# Computer Essentials for Engineers

**GNG1103 – Engineering Design**

## Part B1 – Documents (MS Word)

This lab discusses two basic word processing tools: Microsoft (MS) Word and Google Docs. MS Word is a more mature tool with more features and is described in this document. However, real-time sharing requires use of Microsoft's cloud drive, OneDrive as follows: https://support.office.com/en-us/article/video-share-files-and-folders-in-onedrive-personal-3fcefa26-1371-401e-8c04-589de81ed5eb. As a Canadian student, you get a very good deal on MS Office. The use of this tool to create a technical document is described here.

Engineering design work is often captured in text with illustrative graphics and tables. Much of the design work that you will do in your career will be captured (both for archival and also for sharing and collaboration purposes) using some kind of technical report format. In such documents, words are concise and often easier to understand than in speech discussions and they are recorded in a compact format.

Indeed, communication between native and non-native speakers of a given language is often simplified when things are written down. In short, a technical document captures your: thoughts, understanding and analyses forever. Moreover, it is captured in a way that can be understood and examined by other people (and by yourself, too, later!).

Taking the time to learn the automatic features of either tool can save you a *lot* of time. While you may think that you know the tools in this lab already; this is probably not entirely true. New features are continually being added to save a user time when editing or maintaining their documents.

Typical engineering documents that you will encounter at University (and afterwards) are:

- Technical reports
- Technical papers (e.g. for conferences and journals)

The formats of these types of technical documents can vary but are generally very similar and usually include the following things (in order of occurrence1). See also http://engineering.uottawa.ca/downloads/pdf/thesisguideline.pdf :

- **Title Page**: This is what people see first, so make it clean and professional. Include the title itself in title case (and maybe the organization or course name for which it was created), your name or names, the date of creation of the document. Many organizations have specific requirements for both format and content for this page.
- **Abstract**: A very short summary of the content of the report. Because of the high-level treatment and the length, the big boss might ***only*** read these 100 words or so of your document, so summarize the important contributions only.
- **Acknowledgements**: Acknowledge the contributions of others, in your work, as appropriate.
- **Table of Contents, List of Figures, List of Tables**: We will learn how to generate these automatically using both MS Word and Google Docs
- **Nomenclature**: Symbols used
- **Glossary**: Specialized terms used and their meaning in plain English

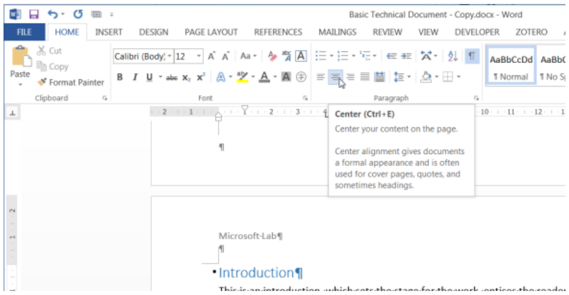
- **Main body**: This needs to be organized hierarchically with headings that go no more than three levels deep (explained in more detail later, but numbering might look like 4.3.2, but *not* 4.3.2.2, where 4 is the chapter number). Typically, the first section is an introduction that sets the context for your work and helps a non-expert reader understand the importance of your work. In a full technical paper, a literature survey would be expected next, followed by results and discussion
- **Conclusions and Recommendations**: The main conclusions should all be here, extracted from the main body, followed by recommendations for future work or next steps.
- **References**: These can be generated automatically in MS Word, provided some simple steps are followed (https://support.office.com/en-us/article/Create-a-bibliography-17686589-4824-4940-9c69-342c289fa2a5 ). There are also powerful add-on tools available for both MS Word and Google docs. We will discuss one of these called Zotero: https://www.zotero.org/) that lets you organize and store a database of references. The stored references can then be used easily in multiple documents. A good report has references, since it implies that the authors "did their homework" and didn't "re-invent the wheel". You need to be aware of what other people have done, although you should not be copying their work, of course (*plagiarism* is both an academic *and* a professional offence; don't do it!).
- **Appendices**: These are extra sections of text that are not central to the main body nor even required for understanding, but are included for the sake of detail or completeness. They are taken out of the main flow and put at the end ("appended") to avoid making the main body unnecessarily long or unwieldy.

## General Advice

We will now create a document with this format, although we will leave out some of the less important sections. In general, you should use the automatic features in the word processor, rather than doing things manually. For example, don't type in carriage returns and extra spaces to line things up, when you can simply change the paragraph attributes for the whole document. This makes the final result more consistent and wastes less of your time.

If it seems like you are doing things slowly and laboriously and you feel like 'there must be a better way of doing this', then there is ***probably a better way of doing it*!** The internet is your friend. Strive to make your final document the best in can be, especially in terms of content, but also in terms of presentation quality! Don't settle for shoddy quality, just because you don't know how to do something. Instead, learn how to do it.

For that, the context-sensitive help is useful. If you are not sure about the use for a specific icon, hover your cursor over it and read the resulting help text. For example, in the diagram below, the cursor was hovered (left stationary for a few seconds) over the 'centering' icon, resulting in the help message shown. When you do this, the keyboard shortcut for the icon is also given by both tools.


Basic Technical Document - Copy.docx - Word
FILE
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PAGE LAYOUT
REFERENCES
MAILINGS
REVIEW
VIEW
DEVELOPER
ZOTERO
Paste
Cut
Copy
Format Painter
Clipboard
Calibri (Body)
12
Font
Paragraph
AaBbCcDd
¶ Normal

Center (Ctrl+E)

Center your content on the page.

Center alignment gives documents a formal appearance and is often used for cover pages, quotes, and sometimes headings.

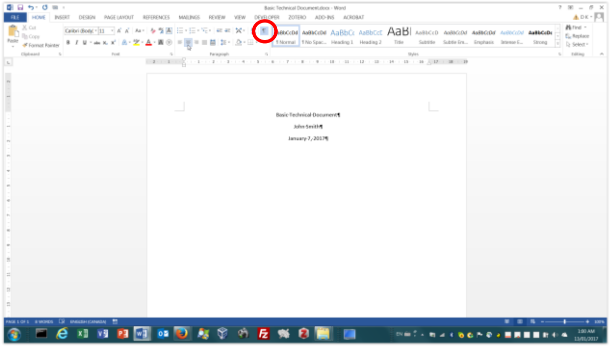
Microsoft·Lab¶

¶

Introduction¶

## Create a Document

1. Open MS Word and create a “Blank Document”. Templates are available, but we will not use these now.
2. Add the text: “Basic Technical Document” and hit the *Enter* key.
3. Next type your own name and hit the *Enter* key once again.
4. Include the current date in a format like “January 7, 2017” and hit *Enter* again.
5. This should now be on a page by all itself and should look something like this:



Basic Technical Document¶

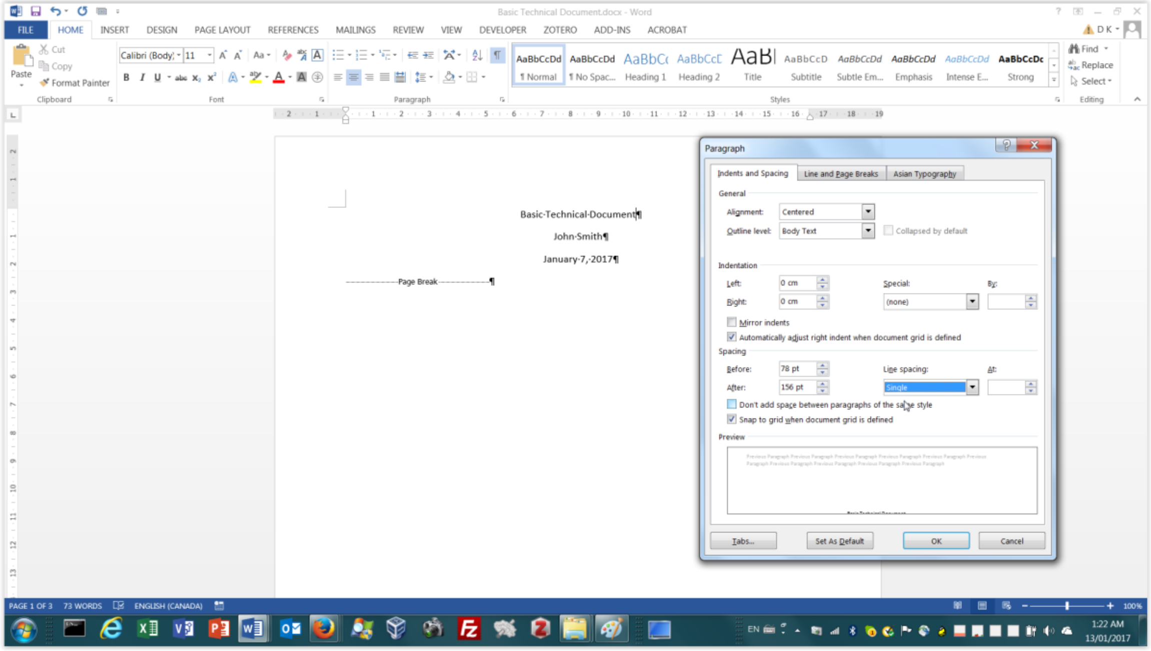
John Smith¶

January 7, 2017¶

Save your MS Word document by selecting *File/Save* or *File/Save As*. Note that you probably want to save periodically and you can also use the keyboard shortcut of *Ctrl+s or ⌘+s* (on a MAC) to save time when doing this.

