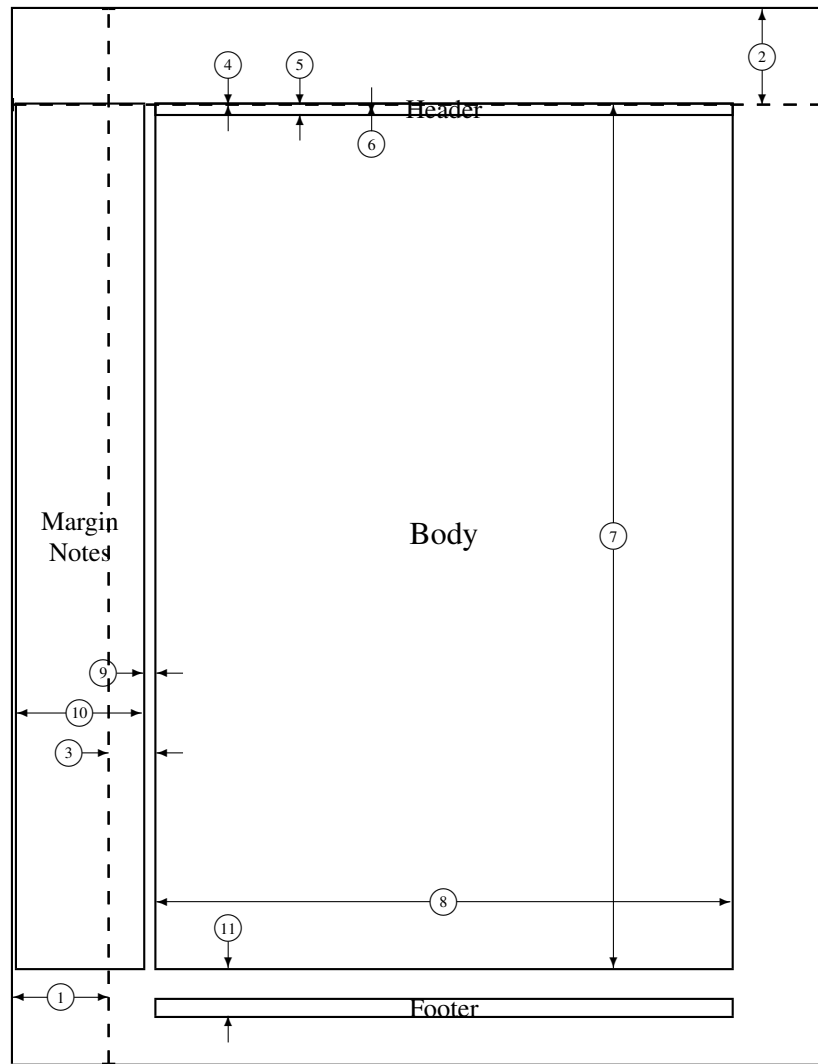


- |    |                                    |    |   |
|----|------------------------------------|----|---|
| 1  | one inch + <code>\hoffset</code>   | 2  | one inch + <code>\voffset</code>              |
| 3  | <code>\oddsidemargin = 36pt</code> | 4  | <code>\topmargin = 0pt</code>                 |
| 5  | <code>\headheight = 7pt</code>     | 6  | <code>\headsep = -7pt</code>                  |
| 7  | <code>\textheight = 650pt</code>   | 8  | <code>\textwidth = 433pt</code>               |
| 9  | <code>\marginparsep = 10pt</code>  | 10 | <code>\marginparwidth = 95pt</code>           |
| 11 | <code>\footskip = 36pt</code>      |    | <code>\marginparpush = 7pt</code> (not shown) |
|    | <code>\hoffset = 0pt</code>        |    | <code>\voffset = 0pt</code>                   |
|    | <code>\paperwidth = 614pt</code>   |    | <code>\paperheight = 794pt</code>             |



