LaTeX 2ε Problems for CSW

Jeremy Jacob

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1. Problems

These exercises are designed to be run using the TeXlive distribution. It is best to use pdflatex (rather than latex), and view the output using a PDF viewer. When completing these exercises you may wish to have by you a LaTeX book, or other guide (see the reference manual for UoYCSproject).

1.1. Very basic usage of LaTeX 2ε

Jim Hefferon's exercises at http://tug.ctan.org/tex-archive/info/first-latex-doc/first-latex-doc.pdf take you through the construction of a very simple LaTeX 2ε document.
    Notes:

- If you do these exercises on the Department's system you can skip the 'Get the software' section!

- A similar 'boilerplate' —but without the ams* packages— to Hefferon's is provided for you by UoYCSproject.cls, so you do not need to use it for documents of that class.

- I recommend that in your project report you use BibTeX, and do *not* build a bibliography by hand.

1.2. Simple macro programming

These exercises introduce you to programming using TeX macros through the LaTeX 2ε interface. Suggested solutions can be found in Appendix A.

1. Create an A4 document of the class article whose title is 'Greetings', that has you as the author and today's date. The body should have two sections, titled 'Welcome' and 'Farewell', in that order. Each section should have two sentences. The first should be one of 'Hello world' or 'Goodbye world' as appropriate. The

second should be a sentence of the shape 'See also Section n', where 'n' is the number of the other section. The numbers should not appear in your source [hint: use symbolic labels and references].

2. Create an identical document, but make it of class scrartcl. Do you notice a difference in the output? Which do you prefer?

3. In the document you have created so far, you should have typed 'See also' twice. Introduce a macro, \sa, to typeset 'See also', and use it in both places (do not forget to protect the following space).

4. In the document you have created so far, you should have typed the structure '<salute> world.' twice, once for salutation 'Hello' and once for salutation 'Goodbye'. Introduce a macro, \sw, with one parameter that is the salutation, and use it in both places.

5. If the package hyperref is loaded[1] then, as well as automatically generating bookmarks and internal links, the macro \autoref{label} is available. This macro knows the kind of reference that a label refers to, so you do not have to type 'Section~', and so on. Make your document load the package, and modify your document to use \autoref rather than **ref**.

6. Your document consists of one structure repeated twice. The structure has three variables. In the first instance it is instantiated with Welcome, Hello and Farewell; in the second it is instantiated with Farewell, Goodbye and Welcome. Create a 3-parameter macro, \st, that captures this structure and use it. The body of your document should be \maketitle followed by two calls to your new macro, and nothing else.[2]

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[1] As UoYCSproject does.

[2] If you wish you can add a package to change fonts from the default set; to create a good PDF document this should always be done. Suitable packages are mathpazo (Palatino) and mathptmx (Times Roman), both combined with helvet,courier. The package microtype is also recommended. The package hyperref automatically turns references into hyperlinks; it must usually be the last loaded package.

A. Possible solutions for subsection 1.2

1. Your answer should have a different author, of course! It may also have different labels. It should have more white space, but I have compressed things here, to save paper.

   ```
   \documentclass[a4paper]{article}
   \title{Greetings}
   \author{Jeremy Jacob}
   \begin{document}
   \maketitle
   \section{Welcome}\label{sec:Welcome}
   Hello world. See also Section~\ref{sec:Farewell}.
   \section{Farewell}\label{sec:Farewell}
   Goodbye world. See also Section~\ref{sec:Welcome}.
   \end{document}
   ```

2. For completeness:

   ```
   \documentclass[a4paper]{scrartcl}
   \title{Greetings}
   \author{Jeremy Jacob}
   \begin{document}
   \maketitle
   \section{Welcome}\label{sec:Welcome}
   Hello world. See also Section~\ref{sec:Farewell}.
   \section{Farewell}\label{sec:Farewell}
   Goodbye world. See also Section~\ref{sec:Welcome}.
   \end{document}
   ```

3.

   ```
   \documentclass[a4paper]{article}
   \title{Greetings}
   \author{Jeremy Jacob}
   \newcommand*{\sa}{See also}
   \maketitle
   \begin{document}
   \section{Welcome}\label{sec:Welcome}
   Hello world. \sa\ Section~\ref{sec:Farewell}.
   \section{Farewell}\label{sec:Farewell}
   Goodbye world. \sa\ Section~\ref{sec:Welcome}.
   \end{document}
   ```

4.

```latex
\documentclass[a4paper]{article}
\title{Greetings}
\author{Jeremy Jacob}
\newcommand*{\sa}{See also}
\newcommand*{\sw}[1]{#1 world.}
\begin{document}
\maketitle
\section{Welcome}\label{sec:Welcome}
\sw{Hello} \sa\ Section~\ref{sec:Farewell}.
\section{Farewell}\label{sec:Farewell}
\sw{Goodbye} \sa\ Section~\ref{sec:Welcome}.
\end{document}
```

5.

```latex
\documentclass[a4paper]{article}
\usepackage{hyperref}
\title{Greetings}
\author{Jeremy Jacob}
\newcommand*{\sa}{See also}
\newcommand*{\sw}[1]{#1 world.}
\begin{document}
\maketitle
\section{Welcome}\label{sec:Welcome}
\sw{Hello} \sa\ \autoref{sec:Farewell}.
\section{Farewell}\label{sec:Farewell}
\sw{Goodbye} \sa\ \autoref{sec:Welcome}.
\end{document}
```

6.

```latex
\documentclass[a4paper]{article}
\usepackage{hyperref}
\title{Greetings}
\author{Jeremy Jacob}
\newcommand*{\sa}{See also}
\newcommand*{\sw}[1]{#1 world.}
\newcommand*{\st}[3]{%
  \section{#1}\label{sec:#1}\sw{#2} \sa\ \autoref{sec:#3}.%
}
\begin{document}
\maketitle
\st{Welcome}{Hello}{Farewell}
\st{Farewell}{Goodbye}{Welcome}
\end{document}
```