

# Quick start for LaTeXing with IEEEtran.cls for IEEE Computer Society Conferences

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**Abstract**—Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

## I. INTRODUCTION

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.


Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

Nulla malesuada porttitor diam. Donec felis erat, congue non, volutpat at, tincidunt tristique, libero. Vivamus viverra fermentum felis. Donec nonummy pellentesque ante. Phasellus adipiscing semper elit. Proin fermentum massa ac quam. Sed

diam turpis, molestie vitae, placerat a, molestie nec, leo. Maecenas lacinia. Nam ipsum ligula, eleifend at, accumsan nec, suscipit a, ipsum. Morbi blandit ligula feugiat magna. Nunc eleifend consequat lorem. Sed lacinia nulla vitae enim. Pellentesque tincidunt purus vel magna. Integer non enim. Praesent euismod nunc eu purus. Donec bibendum quam in tellus. Nullam cursus pulvinar lectus. Donec et mi. Nam vulputate  etus eu enim. Vestibulum pellentesque felis eu massa.

The remainder of the paper starts with a presentation of related work (Section II). It is followed by a presentation of hints on LaTeX (Section III). Finally, a conclusion is drawn and outlook on future work is made (Section IV).

## II. RELATED WORK

Winery [1] is a graphical  modeling tool. The whole idea of TOSCA is explained by Binz et al. [2].

## III. LATEX HINTS

This section contains hints on writing LaTeX. It focuses on minimal examples, which can be directly adapted to the content

### A. Handling of paragraphs

One sentence per line. This rule is important for the usage of version control systems. A new line is generated with a blank line. As you would do in Word: New paragraphs are generated by pressing enter. In LaTeX, this does not lead to a new paragraph as LaTeX joins subsequent lines. In case you want a new paragraph, just press enter twice (!). This leads to an empty line. In word, there is the functionality to press shift and enter. This leads to a hard line break. The text starts at the beginning of a new line. In LaTeX, you can do that by using two backslashes (`\`).

This is rarely used.

Please do *not* use two backslashes for new paragraphs. For instance, this sentence belongs to the same paragraph, whereas the last one started a new one. A long motivation for that is provided at <http://loopspace.mathforge.org/HowDidIDoThat/TeX/VCS/#section.3>.

Corresponding	L <sup>A</sup> T <sub>E</sub> X	code	of
			paper-conference-minted.tex
388	One sentence per line.		
389	This rule is important for the usage of version control		
	↪ systems.		
390	A new line is generated with a blank line.		
391	As you would do in Word:		
392	New paragraphs are generated by pressing enter.		
393	In LaTeX, this does not lead to a new paragraph as LaTeX joins		
	↪ subsequent lines.		
394	In case you want a new paragraph, just press enter twice (!).		
395	This leads to an empty line.		
396	In word, there is the functionality to press shift and enter.		
397	This leads to a hard line break.		
398	The text starts at the beginning of a new line.		
399	In LaTeX, you can do that by using two backslashes		
	↪ <code>(\textbackslash\textbackslash)</code> .		
400	This is rarely used.		
401			
402	Please do <code>\textit{not}</code> use two backslashes for new paragraphs.		
403	For instance, this sentence belongs to the same paragraph,		
	↪ whereas the last one started a new one.		
404	A long motivation for that is provided at <code>\url{http://}</code>		
	↪ <code>loopspace.mathforge.org/HowDidIDoThat/TeX/VCS/#section.3}</code> .		

B. Notes separated from the text

The package mindflow enables writing down notes and annotations in a way so that they are separated from the main text.

This is a small note.

Corresponding	L <sup>A</sup> T <sub>E</sub> X	code	of
			paper-conference-minted.tex
412	<code>\begin{mindflow}</code>		
413	This is a small note.		
414	<code>\end{mindflow}</code>		

C. Hyphenation

L<sup>A</sup>T<sub>E</sub>X automatically hyphenates words. When using mi-crotype, there should be less hypnetations than in other settings. It might be necessary to tweak the hyphenations nevertheless. Here are some hints:

In case you write “application-specific”, then the word will only be hyphenated at the dash. You can also write applica\allowbreak{}tion-specific (result: application-specific), but this is much more effort.

You can now write words containing hyphens which are hyphenated at other places in the word. For instance, application=specific gets application"=specific. This is enabled by an additional configuration of the babel package.