- |    |                        |    |                                  |
|----|------------------------|----|----------------------------------|
| 1  | one inch + \hoffset    | 2  | one inch + \voffset              |
| 3  | \evensidemargin = 36pt | 4  | \topmargin = 0pt                 |
| 5  | \headheight = 7pt      | 6  | \headsep = -7pt                  |
| 7  | \textheight = 650pt    | 8  | \textwidth = 433pt               |
| 9  | \marginparsep = 10pt   | 10 | \marginparwidth = 95pt           |
| 11 | \footskip = 36pt       |    | \marginparpush = 7pt (not shown) |
|    | \hoffset = 0pt         |    | \voffset = 0pt                   |
|    | \paperwidth = 614pt    |    | \paperheight = 794pt             |

**THESIS TITLE**

A thesis written at

**YOUR COMPANY HERE, LLC.**

and submitted to

**KETTERING UNIVERSITY**

in partial fulfillment  
of the requirements for the  
degree of

**BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING**

by

**JOE Q. STUDENT**

December 2013

---

Author

---

Employer Advisor - R. U. There

---

Faculty Advisor - Bob Loblaw

## **DISCLAIMER**

This thesis is submitted as partial and final fulfillment of the cooperative work experience requirements of Kettering University needed to obtain a Bachelor of Science in Mechanical Engineering Degree.

The conclusions and opinions expressed in this thesis are those of the writer and do not necessarily represent the position of Kettering University or Your Company Here, LLC., or any of its directors, officers, agents or employees with respect to the matters discussed.

## **PREFACE**

This thesis represents the capstone of my five years combined academic work at Kettering University and job experience at Your Company Here, LLC.. Academic experiences in Mechanical Engineering proved to be valuable assets while I developed this thesis and addressed the problem it concerns.

Although this thesis represents the compilation of my own efforts, I would like to acknowledge and extend my sincere gratitude to the following persons for their valuable time and assistance, without whom the completion of this thesis would not have been possible:

1. Boss Man 1 - I'm going to make this excessively long so that I can test what happens when the line wraps around to the next row. It should only sigle space, otherwise I have to fix that.
2. Boss Man 2
3. Mentor 1
4. Mentor 2

This is the dedication.

## **ACKNOWLEDGMENTS**

This is the acknowledgments.

## **PREFACE**

This is the preface.



## TABLE OF CONTENTS

	Page
DISCLAIMER . . . . .	2
PREFACE . . . . .	3
ACKNOWLEDGMENTS . . . . .	5
PREFACE . . . . .	6
TABLE OF CONTENTS . . . . .	7
LIST OF TABLES . . . . .	8
LIST OF FIGURES . . . . .	9
SYMBOLS . . . . .	10
ABBREVIATIONS . . . . .	11
NOMENCLATURE . . . . .	12
GLOSSARY . . . . .	13
ABSTRACT . . . . .	14
I. INTRODUCTION . . . . .	1
Problem Topic . . . . .	1
Background . . . . .	1
Criteria and Parameter Restrictions . . . . .	2
Subsection heading . . . . .	2
II. SUMMARY . . . . .	3
III. RECOMMENDATIONS . . . . .	4
I. DEMONSTRATE CITATIONS . . . . .	5
II. DEMONSTRATE FIGURES . . . . .	6
III. DEMONSTRATE MATHEMATICS . . . . .	10
IV. DEMONSTRATE MULTICOLS . . . . .	13
V. DEMONSTRATE TABLES . . . . .	15
VI. DEMONSTRATE TEXT . . . . .	21
LIST OF REFERENCES . . . . .	25

## LIST OF TABLES

Table	Page
V.1 American Presidents . . . . .	15
V.2 American Presidents with 2pt vertical space after heading . . . . .	15
V.3 American Presidents with horizontal and vertical lines . . . . .	15
V.4 C Bitwise Operators . . . . .	16
V.5 American Presidents using <code>\halign</code> . . . . .	16
V.6 State Abbreviations . . . . .	17
V.7 <code>sidewaystable \begin{tabular}...\end{tabular}</code> . . . . .	19
V.8 <code>sidewaystable \halign{...} table</code> . . . . .	20

## LIST OF FIGURES

Figure	Page
II.1 By default figures are not centered. This is a long caption to demonstrate that captions are single spaced. . . . .	6
II.2 Use \centering to center figures. . . . .	7
II.3 This is another figure. . . . .	8
II.4 This figure has two parts. . . . .	8
II.5 This figure has four parts. . . . .	9

