6.895 Theory of Parallel Systems	Lecture 0
How to Do Scribe Notes	
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Lecture Summary

1. *Using 6895.sty*
   In this section, we describe the basics of using the 6895.sty latex style file, focuing on how to setup your documents.

2. *Macros in 6895.sty*
   In this section, we describe how to use the various macros in 6895.sty to write good scribe notes.

3. *Quality scribe notes*
   We list the most common mistakes in scribe notes, and provide tips on how to avoid them.

1 Using 6895.sty

The **6895.sty** file contains a set of macros to help you typeset your problem sets and scribe notes. This file contains an example of how to use these macros to produce scribe notes. Use the following steps to set up your document:

1. Begin your document as you would any latex document:

   `\documentstyle{article}`

2. Use the 6895 package:

   `\usepackage{6895}`

3. Add any other preamble information.

4. Begin the lecture specify the lecture you are scribing:

   `\begin{lecture}{`*Lecture Number*`}{`*Lecture Name*`}{`*Scribe Name*`}`

   For example:

   `\begin{lecture}{5}{Writing Parallel Programs}{Joe Programmer}`

   If someone other than Charles Leiserson gave the lecture, use the following:

   `\begin{guestlecture}{5}{Writing Parallel Programs}{Joe Programmer}{Sam Professor}`

5. Create a summary of the lecture:

   `\begin{summary}`

   `\sumitem{Basic Terms}{We define some basic terms}`

   `\sumitem{Lemmas}{We state a few lemmas}`

   `\sumitem{Proofs}{We prove some lemmas}`

```
\end{summary}
```

6. Describe the lecture.

7. End the document:

```
\end{lecture}

\theend
```

Don't forget the last line!

2 Macros in 6895.sty

In this section we discuss some of the common macros available in 6895.sty. First, in Section 2.1, we discuss various theorem and proof environments. Then, in Section 2.2, we describe how to use the label and reference commands. Finally, in Section 2.3, we present a table of useful macros for common symbols. Please see the 6.895.sty file itself for a number of macros not included here. There are many useful macros that are no documented here, but will make writing good latex documents much easier.

2.1 Theorem/Proof Environments

The 6895.sty file defies many of the usual theorem environments: theorem, corollary, lemma, observation, proposition, definition, claim, fact, assumption. So, for example, one present a theorem as follows:

```
\begin{theorem}

    Statement of the theorem goes here.

\end{theorem}
```

Environments for proofs are similarly provided:

```
\begin{proof}

    This is why my theorem is true.

\end{proof}
```

Together, these two will lead to something that looks like:

Theorem 1 *Statement of the theorem goes here.*

Proof This is why my theorem is true. □

Similarly, environments for the following are provided: proof-sketch, proof-of-lemma, proof-idea, proof-attempt, proofof, remark.

2.2 Labels and References

In this section, we go over how to use various label and reference commands. We want to be produce a document containing all the scribe notes for the semester at the end of the term. To this end, we want all references to be relative (and not absolute), to be correct (and refer to a label of the correct type), and to be unique (so as not to create difficulties in combining all the documents together.

To this end, the 6895.sty file contains a set of commands for labels and references. In order to label a section, using the following command:

```
\seclabel{mysection}
```

This produces a unique label that contains the lecture number, and also indicates that it is a label of a section. In order to reference this label, use the following command:

```
\secref{mysection}
```

This will produce the following text:

```
Section 2.2
```

(if *mysection* is actually that section). This is slightly different than the usual \label and \ref commands, but essentially the same. Label and reference commands exist for the following types:

Label Command	Reference Command	Example
\seclabel	\secref	Section 1
	\secreftwo	Sections 1 and 2
	\secrefthree	Sections 1, 2, and 3
	\secreffour	Sections 1, 2, 3, and 4
\applabel	\appref	Appendix 1
\figlabel	\figref	Figure 1
	\figreftwo	Figures 1 and 2
	\figrefthree	Figures 1, 2, and 3
\tablabel	\tabref	Table 1
\stlabel	\stref	Step 1
\thmlabel	\thmref	Theorem 1
\lemlabel	\lemref	Lemma 1
	\lemreftwo	Lemmas 1 and 2
	\lemfrefthree	Lemmas 1, 2, and 3
\corlabel	\corref	Corollary 1
\equlabel	\equref	Equation 1
	\equreftwo	Equations 1 and 2
\inequlabel	\inequref	Inequality 1
	\inequreftwo	Inequalities 1 and 2
\invlabel	\invref	Invariant 1
\deflabel	\defref	Definition 1
\proplabel	\propref	Proposition 1
\caselabel	\caseref	Case 1
	\casereftwo	Cases 1 and 2
\lilabel	\liref	Line 1

In special cases where no appropriate label and reference command exist, you can use:

```
\genlabel{mylabel}
\genref{mylabel}
```

to get a generic label and reference. Please avoid using these, however, when appropriate label and reference commands exist.

