

GEN 280: Technical Reports

Week 4: Writing the Results and Discussion

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Lecture Outline:

- 1 Tables in L^AT_EX
- 2 Bibliographies
- 3 Writing your Results
- 4 Writing your Discussion.

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- 1 Tables in L^AT_EX
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Figures and Tables

Graphics

- Sometimes we need to **force** a figure to be on the same page on the **top**, **below**, or just **here**.
- We can use the options argument to force the figure position.

```
\begin{figure}[!p!t]
\centering
\includegraphics[width=\textwidth]{gerbil}
\caption{\label{fig:gerbil}This is top}
\end{figure}
```

Same page, on top

```
\begin{figure}[!p!b]
\centering
\includegraphics[width=\textwidth]{gerbil}
\caption{\label{fig:gerbil}This is top}
\end{figure}
```

Same page, on below

```
\begin{figure}[!p!h]
\centering
\includegraphics[width=\textwidth]{gerbil}
\caption{\label{fig:gerbil}This is top}
\end{figure}
```

Same page, just here

Figures and Tables

Sub-figures: use package **subfig** with **minipage** environment

```

\usepackage{subfig} ←
\usepackage{graphicx}

\begin{document}
\begin{figure}[!t!p]
  \centering
  \begin{minipage}{0.5\textwidth}
    \centering
    \subfloat[letter A]{\label{fig:a}\includegraphics[width=.7\columnwidth]{img1}}
  \end{minipage}%
  ~
  \begin{minipage}{0.5\textwidth}
    \centering
    \subfloat[]{\label{fig:b}\includegraphics[width=.7\columnwidth]{img2}}
  \end{minipage}
  ~
  \begin{minipage}{0.5\textwidth}
    \centering
    \subfloat[]{\label{fig:c}\includegraphics[width=.7\columnwidth]{img3}}
  \end{minipage}%
  ~
  \begin{minipage}{0.5\textwidth}
    \centering
    \subfloat[Any caption]{\label{fig:d}\includegraphics[width=.7\columnwidth]{img4}}
  \end{minipage}

  \caption{(a) letter A, (b) letter B, (c) letter C and (d) letter D} \label{fig:multiple}
\end{figure}
\end{document}

```



(a) letter A



(b)



(c)



(d) Any caption

Figure 1: (a) letter A, (b) letter B, (c) letter C and (d) letter D

Figures and Tables

Tables: <https://www.tablesgenerator.com/> is useful

- Use the **tabular** environment from the **tabularx** package.
- The argument specifies column alignment: (l)left, (r)right, (c)center.

Item	Qty	Unit \$
Widget	1	199.99
Gadget	2	399.99
Cable	3	19.99

- It also specifies vertical lines and for horizontal lines use `\hline`.
- Use `&` to separate columns and a double backslash `\\` to start a new row.

Item	Qty	Unit \$
Widget	1	199.99
Gadget	2	399.99
Cable	3	19.99

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Bibliographies

BibTex

Step 1: Put your references in *.bib file

```
@Article{Jacobson1999Towards,  
  author = {Van Jacobson},  
  title = {Towards the Analysis of Massive Multiplayer Online  
          Role-Playing Games},  
  journal = {Journal of Ubiquitous Information},  
  Month = jun,  
  Year = 1999,  
  Volume = 6,  
  Pages = {75--83}}  
  
@InProceedings{Brooks1997Methodology,  
  author = {Fredrick P. Brooks and John Kubiawicz and  
          Christos Papadimitriou},  
  title = {A Methodology for the Study of the  
          Location-Identity Split},  
  booktitle = {Proceedings of OOPSLA},  
  Month = jun,  
  Year = 1997}
```

You can copy the bib format of a reference from **google scholar, Mendeley or EndNote**

Bibliographies

BibTex

Step 2: Copy the key of the reference you need to cite

```
@Article{Jacobson1999Towards,  
  author = {Van Jacobson},  
  ...  
}
```

Bibliographies

BibTeX

Step 3: Use **natbib** package with `\citet` or `\citep` command inside your article

```
\documentclass{article}  
\usepackage{natbib}
```

```
\begin{document}  
  \citet{Brooks1997Methodology}  
  show that \ldots. Clearly,  
  all odd numbers are prime  
  \citep{Jacobson1999Towards}.  
\end{document}
```

```
\end{document}
```

Bibliographies

BibTeX

Step 4: Reference `\bibliography` at the end, and specify a `\bibliographystyle`.

```

\documentclass{article}
\usepackage{natbib}
\begin{document}

\citet{Brooks1997Methodology}
show that \ldots. Clearly,
all odd numbers are prime
\citep{Jacobson1999Towards}.

Your *.bib file name
\bibliography{bib-example}
% if `bib-example' is the name of
% your bib file
\bibliographystyle{plainnat}
\end{document}

```

Brooks et al. [1997] show that Clearly, all odd numbers are prime [Jacobson, 1999].

References

Fredrick P. Brooks, John Kubiawicz, and Christos Papadimitriou. A methodology for the study of the location-identity split. In *Proceedings of OOPSL* June 1997.

Van Jacobson. Towards the analysis of massive multiplayer online role-playing games. *Journal of Ubiquitous Information*, 6:75-83, June 1999.

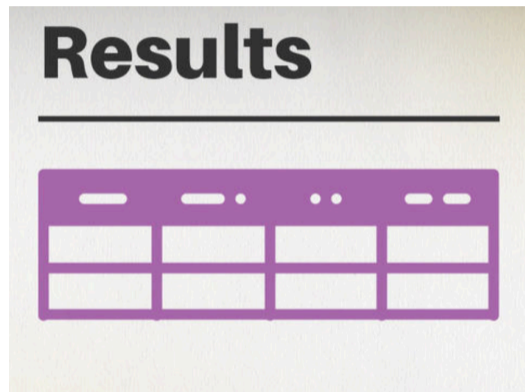
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Writing your Results

Result section:

The Results section contains **the values that you have obtained** from your experimental or modeling work.



Writing your Results

Information that is included in the Results:

- The results of your experiment, both in terms of **raw** and **processed data**.
- The errors in the work.
- Few example results and some summary tables or figures.

Example of phrases used:

- “It can be seen that. . .”
- “There is a linear relationship between. . .”
- “The trend is unclear at this point. . .”

Writing your Results

Information that is not included in the Result:

- Giving reasons for the obtained results.
- Give opinion on the results.

Example of phrases not to be used:

- “This could be due to . . .”
- “This supports the view of previous researchers . . .”
- “This uncertainty might arise for the following reasons . . .”
- “All of the sets of results indicate . . .”

Writing your Results

Raw vs. Processed Data:

Raw Data

Raw data is the data that comes straight off the experiment. It might be scaled, or filtered, but it is the first data that can be recorded.

Processed Data

Processed data is the raw data, dealt with so it can be used more easily, or displayed to show a result or feature.

Some examples of raw data are:

- Pressure in mm water to measure flow with an orifice plate.
- Signals per second for rotating machinery.
- A voltage signal from a microphone with each data point.

Some examples of processed data are:

- Multiply mass by 9.81 to indicate force.
- Filtering the data out of noise.

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Writing your Discussion.

The point of a discussion is to explain:

- What your results mean.
- Whether your results answer the questions or aims you set out in the Introduction.
- How your results are relevant to engineering problems.
- Where the sources of error were and how confident you are in your results.

Discussion



You report submission. Deadline 25, May, 2022.

Submit your file into this [link](#)

Please compress your files into a *.zip or *.rar file and submit all the documents including:

- *.tex file.
- Pictures.
- *.bib file (if any).
- *.pdf file.



Questions?

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