## SYMBOLS

$m$  mass

$v$  velocity

## **ABBREVIATIONS**

abbr      abbreviation

bcf      billion cubic feet

BMOC    big man on campus

## NOMENCLATURE

Alanine    2-Aminopropanoic acid

Valine     2-Amino-3-methylbutanoic acid

## **GLOSSARY**

chick    female, usually young

dude    male, usually young

## **ABSTRACT**

Student, Joe Q. B.S.M.E., Purdue University, December 2013. Thesis Title. Major Professor: John Q. Professor, School of Mechanical Engineering.

This is the abstract.



## I. INTRODUCTION

Following a brief introductory paragraph, the introduction chapter requires six headings titled the following: Problem Topic, Background, Criteria and Parameter Restrictions, Methodology, Primary Purpose, and Overview. Each heading should be margin flush, bold and underlined (APA level 3 heading). A description of what is to be written under each heading is indicated below.

### **Problem Topic**

Under the heading, Problem Topic, bring into focus in a single clear statement, the exact problem addressed and the nature of the end result sought. The problem itself must not be stated in terms of a desirable goal or solution but rather as a current or potential negative situation, result, etc. that the employer would like to eliminate or avoid. If sub-problems are involved, they should be stated here.

### **Background**

Under the heading, Background, provide a helpful orientation regarding the problem addressed by the thesis. It may be necessary to clarify the situation in which the problem arose. The nature of the student's experience with that situation might also be appropriate information to include. Concerns expressed by managers, customers, or others may be relevant background. All the material presented should enable the reader to understand the exact nature of the problem and its importance especially to the employer organization. The background should not give elaborate overly-generalized, obvious, or nonessential information. Facts that should be reported in a later chapter should not be

included. If a history of the employer organization is relevant, it should be placed in an appendix.

### **Criteria and Parameter Restrictions**

Under the heading Criteria and Parameter Restrictions, identify the criteria and parameters imposed, if the thesis project concerns the creation of a design. (Sometimes parameters are also briefly identified earlier under the heading Problem Topic, as part of the problem or the problem situation.) If the thesis project does not concern the creation of a design, the heading may simply be Criteria or perhaps Standards. For all topics, criteria or standards should be identified as the basis for judging the data later presented in supporting (developing) chapters. The appropriateness of each criterion or standard must be briefly justified.

#### **Subsection heading**

This is a sentence. This is a sentence. This is a sentence. This is a sentence. This is a sentence.

#### **Subsubsection heading**

This is a sentence. This is a sentence. This is a sentence. This is a sentence. This is a sentence.

## **II. SUMMARY**

This is the summary chapter.

### **III. RECOMMENDATIONS**

Buy low. Sell high.

## APPENDICES

## I. DEMONSTRATE CITATIONS

I typed

For `\LaTeX` answers I refer to

```
% note to self: {\em \LaTeX: A Document Preparation System\}
```

```
\cite{Lamport:1994}
```

and then to

```
% note to self: {\em The \LaTeX\ Companion\}
```

```
\cite{Goossens:1994}
```

or

```
% note to self: {\em A Guide to LaTeX\} (1999)
```

```
\cite{Kopka:1999}.
```

```
% note to self: {\em A Guide to LaTeX\} (1999)
```

```
\cite{Kopka:1999}
```

is an updated edition of the 1995 edition

```
\cite{Kopka:1995}.
```

to get

For  $\text{\LaTeX}$  answers I refer to [1] and then to [2] or [3]. [3] is an updated edition of the 1995 edition [4].

## II. DEMONSTRATE FIGURES

The `h` specifier used in all the examples below tells  $\text{\LaTeX}$  to put the figure “here” instead of trying to find a good spot at the top or bottom of a page. Specifiers can be combined, for example, “`\begin{figure}[htbp!]`”.

The complete list of specifiers:

Specifier	Description
b	bottom of page
h	here on page
p	on separate page of figures
t	top of page
!	try hard to put figure as early as possible

Label “fi:not-centered” is “II.1”. Label “sf:four-parts-c” is “II.5(c)”.