6. Given the emptiness of this page, we can centre the text (as is being done in the diagram with the mouse pointer) and we can increase the size of the fonts and make the title bold, etc. Notice the paragraph marker symbols at the end of the lines, which can sometimes be helpful when trying to determine why a document is looking a certain way. To turn the display of special “white space” characters (e.g. paragraph markers, tabs, spaces,

etc.), click on the icon that is circled in red in the diagram.  Try it.


Basic Technical Document.docx - Word
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MAILINGS
REVIEW
VIEW
DEVELOPER
ZOTERO
ADD-INS
ACROBAT
Paragraph
Indents and Spacing
Line and Page Breaks
Asian Typography
Tabs...
Set As Default
OK
Cancel

Basic-Technical-Document¶
John-Smith¶
January-7,-2017¶
------------Page Break------------¶

General
Alignment: Centered
Outline level: Body Text
☐ Collapsed by default

Indentation
Left: 0 cm
Right: 0 cm
Special: (none)
By:
☐ Mirror indents
☑ Automatically adjust right indent when document grid is defined

Spacing
Before: 78 pt
After: 156 pt
Line spacing: Single
At:
☐ Don't add space between paragraphs of the same style
☑ Snap to grid when document grid is defined

7. We can also adjust the line spacing after or before a paragraph.  Right-click anywhere in a paragraph and then select “Paragraph…” from the menu.  Then adjust the spacing before and after as shown in the diagram.  This is better than typing in a bunch of extra paragraph markers and/or changing their font size, etc.
8. We next insert a page break after the last line by selecting INSERT/Page Break in MS Word, which is also an icon on the left-hand side at the top that looks like this: Page Break or use the *CTRL+Enter* or *⌘+Enter* (on a MAC) keyboard shortcut.
9. The next page is blank by convention, so you can insert yet another page break.  This allows the abstract to start on the same side as the title page.

## Headings

10. Generation of the Table of Contents requires headings and styles that we will need to create in our main body, so we insert another page break for now and continue on to the main section of our document.
11. Our document will only have seven numbered chapters.  We have some intermediate subsections in chapter 5, to practice inclusion of a heading hierarchy in a document.  As already stated, there should be 3 levels or less in the hierarchy as follows:
    1. Introduction
    2. Related Work
    3. Third Main Subject Heading
    4. Fourth Main Subject Heading
    5. Fifth Main Subject Heading
        5.1 The first subsection beneath the fifth main subject heading
        5.2 The second subsection beneath the fifth main subject heading
            5.1.1 First subsection

        5.1.2 Second subsection
        5.1.3 Third subsection
    6. Conclusions and Recommendations
    7. References

12. The text in our document will be organized with 3 to 5 concise sentences in each paragraph, but we will use some Lorem Ipsum (i.e. random) text generated from: [http://www.lipsum.com/feed/html](http://www.lipsum.com/feed/html).
13. To save some time, this has all been captured already for you in a Word document inside the Lab 1 folder called “Basic Technical Document.doc”.

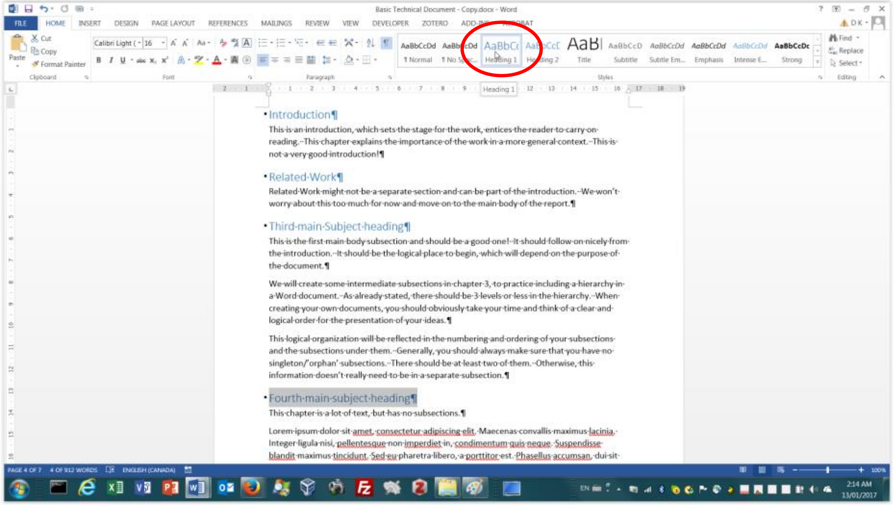
    What is the difference between files created with a suffix of *odt*, *docx* or *txt*?

    .odt ______________________________________________________________________

    .docx ____________________________________________________________________

    .txt ______________________________________________________________________

14. Download the file from Brightspace.
15. Select the heading ‘Introduction’ by clicking anywhere in the text and then click on the *HOME/Styles/Heading 1* box in MS Word (see highlighted icon under the cursor in the next figure. The text will change to the defined format, which will show you that the paragraph style for the “Introduction” heading has been changed successfully (see the next figures).
16. Repeat step (9) until all first-level headings are assigned the heading style of *Heading1*.


Basic Technical Document - Copy.docx - Word
FILE
HOME
INSERT
DESIGN
PAGE LAYOUT
REFERENCES
MAILINGS
REVIEW
VIEW
DEVELOPER
ZOTERO
ADD-INS
ACROBAT
Paste
Cut
Copy
Format Painter
Clipboard
Calibri Light
16
Font
Paragraph
AaBbCcDd
¶ Normal
¶ No Spac...
Heading 1
Heading 2
Title
Subtitle
Subtle Em...
Emphasis
Intense E...
Strong
Styles
Find
Replace
Select
Editing
PAGE 4 OF 7
4 OF 912 WORDS
ENGLISH (CANADA)
100%
2:14 AM
13/01/2017

Introduction

This is an introduction, which sets the stage for the work, entices the reader to carry on reading. This chapter explains the importance of the work in a more general context. This is not a very good introduction!

Related Work

Related Work might not be a separate section and can be part of the introduction. We won’t worry about this too much for now and move on to the main body of the report.

Third main Subject heading

This is the first main body subsection and should be a good one! It should follow on nicely from the introduction. It should be the logical place to begin, which will depend on the purpose of the document.

We will create some intermediate subsections in chapter 3, to practice including a hierarchy in a Word document. As already stated, there should be 3 levels or less in the hierarchy. When creating your own documents, you should obviously take your time and think of a clear and logical order for the presentation of your ideas.

This logical organization will be reflected in the numbering and ordering of your subsections and the subsections under them. Generally, you should always make sure that you have no singleton/’orphan’ subsections. There should be at least two of them. Otherwise, this information doesn’t really need to be in a separate subsection.

Fourth main subject heading

This chapter is a lot of text, but has no subsections.

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Maecenas convallis maximus lacinia. Integer ligula nisi, pellentesque non imperdiet in, condimentum quis neque. Suspendisse blandit maximus tincidunt. Sed eu pharetra libero, a porttitor est. Phasellus accumsan, dui sit

You will need to select the text in question and then press the appropriate ‘AaBbCc’ (Heading 1, etc.) button icon each time to assign the style.

17. Repeat the same procedure for changing the style of all of the headings at each level, using Heading2 for second-level titles and Heading3 for third-level titles.

