How to use Latex?

Part Ⅰ Basic structurs for thesis

Two folders,one for order images use(images),another for the main body(chapers)
The (.tex)file is used for drawing all the documents together(main.tex)

Choose document class

```
\documentclass{article}(for short article)
\documentclass{report}(for long document like thesis)
\usepackage[utf8]{inputenc}
```

Change the fontsize

```
\documentclass[12pt]{report}(set the fontsize as 12 points)
```

Prepare the images(loading the graphicx package and tell latex where to look for the images)

```
\usepackage{graphicx}
\graphicspath{{images/}}      (I have named a folder as “images“ before)
```

Fill in the title,author and date information

```
\title{
    {Thesis Title}\\
    {\large Insititution Name}\\
    {\includegraphics{university.jpg}}\\       (set the insititution logo)
}
\author{}
\date{}
```

Begin the document

```
\begin{document}
\maketitle (set the title and so on on the first page)
```

Add the abstract,dedication(to XXX),declaration (to declare Honesty) and acknowlegement (thanks someone)section
Add these on seprate pages

```
\chapter*{Abstract}
(fill here with your text)
\chapter*{Dedication}
(fill here with your text,like “To mom and dad”)
\chapter*{Declaration}
```

(fill here with your text,like”I declare·····”)
\chapter*{Acknowledgements}
(fill here with your text,like”I want to thank·····”)
\tableofcontents (add these to the tableofcontents)

Set chapers tex in the “chapers”folder,and you can set the first chapter and the last one as “Introduction”and “Conclution”,so that it’s more concise.And fill these texs up with texts.And you can set sections and subsections using this command before a section.

\section{the section’s title}

Use input command to put these chapers in the main.tex.

\chapter{Introduction} (the chapter’s title)
\input{chapters/Introduction} (“chapers”+”/”+he file’s name in the” chapters” folder)
\chapter{Chapter One Title} (“Chapter”+ number + the chapter’s title)
\input{chapters/chapter one}
\chapter{Conclusion}
\input{chapters/Conclusion}

Add in an appendix

\appendix
\chapter{Appendix Title }

Set Appendix in a seperate file as the other chapters and then input it

\input{chapters/appendix}

Part Ⅱ Customize the page layout

Make the document two siders and so that you can print on both sides of the paper

\documentclass[12pt,twoside]{report}

Configure the page layout(put this command before the \title{} part)

Load up the geometry package

\usepackage[]{geometry}

Change the paper size

\usepackage[a4paper]{geometry}

Change the width of the text

\usepackage[a4paper,width=150mm]{geometry}

Change the margin sizes(top and bottom)

\usepackage[a4paper,width=150mm,top=25mm,bottom=25mm]{geometry}

And if you want to set the left,right margin ,use “left=””right=”,use “vmargin=”when you want

the top and bottom margin to be the same,and use the “hmargin=”when you want the right and left margin to be the same,if you want to let the four margins the same ,use”margin=”

In the two side option the inner margin will be smaller than the outer
So you can set the binding space

\usepackage[a4paper,width=150mm,top=25mm,bottom=25mm,bindingoffset=6mm]{geometry}

Add headers and footers

\usepackage{fancyhdr}
\pagestyle{fancy}

You can set the page number’s form

\pagenumbering{arabic(roman,Roman,alpha,Alpha)}

And you can leave it ,or customize the sytle

\usepackage{fancyhdr}
\pagestyle{fancy}
\fancyhead{} (this is for declaring all the head fields)
\fancyhead[RO,LE]{Thesis title} (in the curly brackets we enter the text we want and in the square brackets we enter which part of the header we want the text to be printed in) (RO,LE means the text will be showed on the right side of the odd pages and the left sides of the even pages)
\fancyfoot{} (
\fancyfoot[RO,LE]{\thepage} (set the page number)(O,the odd page;E, the even page;L,the left side; R the right side;C, the center)
\fancyfoot[CO,CE]{Chapter \thechapter}
\fancyfoot[LO,RE]{Author name}
\fancyfoot[LO,RE]{\rightmark} (you can use this to set the section’s name)
\fancyfoot[LO,RE]{\leftmark}(you can use this to set the chapter’s name)

Set a rule line of the head and food

\renewcommand{\headrulewidth}{0.4pt}
\renewcommand{\footrulewidth}{0.4pt}

If you want to clear the footer and header of one single section,find the section part and set a style command

\section{the section’s title}
\pagestyle{empty}
If you want to only set a page number of this section ,you can use
\pagestyle{plain}
And if you want the style back in next section use that command again
\pagestyle{fancy}