This is the first paragraph. This is the first paragraph. This is the first paragraph.

This is the first paragraph. This is the first paragraph.

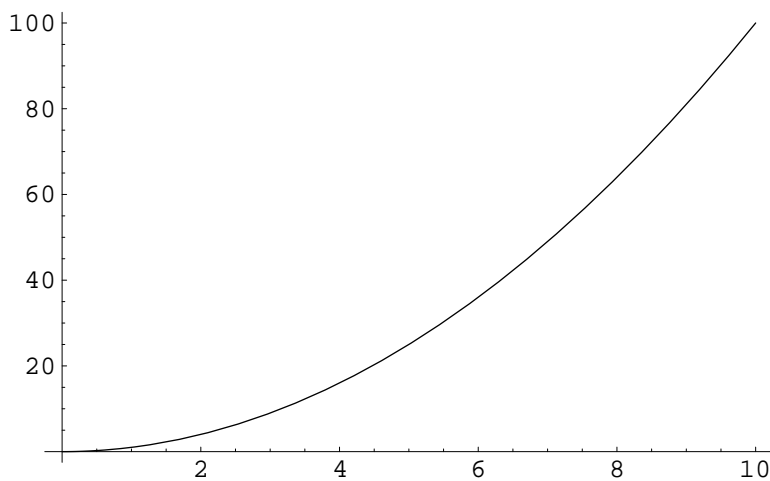


Figure II.1. By default figures are not centered. This is a long caption to demonstrate that captions are single spaced.

This is the second paragraph. This is the second paragraph. This is the second paragraph. This is the second paragraph. This is the second paragraph. This is the second paragraph.

paragraph. This is the second paragraph. This is the second paragraph. This is the second paragraph. This is the second paragraph.

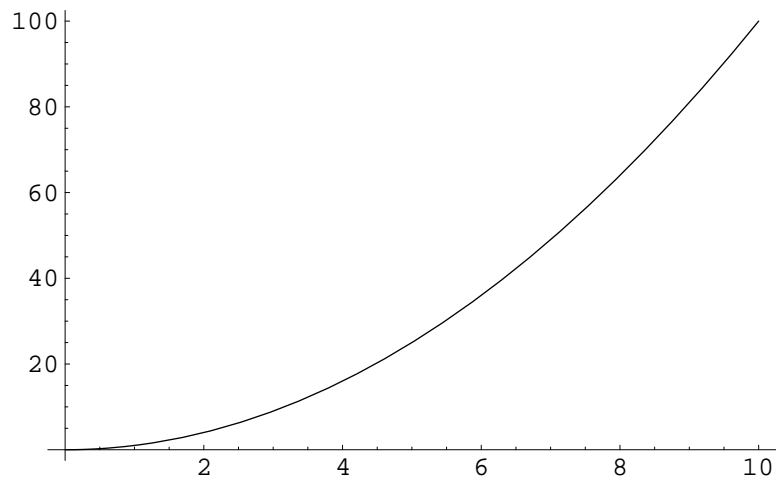


Figure II.2. Use `\centering` to center figures.

This is the third paragraph. This is the third paragraph. This is the third paragraph. This is the third paragraph. This is the third paragraph. This is the third paragraph. This is the third paragraph. This is the third paragraph. This is the third paragraph. This is the third paragraph. This is the third paragraph. This is the third paragraph.

This is the fourth paragraph. This is the fourth paragraph. This is the fourth paragraph. This is the fourth paragraph. This is the fourth paragraph. This is the fourth paragraph. This is the fourth paragraph. This is the fourth paragraph. This is the fourth paragraph. This is the fourth paragraph.

This is the fifth paragraph. This is the fifth paragraph. This is the fifth paragraph. This is the fifth paragraph. This is the fifth paragraph. This is the fifth paragraph. This is the fifth paragraph. This is the fifth paragraph.