The result should be as follows <with the final assigned style shown in angled braces at the beginning of each title heading text>:

<*Heading1*> Introduction
<*Heading1*> Related Work
<*Heading1*> Third Main Subject Heading
<*Heading1*> Fourth Main Subject Heading
<*Heading1*> Fifth Main Subject Heading
<*Heading2*> The first subsection beneath the fifth main subject heading
<*Heading2*> The second subsection beneath the fifth main subject heading
<*Heading3*> First subsection
<*Heading3*> Second subsection
<*Heading3*> Third subsection
<*Heading1*> Conclusions and Recommendations
<*Heading1*> References

18. We want to have numbered headings. They might not be put there already by default for you. This depends on the version of MS Word that you have and the contents of a configuration file on your disk. If you have number prefixes already in your document now (e.g. 1. Introduction) then you can keep going, without needing to use the steps in the appendix. However, if you only have text without numbers (e.g. Introduction), then you will need to do the steps in the appendix, which have been extracted from: http://shaunakelly.com/word/numbering/numbering20072010.html?p=1768.
    - You can find the numbered headings by clicking on the multilevel list options in the HOME/Paragraph menu.

## Table of Contents

19. To create the Table of Contents, first place your cursor where you want the Table of Contents to be created. In MS Word, then click on REFERENCES/Table of Contents on the very left-hand side, which has an icon like this (Table of Contents ▾). Select the first automatic style.
20. By right-clicking and selecting “Update Field” in MS Word, it can be updated with a single mouse click, after picking the “update entire table” radio button. Try it yourself by adding another Heading1 title like ‘Another Heading’ somewhere and then assign it a style of Heading1 first. After the update, you should see your new section appear in the updated *Table of Contents*.

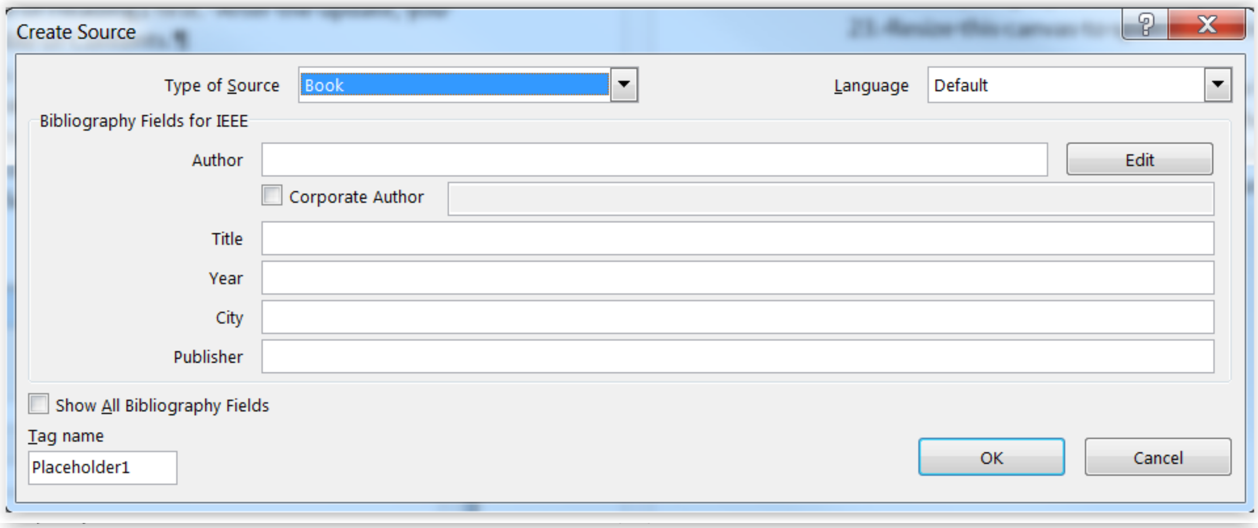
## Citations and List of References (bibliography)

21. You can create references to external sources. These are often called citations and there are different conventions for their format. References might also be required for figures or tables or even other sections or subsections in the document. These are created in two basic ways, although this depends on the specific version of MS Word that you are using. As already mentioned, there are other add-on tools (e.g. Zotero) that simplify the process

even more and also allow you to create a database of your references, so that it is easier to use them in different documents and even auto-fill them from websites.

Zotero must be installed and runs as a program, but is also visible in the Firefox and Google Chrome browsers. In addition, it will appear as a menu title in a document. By selecting *Zotero/ Add/edit citation* or using the *Ctrl+Alt+C* or *⌘+Alt+C* (on a MAC) keyboard shortcut, citations can be added easily, from the database of citations organized in the Zotero application. This database needs to be set up first, before the citation can be added.

In MS Word, select REFERENCES/Insert Citation/Add New Source to get a menu like the one in the next picture.



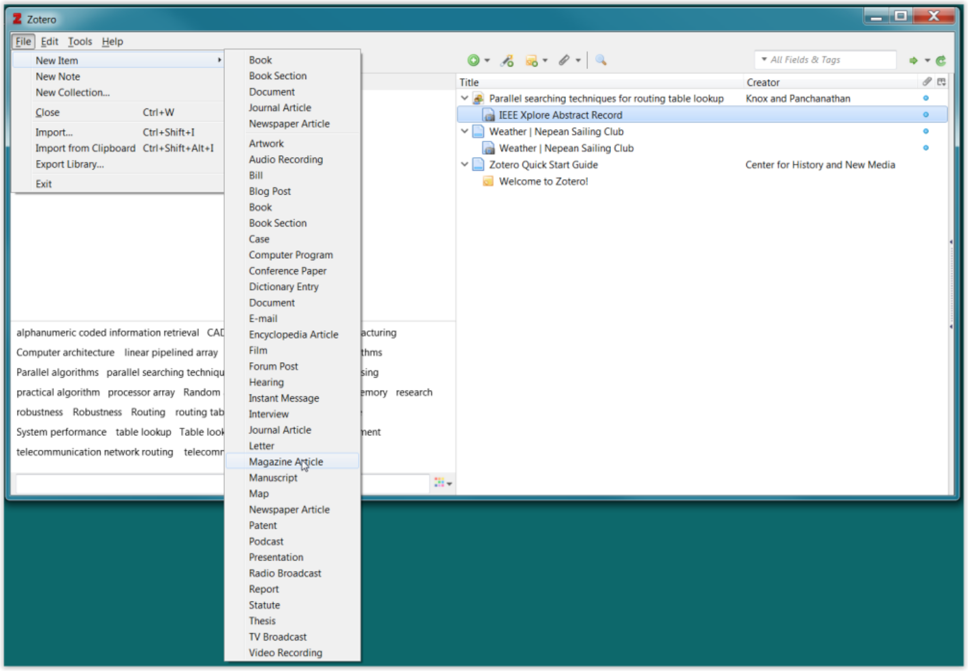
Type of Source: Book

Language: Default

Tag name: Placeholder1

22. In MS Word, fill in the various boxes for the kind of citation you are using. Try it with a simple example of a book source type (there are other types of citations like ‘Journal Article’, ‘website’, etc.). Fill in the required fields. If you check off the box for ‘Show All Bibliography Fields’, you can see that much more detail and information capture is definitely possible. Pressing “OK” creates a citation, which will automatically generate an entry in the bibliography that we will generate next.
    - It will also create a source that can be cited again in the document, without requiring you to type in the information again. Check this by repeating the previous step. You should now see an entry with the information that you have just entered, provided that you entered something successfully.
    - To go back and fill in missing information or to correct information in the citation you just created, you can use REFERENCES/Manage Sources.

