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1. Introduction

The DocumentClass alittlebear.cls aims to provide a simple and easy template for writing math notes on latex. The link to alittlebear.cls can be found at https://github.com/a-little-bear/Latex-Template.

Here is the template of a new tex file:

```
\verb|\documentclass[12pt]{alittle bear}|
\def\name{}
\def\course{}
\def\headername{}
\def\headernum{}
\begin{document}
\end{document}
```

2. Settings

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2.1. Document Preamble.

\documentclass[#pt]{alittlebear}

#: font size in $\{10, 11, 12\}$, in pt

 $\left(\frac{\pi}{name} \right)$

#: author name

\def\course{#}

#: course name

\def\headername{#}

#: header name

\def\headernum{#}

#: header number

2.2. Document Class.

\setlength\parindent{0pt}

Indentation, Default: 0pt

\def\maincolor{brown}

Main color, Default: brown

 $\ensuremath{\texttt{NequirePackage[margin}0.5in]geometry} =$

Margin, Default: 0.5in, may change to 1in

\theoremstyle{definition}

Theorem style from asmthm, Default: definition

3. Commands

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3.1. Formatting Commands.

```
\ind[1][5]{\hspace*{#1mm}}
        #1: indentation, Default: 5mm
              Example: \ind{
                  This is an indented paragraph
              }
              \\ind[10]{
                   This is an indented paragraph with 10mm indentation
\unind[1][5]{\hspace*{-#1mm}}
        #1: unindentation, Default: -5mm
\explain[2][20]{\\ind[#1]{#2}}
        #1: indentation, Default: 20mm, #2: explanation
```

```
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```

```
3.2. TColorBox Commands.
  \qbreak
          End the question and follow by the proof / solution
  \envbreak
          And a seperator line within an environment
  \tcbcnt
          Set the counter for tcolorbox theorem environment
  \retcbcnt
          Reset the counter for tcolorbox theorem environment
  \newn,\newm
          New notitle tcolorbox
                Example: \newn{
                     This is a new notitle "note" tcolorbox
                 \newm{
                     This is a new notitle "mathnote" tcolorbox
  \newh,\newr,\newp
          New asmthm theorem toolorbox environment with prefixes
                Example: \newh{
                     This is a new "hint" asmthm tcolorbox environment
                 \newr{
                     This is a new "remark" asmthm tcolorbox environment
                 \newp{
                     This is a new "proof" asmthm tcolorbox environment
  \newq,\newcl,\newd,\newco,\newt,\newl,\newe,\newu,\newch
          New TColorBox theorem environment with titles
                 Example: \newq[optional: #EnvName]{#label}{
                     This is a new "question" tcolorbox theorem environment
                 \newcl[optional: #EnvName]{#label}{
                     This is a new "claim" tcolorbox theorem environment
                 \newd[optional: #EnvName]{#label}{"definition"}
                 \newco[optional: #EnvName]{#label}{"corollary"}
```

 $\mathbf{1}$

Use ref to reference the environment, where #1:#label e.g. is "question:q1"

\newt[optional: #EnvName]{#label}{"theorem"} \newl[optional: #EnvName]{#label}{"lemma"} \newe[optional: #EnvName]{#label}{"exercise"} \newu[optional: #EnvName]{#label}{"unit"} \newch[optional: #EnvName]{#label}{"chapter"}

3.3. Math Commands.

\numberthis

Add the line number in unnumbered math environment

 $T[1]{\text{\#1}}$

Abbreviation of \text{}

\A1[3]{#1 &=#2 &\text{#3}&&\\}

(left) = (right) + (explanation)

\cd{\cdot}

Abbreviation of \cdot

\alt[1]{\intertext{#1}}

Insert line between align math equations, \\ included

\bb[1]{\mathbb{#1}}

\cal[1]{\mathcal{#1}}

 $\cline{1}{\text{textsc}\{\#1\}}$

More shortcuts for mathbb, mathcal, textsc

\D{\mathop{}\!\mathrm{d}}}

d symbol for differentiation, example: \D x

 $DD[2]{\frac{D \#1 }{D \#2}}$

Leibniz's notation of differentiation, example: $DD\{x\}\{y\}$

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3.4. Symbol Abbreviations.

```
\C \rightarrow \mathbb{C} = complex
R \rightarrow \mathbb{R} = \text{reals}
\Q \rightarrow \mathbb{Q} = \text{rationals}
\Z \rightarrow \mathbb{Z} = integers
\N \rightarrow \mathbb{N} == naturals
F \rightarrow \mathbb{F} = field
\al -> \alpha
\ep -> \varepsilon
\p -> \partial
? \rightarrow \text{stackrel}? == question mark on equal sign
\ra -> \rightarrow == rightarrow (single line)
\Ra -> \Rightarrow == Rightarrow (double lines)
\is -> \equiv == equivalent (triple lines)
\injective \surjective \bijective
\arr = angle brackets
\bra = parenthesis ()
\sqrbra = square brackets []
\curbra = curly brackets {}
\abs = absolute value | |
\ceil = ceiling + () + ceiling
\floor = floor + () + floor
\near = floor + () + ceiling
\func[3]{#1: #2 \rightarrow #3} == function (name, domain, codomain)
\Pset{#} -> \mathcal{P}(#) == power set
\Relate{\#}{\#\#} \rightarrow \#\mathbb{R}{\#} == relation
GF[1][2]{\bb{F}_{#1}} == Galois field, default #1 = 2
\mbox{modulo}[1][n]{\Z/#1\Z} == modulo, default #1 = n
\P -> \mathbb{P} == primes
\nil -> \varnothing == empty set
0 \rightarrow \mathcal{0} = 0
\relate -> \mathcal{R} == relate (relation)
```

```
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```

4. Other Notable Commands

```
\renewcommand{\qedsymbol}
{\c \scriptstyle \substack{\sc{quod}}\\c \erat}\\c \dem}
\scalebox{0.53}{$\blacksquare$}}}$}
       Modified QED symbol
\lstnewenvironment{CPP}{\lstset{language=C++}}{}
       New environment for C++ et al code listing
              Example (CPP = C++, Cl = C):
                  \begin{CPP}
                      hi
                  \end{CPP}
```