Corresponding	L <sup>A</sup> T <sub>E</sub> X	code	of
			paper-conference-minted.tex
425	In case you write <code>\enquote{application-specific}</code> , then the		
	↪ word will only be hyphenated at the dash.		
426	You can also write <code>\verb!applica\allowbreak{}tion-specific!</code>		
	↪ (result: applica\allowbreak{}tion-specific), but this is		
	↪ much more effort.		
427			
428	You can now write words containing hyphens which are		
	↪ hyphenated at other places in the word.		
429	For instance, <code>\verb!application"=specific!</code> gets		
	↪ application"=specific.		
430	This is enabled by an additional configuration of the babel		
	↪ package.		

D. Typesetting Units

Numbers can written plain text (such as 100), by using the siunitx package like that: 100  $\frac{\text{km}}{\text{h}}$ , or by using plain L<sup>A</sup>T<sub>E</sub>X (and math mode): 100  $\frac{km}{h}$ .

Corresponding	L <sup>A</sup> T <sub>E</sub> X	code	of
			paper-conference-minted.tex
436	Numbers can written plain text (such as 100), by using the		
	↪ siunitx package like that:		
437	<code>\SI{100}{\km\per\hour}</code> ,		
438	or by using plain <code>\LaTeX{}</code> (and math mode):		
439	<code>\SI{100}{\frac{\mathit{km}}{h}}</code> .		

5 % of 10 kg

Corresponding	L <sup>A</sup> T <sub>E</sub> X	code	of
			paper-conference-minted.tex
443	<code>\SI{5}{\percent}</code> of <code>\SI{10}{kg}</code>		

Numbers are automatically grouped: 123 456.

Corresponding	L <sup>A</sup> T <sub>E</sub> X	code	of
			paper-conference-minted.tex
447	Numbers are automatically grouped: <code>\num{123456}</code> .		

E. Surrounding Text by Quotes

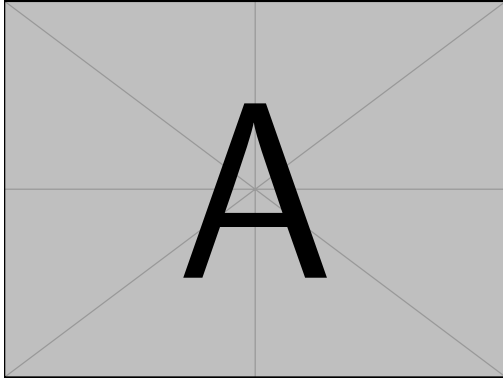
Please use the “enquote command” to quote something. Quoting with “quote” or “quote” also works.

Corresponding	L <sup>A</sup> T <sub>E</sub> X	code	of
			paper-conference-minted.tex
453	Please use the <code>\enquote{enquote command}</code> to quote something.		
454	Quoting with “quote” or “quote” also works.		
455			

F. Cleveref examples

Cleveref demonstration: Cref at beginning of sentence, cref in all other cases.

Figure 1 shows a simple fact, although Figure 1 could also show something else.



**Figure 1:** Example figure for cref demo

Heading1	Heading2
One	Two
Thee	Four

**Figure 2:** Example table for cref demo

Figure 2 shows a simple fact, although Figure 2 could also show something else.

Section III-F shows a simple fact, although Section III-F could also show something else.

Corresponding  $\LaTeX$  code of  
paper-conference-minted.tex

```

485 \Cref{fig:ex:cref} shows a simple fact, although
    ↳ \cref{fig:ex:cref} could also show something else.
486
487 \Cref{tab:ex:cref} shows a simple fact, although
    ↳ \cref{tab:ex:cref} could also show something else.
488
489 \Cref{sec:ex:cref} shows a simple fact, although
    ↳ \cref{sec:ex:cref} could also show something else.

```

### G. Figures

Figure 3 shows something interesting.



**Figure 3:** Simple Figure. Based on Scharrer [3].

Corresponding  $\LaTeX$  code of  
paper-conference-minted.tex

```

495 \Cref{fig:label} shows something interesting.
496
497 \begin{figure}
498   \centering
499   \includegraphics[width=.8\linewidth]{example-image-golden}
500   \caption[Simple Figure]{Simple Figure. Based on
    ↳ \citet{mwe}.}
501   \label{fig:label}
502 \end{figure}

```

One can span a figure across multiple columns by using `\begin{figure*}`. See Figure 4 as an example.

Corresponding  $\LaTeX$  code of  
paper-conference-minted.tex

```

510 \begin{figure*}
511   \centering
512   % note that \textwidth is used instead of \linewidth
513   % This ensures that the graphics width is 60% of the "page"
    ↳ (text block), and not just 60% of the current text
    ↳ column
514   % See https://tex.stackexchange.com/a/17085/9075 for details
515   \includegraphics[width=.6\textwidth]{example-image-16x9}
516   \caption{16x9 Figure}
517   \label{fig:16x9}
518 \end{figure*}

```

### H. Sub Figures

An example of two sub figures is shown in Figure 5.