2.3 Math and Other Symbols

A number of useful commands are defined. See the following table:

Command	Result
\ihat	$\hat{\imath}$
\jhat	$\hat{\jmath}$
\OP	OP
\OPprime	OP'
\abs{var}	$\lvert var \rvert$
\bigO	O
\set{a,b,c}	$\{a, b, c\}$
\half	$\frac{1}{2}$
\Pr{x}	$\Pr[x]$
\Exp{x}	$\mathrm{Exp}[x]$
\implies	$\Rightarrow$
\sizeof{thing}	$\lvert thing \rvert$
\setof{stuff}	$\{stuff\}$
\reals	$\mathbb{R}$
\integers	$\mathbb{Z}$
\naturals	$\mathbb{N}$
\rationals	$\mathbb{Q}$
\complex	$\mathbb{C}$
\norm{x}	$\lVert x \rVert$
\card{x}	$\lvert x \rvert$
\floor{x}	$\lfloor x \rfloor$
\ceil{x}	$\lceil x \rceil$
\ang{x}	$\langle x \rangle$
\sbrace{x}	$[x]$
\cbrace{x}	$\{x\}$
\paren{x}	(x)
\Var	Var
\expect{x}	$\mathrm{E}[x]$
\expectsq{x}	$\mathrm{E}^2[x]$
\variance{x}	$\mathrm{Var}[x]$
\choose{x}{y}	$\binom{x}{y}$
\percent{95}	95%
\twodots	$..$
\transpose	$^{\mathsf{T}}$
\amortized{x}	$\widehat{x}$
\cases{one case}	$\begin{cases} onecase \end{cases}$
\cif{x}	if x
\cwhen{x}	when x
\cotherw	otherwise

3 Writing Guidelines for Scribe Notes and Other Technical Writing

3.1 Extra Writing Help

Writing Guides – Read the latex manual and *The Elements of Style* by Strunk and White. For more help with technical writing see "Writing Resources on the World Wide Web" at

`http://web.mit.edu/uaa/www/writing/links/`

3.2 Organization of Scribe Notes

Boldface for Organization
: Carefully choose the titles of sections, subsections, subsubsections, and paragraphs. The reader should learn all proof ideas and lecture topics from reading the boldface only and ignoring the main text.

Location of Topic Sentences
: In technical writing the topic sentence of each paragraph should be located at the beginning of the paragraph. For scribe notes there are no exceptions. Many writers want to put the topic sentence in the middle or the end of the paragraph, and the writing quality suffers.

Topic Paragraphs
: A numbered section (e.g., section, subsection) should begin with a topic paragraph, which explains the content of the section. A topic paragraph is not necessary in an unnumbered section.

Figures and Long Figure Captions
: Please use as many figures as you can. Do not be afraid to write long figure captions. The reader should understand much of the lecture just from viewing the figures and reading the captions. A figure caption begins with a sentence fragment followed by a period. Only full sentences follow.

Write Clear Latex
: Latex is source code and consequently should be clear and readable. Avoid personalized environments.

Text in Figure Captions Versus Body of Notes
: In the figure caption explain what the figure represents. In the body of this scribe notes say what the figure means. For example, in a lecture on task scheduling, we may have a figure showing a directed a cyclic graph. The figure caption reads as follows: "Example of a precedence graph. Circles represent tasks and edges represent dependencies."

3.3 Sentence Structure

Omission of Needless Words
: Write clearly with short sentences and simple constructions. If the word is not absolutely necessary, then remove it.

Use of Present Tense
: Simplify verb tenses and use the present tense as much as possible. Avoid future and conditional tenses and the subjunctive mood when possible. For example, do not write "we will show" when "we show" suffices; do not write "we can establish" when "we establish" suffices.

Active Verbs
: English is a language in which verbs contain most of the force of the sentence. Therefore use the active voice. Do not say: "It is established in this lecture..."; say: "This lecture establishes...."

Strong Subjects of Sentences

In English the subject also contains force. Therefore as above, avoid saying “It is....”

Precision

The words “this” and “that” need a noun after them. For example, do not say: “This is why we use... period” Say: “This impossibility result is why we use....”

3.4 Use of Mathematics

Punctuation in Centered Equations

Centered equations are grammatically part of the surrounding text. Consequently, they still need punctuation. A period or comma at the end of a centered equation is preceded by a small amount of space (‘ ’ in latex) before it.

Use of Eqnarray

Use eqnarray frequently. In centered equations you should never have more than one ‘$=$’ (or ‘$<$’ ‘$>$’) per line.

Spelling out Numbers

An English rule is that numbers less then or equal to twelve are spelled out, whereas larger numbers are written with Arabic numerals. This guideline is modified for technical writing: If you do arithmetic on a number, represent it with numerals. Otherwise follow the English rule.

Representation of Fractions

In running text you should generally use $1/2$ and avoid $\frac{1}{2}$ (and similarly for other fractions). In centered mathematics you should generally use $\frac{1}{2}$.

3.5 When to Ignore the Rules

Ignore the above rules until your ideas are written. Then as you edit your text, apply all rules. Do not try to write perfect text from the outset.