Part Ⅲ Figures,subfigures and tables

Add the figure(put these code in the specific chapter tex)

```
\begin{figure}[h]
\centering    (put it in the middle part of the page)
\includegraphics[scale=0.5]{graph_a}    (scale will set the picture smaller or bigger than it is now )
\caption{An example graph}    (the graph's name)
\end{figure}
```

You can also show your picture's code in the text

```
\begin{figure}[h]    (h:input it here , t:input it above, b:input it below)
\centering
\includegraphics[scale=0.5]{graph_a}
\caption{An example graph}
\lable{fig:XXX}
\end{figure}
```

And then add "see \ref{fig:XXX}"in the text where you want it to be shown.

Input multiple images(use three as an example)

Load packages in the main.tex

```
\usepackage{caption}
\usepackage{subcaption}
```

And place a figure in the specific chapter tex

```
\begin{figure}

\end{figure}
```

And then centering it,place a subfigure inside

```
\begin{figure}
    \centering
    \begin{subfigure}[b]{0.3\textwidth} (set the position and the width of the first picture one third of the textwidth)
        \centering
        \includegraphics[width=\textwidth]{graph_1}  (the textwidth here have already change to 0.3*the normal textwidth)
        \caption{An example graph}    (if you want to put a calculate mode here ,use form like "$"+calculate mode+"$",such as "$y=x$"
        \lable{fig:XXX}
    \end{subfigure}
    \hfill    (add some spaces between the subfigures)
```

```
    \begin{subfigure}[b]{0.3\textwidth}
        \centering
        \includegraphics[width=\textwidth]{graph_2}
        \caption{An example graph}
        \lable{fig:XXX}
    \end{subfigure}
    \hfill
    \begin{subfigure}[b]{0.3\textwidth}
        \centering
        \includegraphics[width=\textwidth]{graph_3}
        \caption{An example graph}
        \lable{fig:XXX}
    \end{subfigure}
    \caption{three example graph}    (add lable for all these three into a whole)
    \lable{fig:XXX}
\end{figure}
```

And you can set a list of figures(in the main.tex)

```
\tablecontents
\listoffigures
```

Add tables

```
begin{table}[b]
\centering
begin{tabular}{|l|l|l}
A&B&C\\
\hline
1&2&3\\
4&5&6
end{tabular}
\caption{An example graph}
\lable{tab:abc}
\end{table}
```

A	B	C
1	2	3
4	5	6

Table 4.1: very basic table

Input multiple tables(use two as an example)

```
\begin{table}[h]
    \centering
        \begin{subtable}[h]{0.45\textwidth}
        \centering
        \begin{tabular}{|l|l|l}
        Day &Max Temp&Min Temp\\
        \hline \hline
```

```
        Mon&2&3\\
        Tue&5&6\\
        Wed&17&18\\
        Thu&18&19\\
        Fri&20&21\\
        Sat&13&12\\
        Sun&23&21\\
        \end{tabular}
        \caption{First week}
        \lable{tab:week}
    \end{subtable}
    \hfill
        \begin{subtable}[h]{0.45\textwidth}
        \centering
        \begin{tabular}{l|l|l}
        Day &Max Temp&Min Temp\\
        \hline \hline
        Mon&17&20\\
        Tue&21&20\\
        Wed&22&20\\
        Thu&23&20\\
        Fri&20&21\\
        Sat&13&12\\
        Sun&23&21\\
        \end{tabular}
        \caption{Second week}
        \lable{tab:week2}
    \end{subtable}
\caption{An example table}
\lable{tab:weekly}
\end{table}
```

Day	Max Temp	Min Temp
Mon	20	13
Tue	22	14
Wed	23	12
Thurs	25	13
Fri	18	7
Sat	15	13
Sun	20	13

(a) First Week

Day	Max Temp	Min Temp
Mon	17	11
Tue	16	10
Wed	14	8
Thurs	12	5
Fri	15	7
Sat	16	12
Sun	15	9