Corresponding  $\LaTeX$  code of  
paper-conference-minted.tex

```

527 \begin{figure*}[!b]
528   \centering
529   \subfloat[Case I]{\includegraphics[width=.4\linewidth]{ }
    ↳ example-image-a}%
530   \label{fig:first_case}}
531   \hfil
532   \subfloat[Case II]{\includegraphics[width=.4\linewidth]{ }
    ↳ example-image-b}%
533   \label{fig:second_case}}
534   \caption{Example figure with two sub figures.}
535   \label{fig:two_sub_figures}
536 \end{figure*}

```

Note that often IEEE papers with subfigures do not employ subfigure captions (using the optional argument to `\subfloat[]`), but instead will reference/describe all of them (a), (b), etc., within the main caption. Be aware that for `subfig.sty` to generate the (a), (b), etc., subfigure labels, the optional argument to `\subfloat` must be present. If a subcaption is not desired, just leave its contents blank, e.g., `\subfloat[]`. An example is shown in Figure 6.

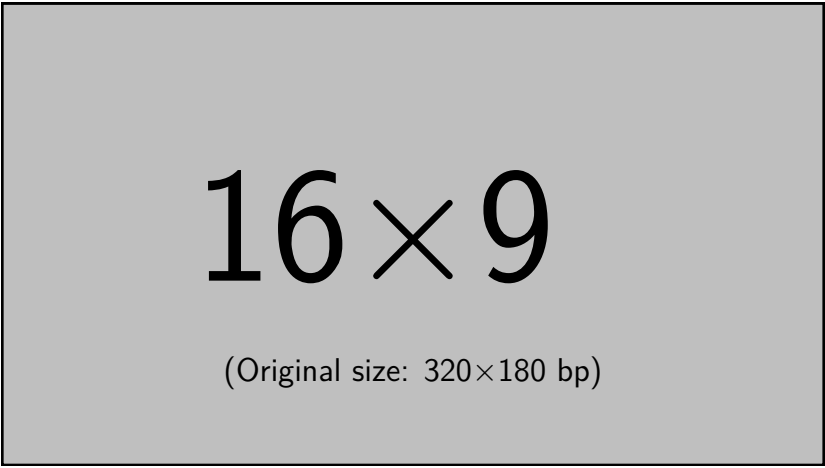
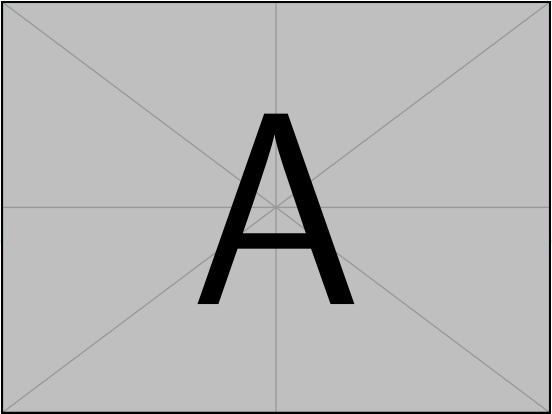


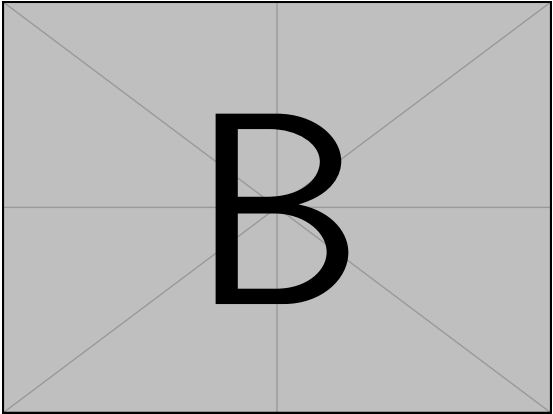
Figure 4: 16x9 Figure

Corresponding L<sup>A</sup>T<sub>E</sub>X code of  
paper-conference-minted.tex

```
549 \begin{figure*}[\!b]
550 \centering
551 \subfloat[]{\includegraphics[width=.4\linewidth]{example-}
↔ image-a}%
552
553
554
555
556
557
558
```