With Zotero, you create the reference in the Zotero application by selecting *File/New Item/* and then pick the appropriate item type (e.g. Magazine Article, Conference paper, etc.) as shown in the figure below. You can also install a Zotero connector into your web browser, which can really simplify creating citations:


Zotero
File
Edit
Tools
Help
New Item
New Note
New Collection...
Close Ctrl+W
Import... Ctrl+Shift+I
Import from Clipboard Ctrl+Shift+Alt+I
Export Library...
Exit
Book
Book Section
Document
Journal Article
Newspaper Article
Artwork
Audio Recording
Bill
Blog Post
Book
Book Section
Case
Computer Program
Conference Paper
Dictionary Entry
Document
E-mail
Encyclopedia Article
Film
Forum Post
Hearing
Instant Message
Interview
Journal Article
Letter
Magazine Article
Manuscript
Map
Newspaper Article
Patent
Podcast
Presentation
Radio Broadcast
Report
Statute
Thesis
TV Broadcast
Video Recording
All Fields & Tags
Title
Creator
Parallel searching techniques for routing table lookup
Knox and Panchanathan
IEEE Xplore Abstract Record
Weather | Nepean Sailing Club
Weather | Nepean Sailing Club
Zotero Quick Start Guide
Center for History and New Media
Welcome to Zotero!
alphanumeric coded information retrieval
Computer architecture
linear pipelined array
Parallel algorithms
parallel searching techniqu
practical algorithm
processor array
Random
robustness
Robustness
Routing
routing tab
System performance
table lookup
Table look
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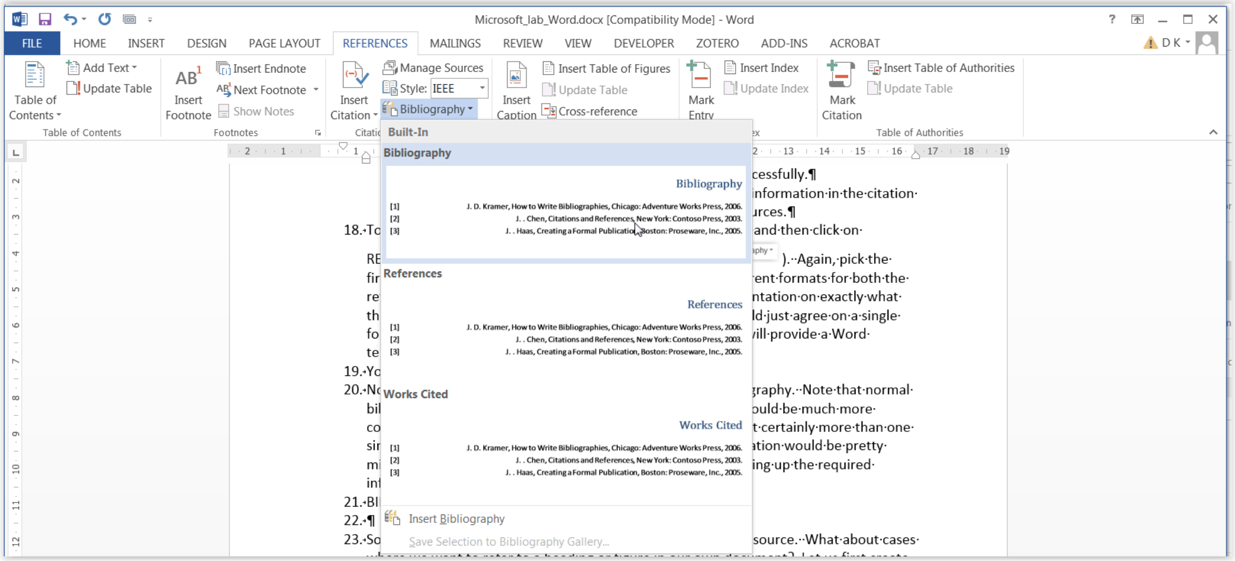
Once the citation exists in Zotero, you will be able to access it from the *Zotero* menu in Google Docs (Mozilla Firefox or Google Chrome browsers) but you need to keep the Zotero application running. In your document, you select *Zotero/ Add/edit citation*.

You will be told that "*Zotero is updating your document. Please wait…*" and will be given a single-line Zotero pop-up, which you can switch to "Classic view". You may *also* be prompted for a citation/reference system type. If so, pick "**IEEE**". Double-click the particular citation that you want to add and you should get a number like [1] inserted into your text.

23. Now that we have at least one citation, we can create a bibliography. Note that normal bibliographies will show the results of your research, which should be much more comprehensive (e.g. for product benchmarking, there is almost certainly more than one similar product which you will need to reference). A single citation would be pretty miserable, so take some time now to create another one, making up the required information about author, etc.

    To create a bibliography, place your cursor in the desired spot and then click on REFERENCES/Bibliography, which has an icon like this ( Bibliography ▾ ). Again, pick the first built-in type. In reality, different organizations have different formats for both the references and the bibliography and they will provide documentation on exactly what they want. Sometimes, it would be *really* nice if everyone could just agree on a single format, but they don't. Many organizations will provide a Word template to simplify the process for you, but this is not always true.

    Pick the first generic type of Bibliography in the list, as shown by the cursor position in the diagram. When you add more citations, you will need to right-click on the bibliography and select "Update Field". Note that, as with the Table of Contents, you can reformat the title (e.g. centre it and make it bold, etc.). If you want the bibliography to ***appear*** in the Table of Contents, then give the title a heading style of Heading1 and then update the Table of Contents. You should now see “Bibliography” (or “List of References” or whatever you called it) appear in the Table of Contents with the appropriate page number.


Microsoft_lab_Word.docx [Compatibility Mode] - Word
FILE
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REFERENCES
MAILINGS
REVIEW
VIEW
DEVELOPER
ZOTERO
ADD-INS
ACROBAT
D K
Add Text
Update Table
Table of Contents
Insert Endnote
Next Footnote
Show Notes
Insert Footnote
Footnotes
Insert Citation
Manage Sources
Style: IEEE
Bibliography
Insert Caption
Insert Table of Figures
Update Table
Cross-reference
Mark Entry
Insert Index
Update Index
Mark Citation
Insert Table of Authorities
Update Table
Table of Authorities
Built-In
Bibliography
References
Works Cited
Insert Bibliography
Save Selection to Bibliography Gallery...

Bibliography

[1] J. D. Kramer, How to Write Bibliographies, Chicago: Adventure Works Press, 2006.
[2] J. . Chen, Citations and References, New York: Contoso Press, 2003.
[3] J. . Haas, Creating a Formal Publication, Boston: Proseware, Inc., 2005.

References

[1] J. D. Kramer, How to Write Bibliographies, Chicago: Adventure Works Press, 2006.
[2] J. . Chen, Citations and References, New York: Contoso Press, 2003.
[3] J. . Haas, Creating a Formal Publication, Boston: Proseware, Inc., 2005.

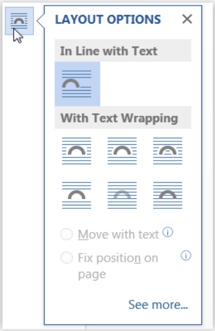
Works Cited

[1] J. D. Kramer, How to Write Bibliographies, Chicago: Adventure Works Press, 2006.
[2] J. . Chen, Citations and References, New York: Contoso Press, 2003.
[3] J. . Haas, Creating a Formal Publication, Boston: Proseware, Inc., 2005.

If using Zotero, select *Zotero/ Add/Edit Bibliography* and… eventually… one will be added into your document. You may be prompted to confirm the operation with a pop-up window. If you add more citations/references, you only need to select *Zotero/refresh* to get an updated references list.

## Adding a Figure (inside a canvas object)

24. So far, we have learned how to insert a citation to external sources like books and websites. What about cases where we want to refer to a heading or to a figure or something else in our own document? We will first create a figure inside a drawing canvas, give it a caption and then create a reference to that figure.
25. To insert a figure in MS Word, the best way is to enclose it inside a drawing canvas. To do this, select INSERT/Shapes/New Drawing Canvas (at the very bottom of the pull-down menu list). Resize this canvas to span the entire page width and then click on the now-visible ‘Layout Options’ icon, which looks like this ( ). The easiest type of layout option to use is ‘In-line with the text’ (see the next figure for other options with text wrapping). This kind of drawing canvas will stay in the same relative position to the text, regardless of your editing changes, which is usually what you will want to have.



The drawing canvas should be made the width of the page and then you can place any graphical objects inside the border. Placing graphical objects directly on the page used to crash MS Word pretty nicely, although later versions (MS Word 2013 and 2016, 365, etc.) have been more robust. The method described here: works well, is robust for all versions of MS Word and automatically moves the graphics around as you add and remove the text that is placed around it.

### Adding a Figure Caption

26. To add a caption to the figure, position your cursor directly after the drawing canvas in question and select REFERENCES/Insert Caption, which has an icon like this (Insert Caption). Select ‘figure’ from the label: pull-down menu and select ‘OK’. You can centre the title using the appropriate icon in the HOME menu. You can type in some text (e.g. ‘This is my figure title’) after the Figure 1 auto-heading.