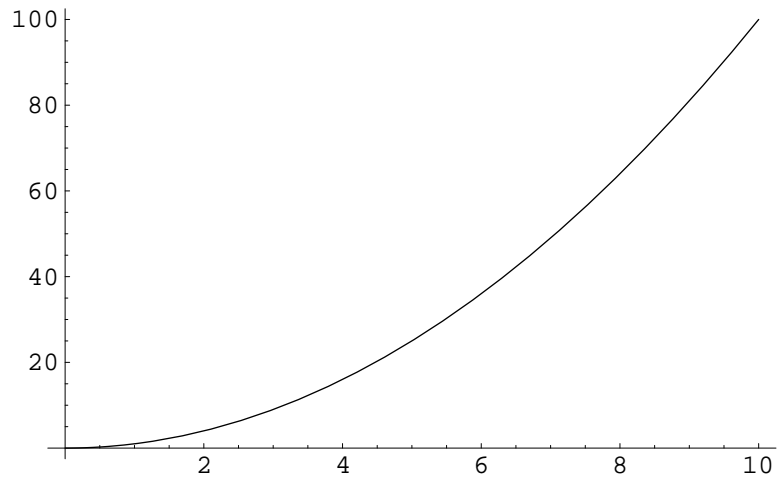
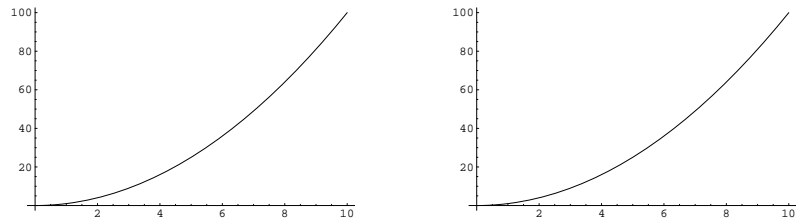


Figure II.3. This is another figure.



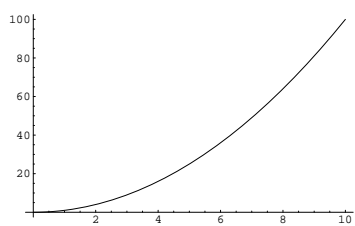
(a) First subcaption.

(b) Second subcaption.

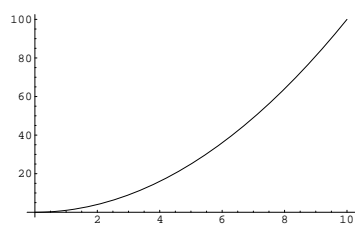
Figure II.4. This figure has two parts.

the fifth paragraph. This is the fifth paragraph. This is the fifth paragraph. This is the fifth paragraph.

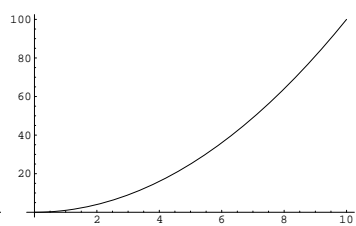
This is the sixth paragraph. This is the sixth paragraph. This is the sixth paragraph. This is the sixth paragraph. This is the sixth paragraph. This is the sixth paragraph. This is the sixth paragraph. This is the sixth paragraph. This is the sixth paragraph.



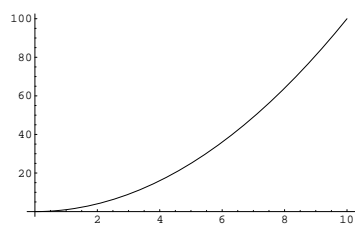
(a) First subcaption.



(b) Second subcaption.



(c) Third subcaption.



(d) Fourth subcaption.

Figure II.5. This figure has four parts.

### III. DEMONSTRATE MATHEMATICS

```
% From _More Math Into LaTeX_, 4th Edition, page 152:
%      TeX uses $$ to open and close a displayed math environment.
%      In LaTeX, this may occasionally cause problems.  Don't do it.
\[
    E = mc^2
\]
```

$$E = mc^2$$

---

```
\begin{equation}
    E = mc^2
\end{equation}
```

$$E = mc^2 \tag{III.1}$$

---

```
% Mydefs.tex defines \be to be \begin{equation} and
% \ee to be \end{equation}.
\be
    E = mc^2
\ee
```