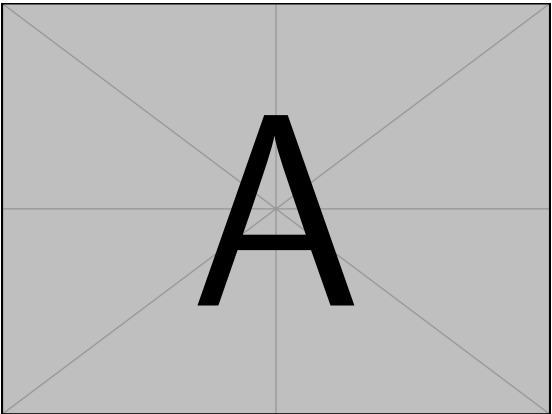


(a) Case I

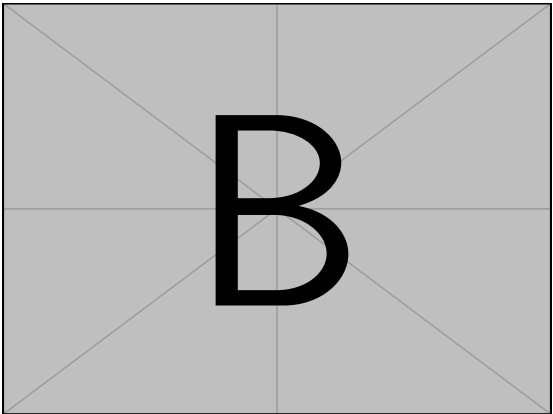


(b) Case II

Figure 5: Example figure with two sub figures.



(a)



(b)

Figure 6: Example figure with two sub figures. IEEE style. (a) The first case. (b) The second case.

**Figure 7: Simple Table**

Heading1	Heading2
One	Two
Thee	Four

**Figure 8: Table with diagonal line**

Diag Column Head I	Diag Column Head II	Second	Third
		foo	bar

Corresponding  $\text{\LaTeX}$  code of  
paper-conference-minted.tex

```
566 \begin{figure}
567   \caption{Simple Table}
568   \label{tab:simple}
569   \centering
570   \begin{tabular}{ll}
571     \toprule
572     Heading1 & Heading2 \\
573     \midrule
574     One      & Two      \\
575     Thee     & Four     \\
576     \bottomrule
577   \end{tabular}
578 \end{figure}
```

Corresponding  $\text{\LaTeX}$  code of  
paper-conference-minted.tex

```
582 % Source: https://tex.stackexchange.com/a/468994/9075
583 \begin{figure}
584   \caption{Table with diagonal line}
585   \label{tab:diag}
586   \begin{center}
587     \begin{tabular}{|l|c|c|}
588       \hline
589       \diagbox[width=10em]{Diag\Column Head I}{Diag Column\Head
590       \leftrightarrow II} & Second & Third \\
591       & foo & bar \\
592     \hline
593   \end{tabular}
594   \end{center}
595 \end{figure}
```

## J. Source Code

minted is a sophisticated package to enable properly highlighted listings. It uses the pygments library, which in turn requires Python.

Listing 1 shows source code written in XML. Zeile 2 contains a comment.

```
1 <listing name="example">
2   <!-- comment -->
3   <content>not interesting</content>
4 </listing>
```

**List. 1:** Example XML listing using minted

Corresponding  $\text{\LaTeX}$  code of  
paper-conference-minted.tex

```
605 \Cref{lst:XML} shows source code written in XML.
606 \refline{line:comment} contains a comment.
607
608 \begin{listing}[htbp]
609   \begin{minted}[linenos=true,escapeinside=||]{xml}
610     <listing name="example">
611       <!-- comment --> |\labelline{line:comment}|
612       <content>not interesting</content>
613     </listing>
614   \end{minted}
615   \caption{Example XML listing using minted}
616   \label{lst:XML}
617 \end{listing}
```

One can also typeset JSON as shown in Listing 2.

```
1 {
2   key: "value"
3 }
```

**List. 2:** Example JSON listing using minted

Corresponding  $\text{\LaTeX}$  code of  
paper-conference-minted.tex

```
623 \begin{listing}[htbp]
624   \begin{minted}[linenos=true,escapeinside=||]{json}
625     {
626       key: "value"
627     }
628   \end{minted}
629   \caption{Example JSON listing using minted}
630   \label{lst:flJSON}
631 \end{listing}
```

Java is also possible as shown in Listing 3.

```
1 public class Hello {
2   public static void main (String[] args) {
3     System.out.println("Hello World!");
4   }
5 }
```