### Cross References (e.g. create a reference to a figure caption)

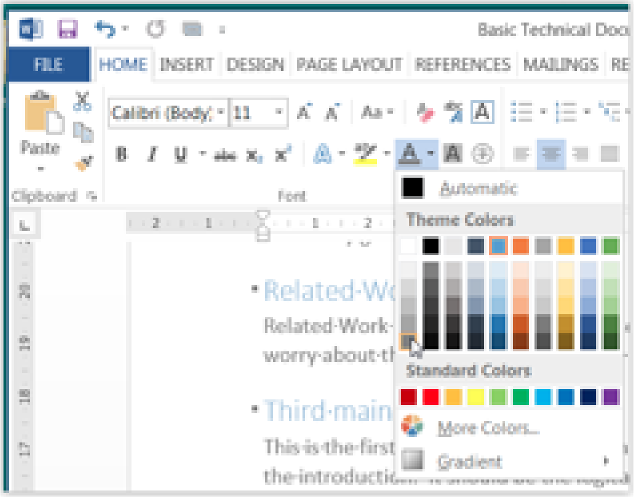
27. Now insert a reference to the newly-created figure caption. Place your cursor *where you want to insert the reference* and then select REFERENCES/Cross Reference, which has an icon like this (Cross-reference Captions).

    Choose the appropriate reference type (e.g. ‘figure’ here) from the pull-down menu, if not already selected, and then change ‘Insert references to;’ to have a value of ‘Only label and number’ from the pull-down menu; this just gives a short-form reference like “Figure 1”. Have a quick look at the other reference types, while you are here, by looking at the other options in the pull-down menu. Also, see what happens with your figure reference, when you select different options in the ‘Insert References to:’ pull-down menu.

    Next select the specific reference in the list, to which you want to refer, and click on ‘Insert’. Note that the menu does not disappear, so you can insert more than one reference. Since you only have one figure right now, you can only pick the same one, but you’ll get two copies of it! If you created another figure, you would see that second figure as an option in the list too.

## Headers and Footers

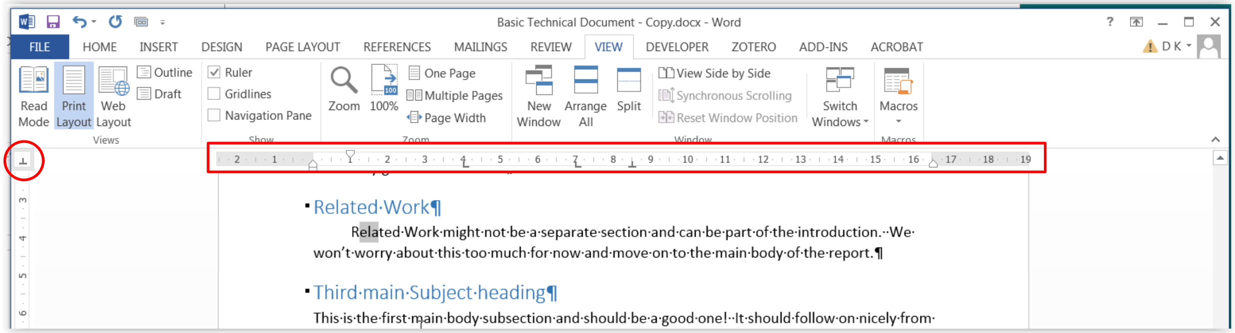
28. Finally, we will create some header and footer information (adding some page numbers to the footer). In MS Word, select the INSERT/("Header and Footer" area)/Header pull-down menu arrow and then select "Blank". You can see that there are other types of header, but we just want a simple header (or we might not even want a header at all!) Type the name of your project in the [Type here] area: "Microsoft Lab". Then, select the "Close Header and Footer" icon, which looks like this(✖ Close Header and Footer Close) and which is located near the top right of the page. To access the header again, just double-click on the text (i.e. "Microsoft Lab").
29. Follow a similar procedure for the footer, selecting Select the INSERT/("Header and Footer" area)/Footer" pull-down menu arrow, but this time scroll down the list of available options and select "Semaphore". This pre-formatted footer has a "page i of n" format already done for you, but you can choose different styles or even customize these ones. Select the "Close Header and Footer" icon like before.
30. We will change the colour of the page numbering from blue to grey. To do this, double-click on the "Page x of y" text at the bottom and then select the entire block of text. Using the HOME/("Font" area)/Font Color pull-down icon, which is being selected using the cursor in the diagram below, select a level of grey that you like.



Related·Work
Related·Work·
worry·about·t
Third·main
This·is·the·first
the·introductio

## Using the Ruler to set up margins and tabs

31. The ruler in MS Word can show us the margins on the page and also where tabs are located graphically. Make sure that the VIEW/("Show" area)/Ruler check box has a check mark in it, or add one, to view the ruler. In the diagram below, the ruler can be seen as a horizontal object in the middle of the next figure, surrounded with a red rectangle.


Basic Technical Document - Copy.docx - Word
FILE
HOME
INSERT
DESIGN
PAGE LAYOUT
REFERENCES
MAILINGS
REVIEW
VIEW
DEVELOPER
ZOTERO
ADD-INS
ACROBAT
Read Mode
Print Layout
Web Layout
Outline
Draft
Views
Ruler
Gridlines
Navigation Pane
Show
Zoom
100%
One Page
Multiple Pages
Page Width
Zoom
New Window
Arrange All
Split
View Side by Side
Synchronous Scrolling
Reset Window Position
Window
Switch Windows
Macros
Macros

Related·Work¶

Related·Work·might·not·be·a·separate·section·and·can·be·part·of·the·introduction.··We·won't·worry·about·this·too·much·for·now·and·move·on·to·the·main·body·of·the·report.¶

Third·main·Subject·heading¶

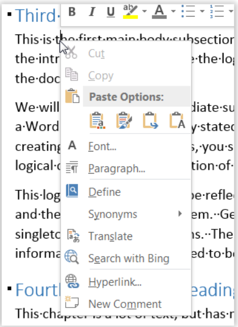
This·is·the·first·main·body·subsection·and·should·be·a·good·one!··It·should·follow·on·nicely·from·

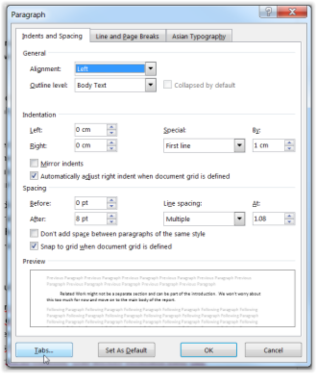
As you move your cursor onto different paragraphs, the ruler can change in appearance. For this example paragraph, by examining the ruler in the figure closely, you can see:

- the left margin (shown with ⌂ ) is set at the zero ruler location, with a hanging indent at 1cm. This indent is only used for the first line of a paragraph (the position for the indent is shown with ▽ ).
- there are two left-justified tabs at 4cm and 7cm (shown with └ ),
- there is a centre-justified tab (shown with ⊥ ) at 8.5cm and
- there is a right margin (shown with △ ) at 16.5cm

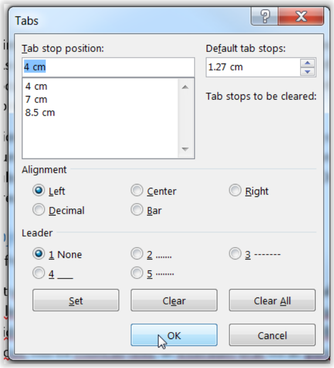
To add a new tab, select on the tab type icon, shown circled in red in the same figure, until the desired tab type is shown and then click anywhere in the ruler to insert such a tab marker. To delete an existing tab marker, select and then drag it off the ruler entirely. As a test, type text in the same paragraph, hitting the tab key a few times. You will notice that the text will be aligned with these defined tab markers, which is useful if you are trying to line up text in columns.

To check the tab marker values for a particular paragraph, numerically, right-click on text in the paragraph in question and then select "Paragraph…" and then click on the "Tabs…" icon as shown in the next figure, in the same sequence of menus that would be presented to you. This is the same paragraph that was shown, using the ruler, in the previous diagram. The same information can be created and edited here too, but you can see that the ruler is quite a bit simpler to use.