$$E = mc^2 \tag{III.2}$$

---

```
\be
    x = -\frac{b}{2a} \pm \frac{\sqrt{b^2 - 4ac}}{2a}
\ee
```

$$x = -\frac{b}{2a} \pm \frac{\sqrt{b^2 - 4ac}}{2a} \tag{III.3}$$

---

```
% requires \usepackage{amsmath}; use align* for no equation number
\begin{align}
  a &= {}& b + c \\
  x &= {}& y + z
\end{align}
```

$$a = b + c \tag{III.4}$$

$$x = y + z \tag{III.5}$$

```
\[
  Z = \left(
    \begin{array}{cc}
      a & b \\
      c & d
    \end{array}
  \right)
\]
```

$$Z = \begin{pmatrix} a & b \\ c & d \end{pmatrix}$$

```
\begin{equation}
  \begin{split}
    a &= {}& b + c \\
    {} &+ d + e
  \end{split}
\end{equation}
```

$$a = b + c + d + e \tag{III.6}$$

\be  
 $(\cos x)^2 + (\sin x)^2 = 1$   
 \ee

$$(\cos x)^2 + (\sin x)^2 = 1 \tag{III.7}$$

---

If  $X = \cos x$  and  $Y = \sin x$  then  $X^2 + Y^2 = 1$ .

If  $X = \cos x$  and  $Y = \sin x$  then  $X^2 + Y^2 = 1$ .

---



columns. This is five columns. This is five columns.	This is five columns. This is five columns. This is five	columns. This is five columns. This is five columns.	This is five columns. This is five columns.	This is five columns.
--	--	--	--	--------------------------

## V. DEMONSTRATE TABLES

Here is a really simple table.

Table V.1. American Presidents

<b>Number</b>	<b>Name</b>
1	George Washington
2	John Adams
3	Thomas Jefferson

There are 72.27 points per inch. I like to put 2 points of vertical space between the heading (Number Name) and the first line (1 George Washington) of the table.

Table V.2. American Presidents with 2pt vertical space after heading

<b>Number</b>	<b>Name</b>
1	George Washington
2	John Adams
3	Thomas Jefferson

L<sup>A</sup>T<sub>E</sub>X can print horizontal and vertical rules in tables. I don't like the way this looks.

Table V.3. American Presidents with horizontal and vertical lines

<b>#</b>	<b>Name</b>
1	George Washington
2	John Adams
3	Thomas Jefferson



Here is a more complicated table.

Table V.4. C Bitwise Operators

<b>A</b>	<b>B</b>	<b>A B</b>	<b>A&amp;B</b>
0	0	0	0
0	1	1	0
1	0	1	0
1	1	1	1

You can use Plain T<sub>E</sub>X's `\halign` command to make tables also. If you can't do a complicated table using L<sup>A</sup>T<sub>E</sub>X commands you may want to try using Plain T<sub>E</sub>X commands. L<sup>A</sup>T<sub>E</sub>X's table making commands use Plain T<sub>E</sub>X commands.

Table V.5. American Presidents using `\halign`

<b>Number</b>	<b>Name</b>
1	George Washington
2	John Adams
3	Thomas Jefferson

The next page shows how to do a table that is too long to fit on one page.

Table V.6. : State Abbreviations

State	Abbreviation
Alabama	AL
Alaska	AK
Arizona	AZ
Arkansas	AR
California	CA
Colorado	CO
Connecticut	CT
Delaware	DE
Florida	FL
Georgia	GA
Hawaii	HI
Idaho	ID
Illinois	IL
Indiana	IN
Iowa	IA
Kansas	KS
Kentucky	KY
Louisiana	LA
Maine	ME
Maryland	MD
Massachusetts	MA
Michigan	MI
Minnesota	MN
Mississippi	MS
Missouri	MO
Montana	MT
Nebraska	NE
Nevada	NV
New Hampshire	NH
New Jersey	NJ
New Mexico	NM
New York	NY
North Carolina	NC
North Dakota	ND
Ohio	OH
Oklahoma	OK
Oregon	OR
Pennsylvania	PA
Rhode Island	RI
South Carolina	SC
South Dakota	SD