**List. 3:** Java code rendered using minted

Corresponding  $\LaTeX$  code of  
paper-conference-minted.tex

```
637 \begin{listing}[htbp]
638 \begin{minted}[linenos=true,escapeinside=|]{java}
639 public class Hello {
640     public static void main (String[] args) {
641         System.out.println("Hello World!");
642     }
643 }
644 \end{minted}
645 \caption{Java code rendered using minted}
646 \label{lst:flJava}
647 \end{listing}
```

### K. Itemization

One can list items as follows:

- Item One
- Item Two

Corresponding  $\LaTeX$  code of  
paper-conference-minted.tex

```
655 \begin{itemize}
656 \item Item One
657 \item Item Two
658 \end{itemize}
```

With the package paralist, one can create itemizations with lesser spacing:

- Item One
- Item Two

Corresponding  $\LaTeX$  code of  
paper-conference-minted.tex

```
664 \begin{compactitem}
665 \item Item One
666 \item Item Two
667 \end{compactitem}
```

One can enumerate items as follows:

- 1) Item One
- 2) Item Two

Corresponding  $\LaTeX$  code of  
paper-conference-minted.tex

```
673 \begin{enumerate}
674 \item Item One
675 \item Item Two
676 \end{enumerate}
```

With the package paralist, one can create enumerations with lesser spacing:

- 1) Item One
- 2) Item Two

Corresponding  $\LaTeX$  code of  
paper-conference-minted.tex

```
682 \begin{compactenum}
683 \item Item One
684 \item Item Two
685 \end{compactenum}
```

With paralist, one can even have all items typset after each other and have them clean in the tex document:

1) All these items... 2) ...appear in one line 3) This is enabled by the paralist package.

Corresponding  $\LaTeX$  code of  
paper-conference-minted.tex

```
691 \begin{inparaenum}
692 \item All these items...
693 \item ...appear in one line
694 \item This is enabled by the paralist package.
695 \end{inparaenum}
```

### L. Other Features

The words “workflow” and “dwarflake” can be copied from the PDF and pasted to a text file.

Corresponding  $\LaTeX$  code of  
paper-conference-minted.tex

```
701 The words \enquote{workflow} and \enquote{dwarflake} can be
↪ copied from the PDF and pasted to a text file.
```

The symbol for powerset is now correct:  $\wp$  and not a Weierstrass p ( $\wp$ ).

$\wp(1, 2, 3)$

Corresponding  $\LaTeX$  code of  
paper-conference-minted.tex

```
705 The symbol for powerset is now correct:  $\wp$  and not a
↪ Weierstrass p ( $\wp$ ).
706
707  $\wp(\{1, 2, 3\})$ 
```

Brackets work as designed:  $\langle \text{test} \rangle$  One can also input backquotes in verbatim text: ``test``.

Corresponding  $\LaTeX$  code of  
paper-conference-minted.tex

```
711 Brackets work as designed:
712  $\langle \text{test} \rangle$ 
713 One can also input backquotes in verbatim text: \verb|`test`|.
```

## IV. CONCLUSION AND OUTLOOK

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et

netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

#### ACKNOWLEDGMENT

Identification of funding sources and other support, and thanks to individuals and groups that assisted in the research and the preparation of the work should be included in an acknowledgment section, which is placed just before the reference section in your document [4].

In the bibliography, use `\textsuperscript` for “st”, “nd”, ...: E.g., “The 2<sup>nd</sup> conference on examples”. When you use JabRef, you can use the clean up command to achieve that. See <https://help.jabref.org/en/CleanupEntries> for an overview of the cleanup functionality.

#### REFERENCES

- [1] O. Kopp *et al.*, “Winery – A Modeling Tool for TOSCA-based Cloud Applications,” in *Proceedings of 11<sup>th</sup> International Conference on Service-Oriented Computing (ICSOC’13)*, ser. LNCS, vol. 8274. Springer Berlin Heidelberg, 2013, pp. 700–704.
- [2] T. Binz, G. Breiter, F. Leymann, and T. Spatzier, “Portable Cloud Services Using TOSCA,” *IEEE Internet Computing*, vol. 16, no. 03, pp. 80–85, May 2012.
- [3] M. Scharrer, *The mwe Package*, 2017. [Online]. Available: <http://texdoc.net/mwe>
- [4] B. Veytsman, “Latex class for the association for computing machinery – acknowledgement information,” Aug. 2021. [Online]. Available: <https://github.com/borisveytsman/acmart/blob/1704c8bf7ee92a1515ff755f5118b6a22bb1f8e/samples/samples.dtx#L709>

All links were last followed on October 5, 2020.