Cut
Copy
Paste Options:
Font...
Paragraph...
Define
Synonyms
Translate
Search with Bing
Hyperlink...
New Comment


Paragraph
Indents and Spacing
Line and Page Breaks
Asian Typography
General
Indentation
Spacing
Preview
Tabs...
Set As Default
OK
Cancel

Alignment: Left
Outline level: Body Text
☐ Collapsed by default
Left: 0 cm
Right: 0 cm
Special: First line
By: 1 cm
☐ Mirror indents
☑ Automatically adjust right indent when document grid is defined
Before: 0 pt
After: 8 pt
Line spacing: Multiple
At: 1.08
☐ Don't add space between paragraphs of the same style
☑ Snap to grid when document grid is defined


Tabs
Alignment
Leader
Set
Clear
Clear All
OK
Cancel

Tab stop position: 4 cm
4 cm
7 cm
8.5 cm
Default tab stops: 1.27 cm
Tab stops to be cleared:
● Left ○ Center ○ Right
○ Decimal ○ Bar
● 1 None ○ 2 ....... ○ 3 -------
○ 4 ___ ○ 5 ........

How can the ruler be hidden?

______________________________________________________________________

______________________________________________________________________

**Saving and submitting your finished document**

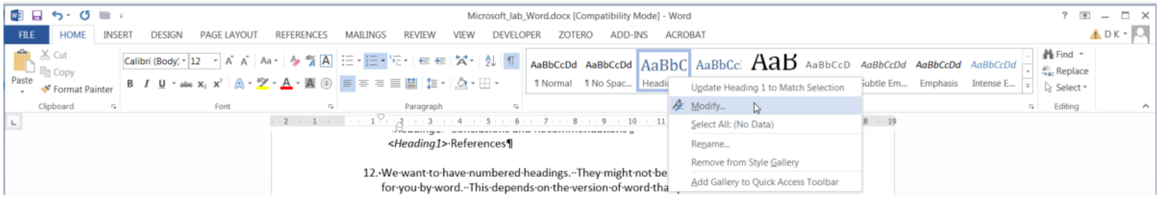
32. Save your MS Word document by selecting *File/Save* or *File/Save As* and submit it, along with the filled-in version of this document, into BrightSpace in the Part B folder for the lab. Note that you probably want to save periodically and the keyboard shortcut of *Ctrl+s or ⌘+s* (on a MAC).

# Appendix – Adding Hierarchical Numbering Styles to Headings (MS Word)

This procedure has been based on the one described in [http://shaunakelly.com/word/numbering/numbering20072010.html?p=1768](http://shaunakelly.com/word/numbering/numbering20072010.html?p=1768). Note that Word 2013 has been used here. Earlier or later versions of the software might look different (or even behave differently!). Microsoft updates their software on a reasonably regular basis and it generally gets easier to use with each subsequent iteration. If the steps here are not representative of your software and don't work, then the internet or Lynda ([www.lynda.com](www.lynda.com)) is your friend! A suitable key search phrase might be: "Microsoft Word numbered headings".

a) Make sure that the Heading1, Heading2 and Heading3 styles are cascaded properly. That is, we want Heading1 to be based on "no style", but we want Heading2 to be based on Heading1 and we want Heading 3 to be based on Heading2.

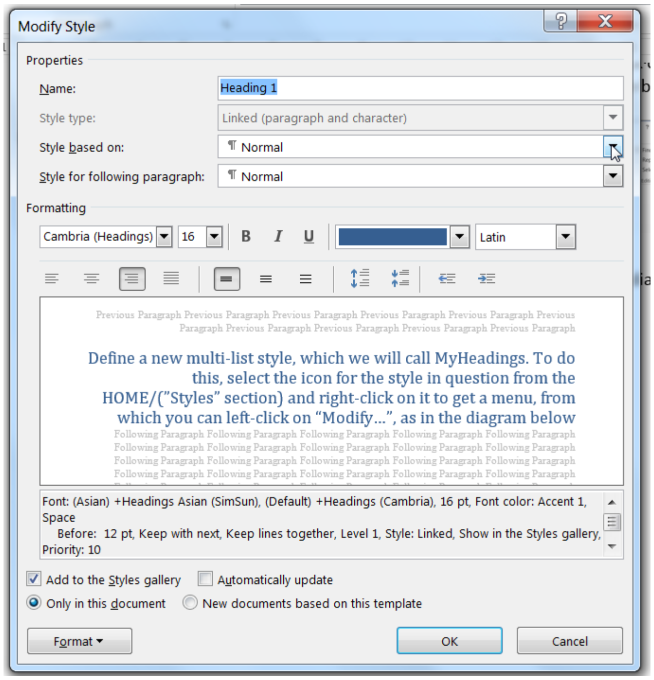
b) Define a new multi-list style, which we will call *MyHeadings*. To do this, select the icon for the style in question from the HOME/("Styles" section) and right-click on it to get a menu, from which you can left-click on "Modify…", as in the diagram below


Microsoft_lab_Word.docx [Compatibility Mode] - Word
FILE
HOME
INSERT
DESIGN
PAGE LAYOUT
REFERENCES
MAILINGS
REVIEW
VIEW
DEVELOPER
ZOTERO
ADD-INS
ACROBAT
Paste
Cut
Copy
Format Painter
Clipboard
Calibri (Body)
12
Font
Paragraph
AaBbCcDd
¶ Normal
AaBbCcDd
¶ No Spac...
AaBbC
Headi
AaBbCc
AaB
AaBbCcD
AaBbCcDd
Subtle Em...
AaBbCcDd
Emphasis
AaBbCcDd
Intense E...
Find
Replace
Select
Editing
Update Heading 1 to Match Selection
Modify...
Select All: (No Data)
Rename...
Remove from Style Gallery
Add Gallery to Quick Access Toolbar

<Heading1>·References¶

12.·We·want·to·have·numbered·headings.··They·might·not·be
for·you·by·word.··This·depends·on·the·version·of·word·tha

After clicking on "Modify…", you should see a menu like the one in the next diagram and you should click on the pull-down arrow for "Style based on" as shown by the cursor position in the diagram. As already explained, select "(no style)" for Heading1's style basis, select Heading 1 for Heading 2's style basis and Heading 2 for Heading 3's style basis. We could continue like this for Heading4, except that we only want to use three levels of headings in our technical documents and we should really re-organize our document to achieve this goal, if required.


Modify Style
Properties
Formatting
Previous Paragraph Previous Paragraph Previous Paragraph Previous Paragraph Previous Paragraph Previous Paragraph Previous Paragraph Previous Paragraph Previous Paragraph Previous Paragraph
Following Paragraph Following Paragraph Following Paragraph Following Paragraph Following Paragraph
Format ▾
OK
Cancel

Name: Heading 1

Style type: Linked (paragraph and character)

Style based on: ¶ Normal

Style for following paragraph: ¶ Normal

Cambria (Headings) | 16 | B | I | U | Latin

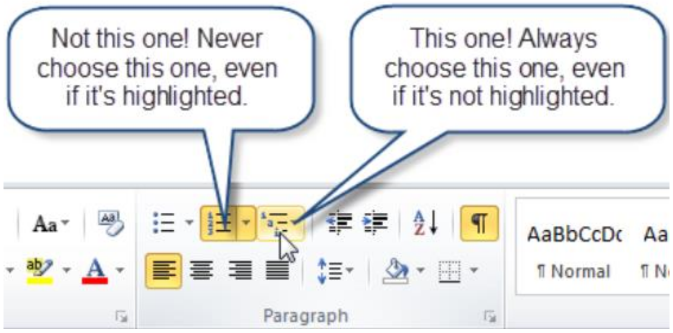
Define a new multi-list style, which we will call MyHeadings. To do this, select the icon for the style in question from the HOME/("Styles" section) and right-click on it to get a menu, from which you can left-click on "Modify…", as in the diagram below

Font: (Asian) +Headings Asian (SimSun), (Default) +Headings (Cambria), 16 pt, Font color: Accent 1, Space
Before: 12 pt, Keep with next, Keep lines together, Level 1, Style: Linked, Show in the Styles gallery, Priority: 10