(b) Second Week

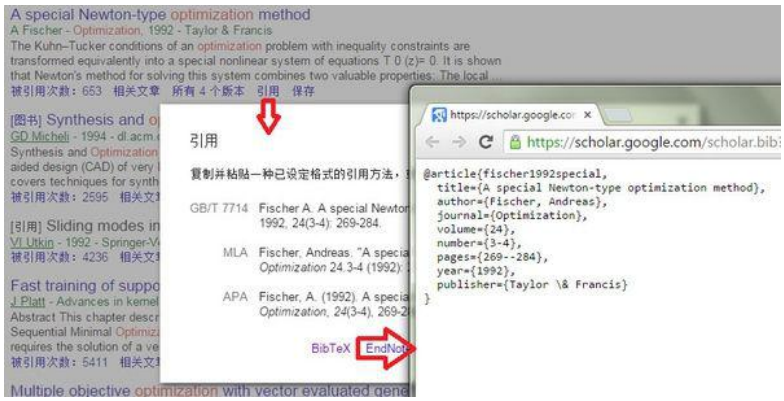
Table 4.2: Max and min temps recorded in the first two weeks of July

And you can set a list of tables(in the main.tex)

```
\tablecontents
\listoftables
```

Part Ⅳ Bibliography with biblatex

Build a file next to the main.tex named “reference.bib”
In the reference.bib,input your recource in a specific form
It is called the BibTex form,you can find it in google



And it looks like this

```
@article{einstein,
    author        = {Albert Einstein},
    title         = {Zur Elektrodynamik bewegter K{\"o}rper.
(German) [On the electrodynamics of moving bodies]},
    journaltitle  = {Annalen der Physik},
    year          = {1905},
    volume        = {322},
    number        = {10},
    pages         = {891-921},
    doi           = {http://dx.doi.org/10.1002/andp.19053221004}
}

@online{knuthwebsite,
    author        = {Donald Knuth},
    title         = {Knuth: Computers and Typesetting},
    year          = {1984},
    url           = {http://www-cs-faculty.stanford.edu/~uno/abcde
.html}
}

@book{latexcompanion,
    author        = {Michel Goossens and Frank Mittelbach and
Alexander Samarin},
    title         = {The \LaTeX\ Companion},
    year          = {1993},
    publisher     = {Addison-Wesley},
    location      = {Reading, Massachusetts}
}
```

And set a reference code before the title code

\usepackage[style=alphabetic(or author year),sorting=ynt(or none){biblatex} (you can choose your style and way to sort these souces)

\addbibresource{reference.bib}

And you can also use \bibliographystyle{plain} to choose your style (choose your style:plain,unsrt,alpha,abbrv,ieeetr,acm,siam,apalike)

And after those chapters,input these in the main.tex

\printbibiliography

Set the citations(cite the source in the text)

Put these in where you want to cite the source

\parencite[see(or e.g.)][p10 (or page 10)]{the title of your citation}

Or
\cite{the title of your citation}

Part Ⅴ Customizing your title page and abstract

You can make a special title page and abstract page

In part one ,we use these:

```
\title{
    {Thesis Title}\\
    {\large Insititution Name}\\
    {\includegraphics{university.jpg}}\\      (set the insititution logo)
}
\author{}
\date{}

\begin{document}
\maketitle (set the title and so on on the first page)

\chapter*{Abstract}
(fill here with your text)
```

Now we change it

First creat a file named”titlepage.tex” next to the main.tex
Input these

```
\begin{titlepage}
    \begin{center}      (centering)
    \vspace*{1cm}
    \Huge
    \textbf{Thesis title}     (overstriking)
    \vspace{0.5cm}
    \LARGE                    (the fontsieze)(tiny,script size,footnote size,small,normal size,large,Large,LARGE,huge,Huge)
    Thesis subtitle
    \vspace{1.5cm}
    \textbf{author name}

    \vfill     (settle it in an average level)
    A thesis presented for\\
    XXX
```

```
        \vspace{0.8cm}
        \includegraphics[width=0.4\textwidth]{graph_1} (input the logo)
        \Large
        Department name\\
        University    name\\
        Country\\
        Date

        \end{center}
    \end{titlepage}
```

And then change the main.tex

```
    \title{Thesis Title}
    \author{XXX}
    \date{XXX}

    \begin{document}
    \input{titlepage}

    \chapter*{Abstract}
    (fill here with your text)
```

Now it comes to abstract
First creat a file named”abstract.tex” next to the main.tex
Input these

```
    \thispagestyle{plain}
        \begin{center}
        \Large
        \textbf{Thesis title}      (overstriking)
        \vspace{0.4cm}
        \large
        Thesis subtitle
        \vspace{0.4cm}
        \textbf{author name}

        \vspace{0.9cm}
        \textbf{Abstract}

        \end{center}
```

Input the text part here

And change the main.tex

```
\title{Thesis Title}
\author{XXX}
\date{XXX}

\begin{document}
\input{titlepage}

\input{abstract}
```