen. Because they consist of lines and anchor points, the size of the files are relatively small.
You can also use an online Tables Generator.

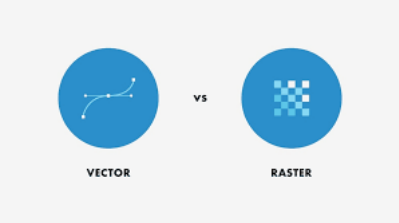


Figure 2. Two types of graphics

3.3 Drawing with TikZ

TikZ is the most complex and powerful tool to create vector graphics. The graphics are put in `\begin{tikzpicture}` environment.

To help with calculating coordinates, draw the support grid:
`\draw[style=help lines] (-2,0) grid[step=1cm] (8,4);`

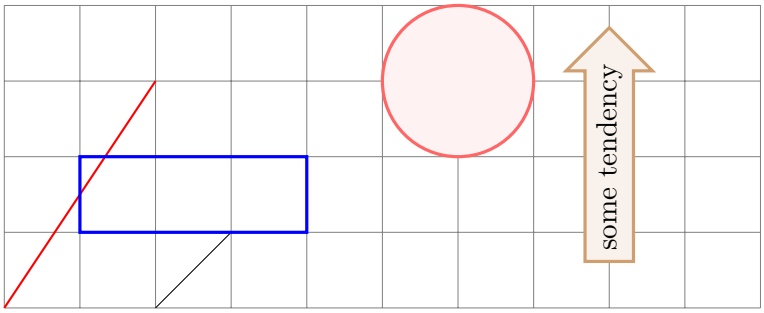
For each shape there are some drawing instructions. For example,

- for a rectangular you have to provide two points, the first one is where the "pencil" begins to draw the rectangle and the second one is the diagonally opposite corner point

```
\begin{tikzpicture}
        \draw[style=help lines] (-2,0) grid[step=1cm] (8,4);
        \draw (0,0) -- (1,1);
        \draw[red, thick] (-2,0) -- (0,3);
        \draw[blue, very thick] (-1,1) rectangle (2,2);
```

```
        \filldraw[color=red!60, fill=red!5, very thick](4,3) circle (1);

        % define a style of some object, e.g. an arrow
        \tikzstyle{my arrow} = [draw=brown!75, very thick, single arrow, minimum h
        \node at (6,2) [my arrow=90] {\rotatebox{90}{some tendency}};
\end{tikzpicture}
```



NB! It might be easier to draw in Python, inc. savign as .eps

3.4 Produce automatic lists of labelled objects

`\listoftables and \listoffigures`

List of Tables

List of Figures

Task 3. Time-table your pastimes and add commented pics/graphs

- Produce a one-page document with a table and a figure.
  - no pagination, please!
  - add in-text references to both
  - create proper captions: Chicago referencing style (as required by Benjamins Publishing house) requires "Figure captions should be placed below the figure, while table captions should be placed above the relevant table."
- Link the formatted document with tables and figures in Achievement Tracker