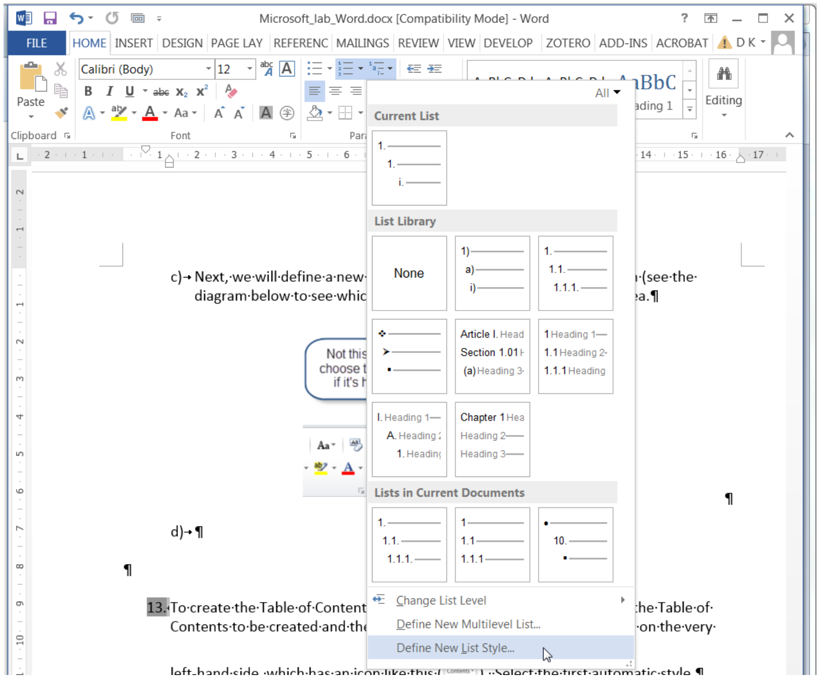
☑ Add to the Styles gallery ☐ Automatically update

● Only in this document ○ New documents based on this template

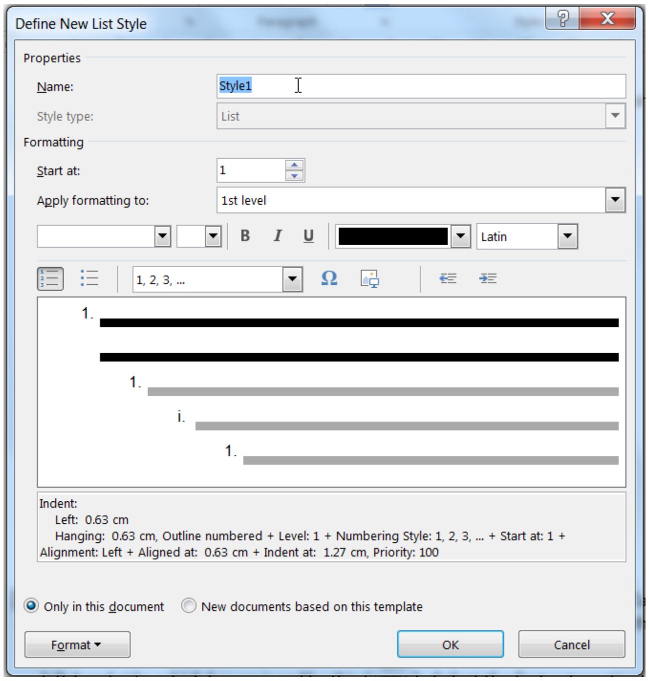
c) Next, we will define a new list style by picking the multi-level list icon (see the diagram below to see which icon this is in the HOME/(Paragraph) area.


Not this one! Never choose this one, even if it's highlighted.
This one! Always choose this one, even if it's not highlighted.
AaBbCcDc
Aa
¶ Normal
¶ N
Paragraph

d) Select "Define New List Style from the resulting pull-down menu, by clicking in the cursor position shown in the next diagram.


Microsoft_lab_Word.docx [Compatibility Mode] - Word
FILE
HOME
INSERT
DESIGN
PAGE LAY
REFERENC
MAILINGS
REVIEW
VIEW
DEVELOP
ZOTERO
ADD-INS
ACROBAT
Paste
Clipboard
Calibri (Body)
12
Font
Editing
Current List
List Library
None
Lists in Current Documents
Change List Level
Define New Multilevel List...
Define New List Style...

e) After clicking, the result should look like the next diagram. Clear out the default name (e.g. *Style1*) and replace it with the new one of *MyHeadings*.


Define New List Style
Properties
Formatting
Only in this document
New documents based on this template
Format
OK
Cancel

Name: Style1

Style type: List

Start at: 1

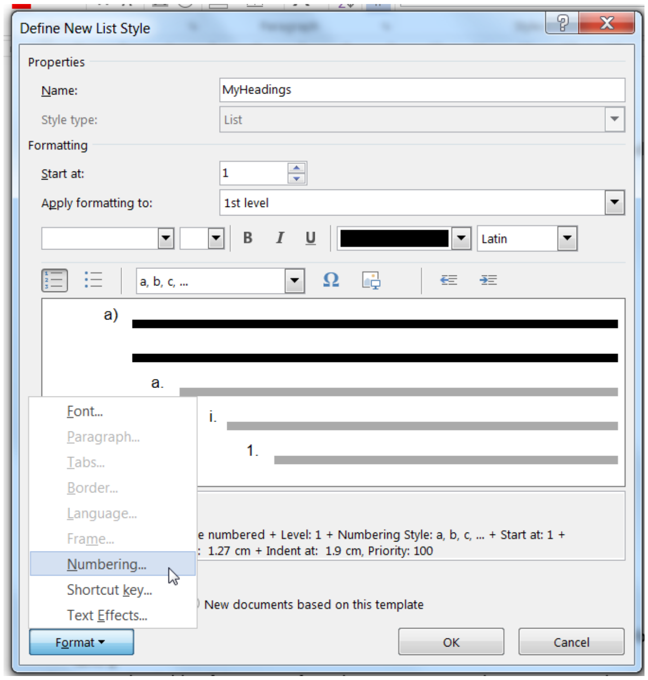
Apply formatting to: 1st level

Latin

1, 2, 3, ...

Indent:
Left: 0.63 cm
Hanging: 0.63 cm, Outline numbered + Level: 1 + Numbering Style: 1, 2, 3, … + Start at: 1 +
Alignment: Left + Aligned at: 0.63 cm + Indent at: 1.27 cm, Priority: 100

f) Don’t change anything else, but click on the Format pull-down tab at the bottom left. Select “Numbering” as shown in the diagram below



Define New List Style

Properties

Name: MyHeadings

Style type: List

Formatting

Start at: 1

Apply formatting to: 1st level

Latin

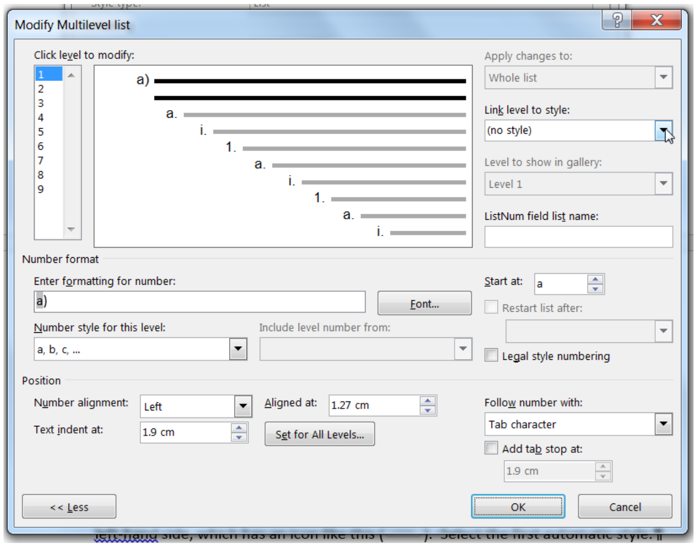
a, b, c, ...

e numbered + Level: 1 + Numbering Style: a, b, c, … + Start at: 1 +
: 1.27 cm + Indent at: 1.9 cm, Priority: 100

New documents based on this template

a)
a.
i.
1.
Font...
Paragraph...
Tabs...
Border...
Language...
Frame...
Numbering...
Shortcut key...
Text Effects...
Format
OK
Cancel

g) The result will be a menu like the next diagram. Select the number 1 in the “Click level to modify” area (as is shown in the diagram) and change “Link level to style” to Heading1 by clicking on the cursor position shown in the diagram and selecting the right thing in the resulting pull-down menu. Then, clear out ***all*** of the existing contents of “Enter formatting for number” completely. This is shown as “a)” in the diagram, but you should delete this and then select the “Number style for this level” pull-down arrow and next pick “1,2,3,…” and type a single period character



Modify Multilevel list

Click level to modify: 1

Apply changes to: Whole list

Link level to style: (no style)

Level to show in gallery: Level 1

ListNum field list name:

Number format

Enter formatting for number: a)

Number style for this level: a, b, c, ...