*continued on next page*

Table V.6. : *continued*

State	Abbreviation
Tennessee	TN
Texas	TX
Utah	UT
Vermont	VT
Virginia	VA
Washington	WA
West Virginia	WV
Wisconsin	WI
Wyoming	WY

Table V.7. `sidewaystable \begin{tabular}...\end{tabular}`

<b>Number</b>	<b>Name</b>
1	George Washington
2	John Adams
3	Thomas Jefferson

Table V.8. `sidewaystable \halign{...} table`

Number	Name
1	George Washington
2	John Adams
3	Thomas Jefferson

## VI. DEMONSTRATE TEXT

This is a sentence.  
This is a sentence.  
This is a sentence.  
This is a sentence.  
This is a sentence.

This is a sentence.  
This is a sentence.  
This is a sentence.  
This is a sentence.  
This is a sentence.

This is a sentence. This is a sentence. This is a sentence. This is a sentence. This is a sentence.

This is a sentence. This is a sentence. This is a sentence. This is a sentence. This is a sentence.

---

From \verb+[http://www.biblegateway.com/passage/?book\\_id=1&chapter=1&version=50+](http://www.biblegateway.com/passage/?book_id=1&chapter=1&version=50+):

\begin{quote}

1 In the beginning God created the heavens and the earth.  
2 The earth was without form,  
and void;  
and darkness was on the face of the deep.  
And the Spirit of God was hovering over the face of the waters.

3 Then God said, ‘Let there be light’;  
and there was light.  
4 And God saw the light,  
that it was good;  
and God divided the light from the darkness.

5 God called the light Day,  
and the darkness He called Night.  
So the evening and the morning were the first day.

\end{quote}

From [http://www.biblegateway.com/passage/?book\\_id=1&chapter=1&version=50](http://www.biblegateway.com/passage/?book_id=1&chapter=1&version=50):

1 In the beginning God created the heavens and the earth. 2 The earth was without form, and void; and darkness was on the face of the deep. And the Spirit of God was hovering over the face of the waters.

3 Then God said, “Let there be light”; and there was light. 4 And God saw the light, that it was good; and God divided the light from the darkness. 5 God called the light Day, and the darkness He called Night. So the evening and the morning were the first day.

---

```

\begin{description}
  \item[apple]
    A red fruit.
  \item[banana]
    A yellow fruit.
    This sentence is to make the entry longer so you can see what happens.
    This sentence is to make the entry longer so you can see what happens.
  \item[cherry]
    A red fruit.
\end{description}

```

**apple** A red fruit.

**banana** A yellow fruit. This sentence is to make the entry longer so you can see what happens. This sentence is to make the entry longer so you can see what happens.

**cherry** A red fruit.

---

```

\begin{enumerate}
  \item apple
  \item banana
    This sentence is to make the entry longer so you can see what happens.
    This sentence is to make the entry longer so you can see what happens.
  \item cherry
\end{enumerate}

```

1. apple
  2. banana This sentence is to make the entry longer so you can see what happens. This sentence is to make the entry longer so you can see what happens.
  3. cherry
-



```

\begin{itemize}
  \item apple
  \item banana
    This sentence is to make the entry longer so you can see what happens.
    This sentence is to make the entry longer so you can see what happens.
  \item cherry
\end{itemize}

```

- apple
  - banana This sentence is to make the entry longer so you can see what happens. This sentence is to make the entry longer so you can see what happens.
  - cherry
-

## LIST OF REFERENCES

## LIST OF REFERENCES

- [1] Leslie Lamport. *TeX: A Document Preparation System*. Addison-Wesley, Reading Massachusetts, 1994.
- [2] Michel Goossens, Frank Mittelbach, and Alexander Samarin. *The TeX Companion*. Addison-Wesley, Reading Massachusetts, 1994.
- [3] Helmut Kopka and Patrick W. Daly. *A Guide to TeX, : Document Preparation for Beginners and Advanced Users*. Addison-Wesley, Reading Massachusetts, third edition, 1999.
- [4] Helmut Kopka and Patrick W. Daly. *A Guide to TeX : Document Preparation for Beginners and Advanced Users*. Addison-Wesley, Reading Massachusetts, second edition, 1995.