Include level number from:

Start at: a

☐ Restart list after:

☐ Legal style numbering

Position

Number alignment: Left

Aligned at: 1.27 cm

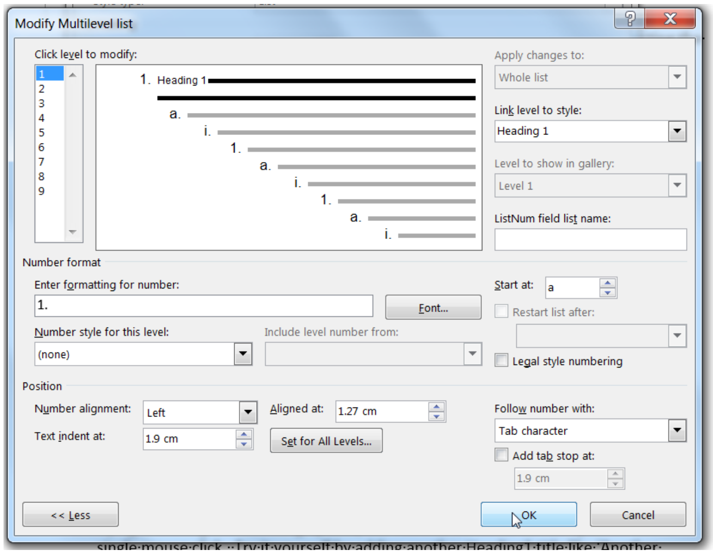
Text indent at: 1.9 cm

Follow number with: Tab character

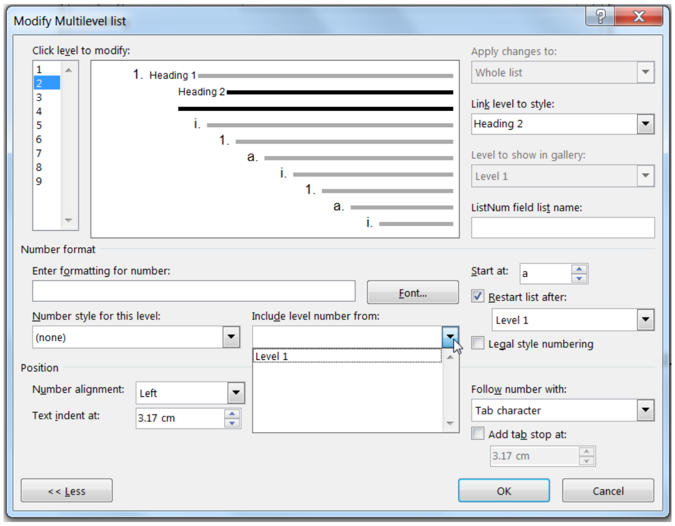
☐ Add tab stop at: 1.9 cm

1
2
3
4
5
6
7
8
9
a)
a.
i.
1.
a.
i.
1.
a.
i.
Font...
Set for All Levels...
<< Less
OK
Cancel

h) If you have done everything right, it should look like the next diagram, which shows that the level 1 setting of the new MyHeadings list style has been linked to Heading1:and that the formatting is number-based.

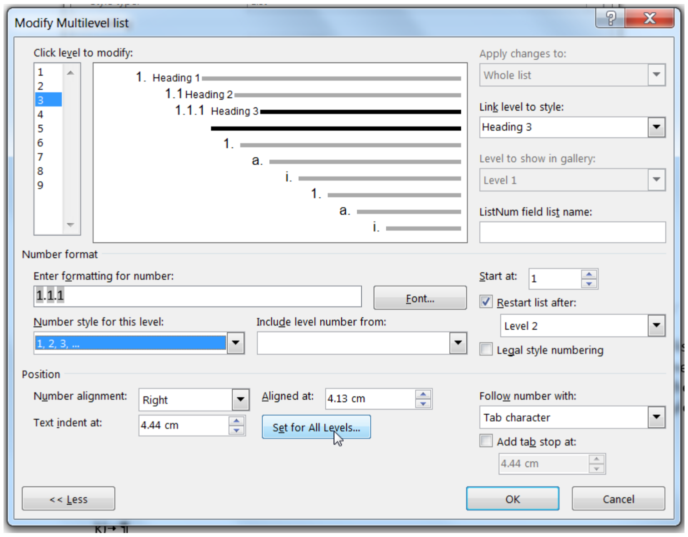

Modify Multilevel list
Click level to modify: 1
Apply changes to: Whole list
Link level to style: Heading 1
Level to show in gallery: Level 1
ListNum field list name:
Enter formatting for number: 1.
Start at: a
☐ Restart list after:
Number style for this level: (none)
Include level number from:
☐ Legal style numbering
Number alignment: Left
Aligned at: 1.27 cm
Text indent at: 1.9 cm
Follow number with: Tab character
☐ Add tab stop at: 1.9 cm

i) Without hitting 'OK', do a similar operation for the 'Click level to modify' value of 2. This time, set the "Link level to style" to Heading2. Completely clear the "Enter formatting for number", then select the pull-down arrow for "Include level number from:" as shown by the cursor position in the next diagram. Once you pick the (only) option of "Level 1", you should see a number "1" in the "Enter formatting for number" box. Next, type a period and then pick "1,2,3,…" from the "Number style for this level" box again. You should now see "1.1" in the "Enter formatting for number" box. Do not hit "OK" yet, since we still need to do the 3rd level.


Modify Multilevel list
Click level to modify: 2
Apply changes to: Whole list
Link level to style: Heading 2
Level to show in gallery: Level 1
ListNum field list name:
Enter formatting for number:
Start at: a
☑ Restart list after: Level 1
Number style for this level: (none)
Include level number from: Level 1
☐ Legal style numbering
Number alignment: Left
Text indent at: 3.17 cm
Follow number with: Tab character
☐ Add tab stop at: 3.17 cm

j) Next, change "Click level to modify" to 3, change "link level to style:" to Heading3, clear out the "Enter formatting for number" box completely and click on the pull-down arrow for "Include level number from" again. Pick "Level 1" again from the list and type a period character. Click on the same pull-down arrow again, but this time pick "Level 2" and type another period character. You should now have "1.1." in the "Enter formatting for number" box. Finally, select "1,2,3,…" from the

"Number style for this level" box again and you should have 1.1.1 in the "Enter formatting for number" box as shown in the next diagram. Click on the "Set for All levels" box as shown by the cursor position in the diagram and just click "OK" on the new "Set for All Levels" menu that is displayed (see the right menu in the diagram below).


Modify Multilevel list
1. Heading 1
1.1 Heading 2
1.1.1 Heading 3
1.
a.
i.
1.
a.
i.
Number format
Position
Font...
Set for All Levels...
<< Less
OK
Cancel

Click level to modify: 3 (levels 1–9)

Apply changes to: Whole list

Link level to style: Heading 3

Level to show in gallery: Level 1

ListNum field list name:

Enter formatting for number: 1.1.1

Number style for this level: 1, 2, 3, ...

Include level number from:

Start at: 1

☑ Restart list after: Level 2

☐ Legal style numbering

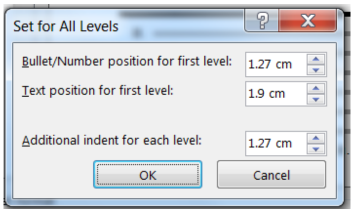
Number alignment: Right

Aligned at: 4.13 cm

Text indent at: 4.44 cm

Follow number with: Tab character

☐ Add tab stop at: 4.44 cm


Set for All Levels
OK
Cancel

Bullet/Number position for first level: 1.27 cm

Text position for first level: 1.9 cm

Additional indent for each level: 1.27 cm

k) We are finally done! Click "OK"and then "OK" again, in the other menu which is still open, to finish it all off.

l) You may need to re-apply the styles of Heading1, Heading2 and Heading3 inside your document, but you shouldn't. If you need to do this, click on a character in the block of text that you want to change. Then, click on the appropriate icon in the HOME/("Styles" portion) menu. Specifically, you would click on the icon for: Heading1, Heading2 or Heading3. If you turn regular body text into a heading by mistake, click on the 'Normal' icon!

m) Save your document.