

# CODEXIS

## TEST BOOK





# Test Book



# Test Book

Buckminster Fuller's Vision in the Digital Age

Test Author

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by Test Author

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*A comprehensive exploration of R. Buckminster Fuller's design science principles and their profound relevance to contemporary challenges in sustainability, technology, and global resource management.*

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# Acknowledgements

I would like to express my sincere gratitude to several individuals who have been instrumental in bringing this project to fruition.

First and foremost, I thank the open-source community whose tools and libraries made this conversion project possible. The dedication of developers who maintain tools like  $\text{\LaTeX}$ , Pandoc, and various ebook conversion utilities has been invaluable.

Special thanks go to the technical reviewers who provided detailed feedback on the conversion process and helped identify formatting issues across different platforms. Your attention to detail has significantly improved the quality of the output.

I am particularly grateful to the librarians and archivists who have helped locate and preserve original editions, ensuring we have accurate source material to work from. Your expertise in handling and digitizing delicate texts has been crucial to this project.

The testing team deserves recognition for their thorough validation of the conversion pipeline across multiple formats and devices. Your patience in checking each iteration has helped create a robust system.

Finally, I would like to acknowledge the support of my colleagues who shared their expertise in typography, layout design, and digital publishing. Your insights have helped bridge the gap between traditional printing and modern digital formats.

*Test Author*

*2026-02-02*



# Dedication

*To all the dedicated developers and librarians who work tirelessly to preserve and share knowledge across generations and formats. Your efforts keep literature alive.*



# Epigraph

*“Books are a uniquely portable magic.”*

—Stephen King

*“The preservation of knowledge is one  
of our sacred duties to future generations.”*

—A.D. Melillo

*“What is the use of a book,” thought Alice,  
“without pictures or conversations?”*

—Lewis Carroll



# Prelude

## *On the Nature of Digital Transformation*

In the ever-evolving landscape of publishing, we stand at a unique intersection between preservation and innovation. The journey from printed page to digital format is not merely a technical conversion but a transformation that bridges centuries of publishing tradition with modern accessibility needs.

This test book represents more than just a collection of technical examples—it embodies our commitment to maintaining the fidelity of knowledge across different mediums. Each page, each formula, and each figure serves a dual purpose: to test our conversion systems and to demonstrate the possibilities that lie within digital publishing.

As you navigate through these pages, you'll encounter carefully crafted examples that challenge common conversion scenarios:

*From the simplest paragraph to the most complex equation,  
From basic tables to intricate figures,  
From cross-references to bibliographic citations,  
Each element tells part of our story.*

We approach this work with three fundamental principles:

Precision → Every detail matters  
Preservation → Nothing should be lost  
Accessibility → Knowledge must flow freely

The chapters that follow will systematically explore the capabilities and limitations of our conversion pipeline. They will demonstrate not just what is possible, but what is necessary to ensure that knowledge remains accessible across generations and platforms.

Consider this book a living laboratory—each successful conversion validates our methods, while each challenge encountered helps us refine our approach. Through this process, we aim to establish not just a technical framework, but a philosophical one as well, addressing the fundamental question: How do we best preserve and present knowledge in an increasingly digital world?

*“In every end, there is also a beginning.”*

—The Digital Archivists

\* \* \*

*Note: This prelude serves as both an introduction to our test book and as a test of various typographical elements, including centered text, quotes, tables, and decorative elements.*

# Preface

The digitization of books represents both an opportunity and a challenge. While digital formats offer unprecedented accessibility and preservation capabilities, they also demand meticulous attention to detail in the conversion process. This test book was conceived as a practical tool to validate and refine our conversion pipeline, ensuring that complex documents can be accurately transformed across multiple formats while preserving their integrity and usability.

Our approach to creating this test book has been systematic and comprehensive. We have deliberately included a wide range of typographical elements, mathematical expressions, figures, tables, and cross-references that commonly appear in technical and academic works. Each element has been carefully chosen to test specific aspects of the conversion process, from basic formatting to complex interactive features.

The conversion pipeline we are testing handles multiple output formats:

- PDF output maintains the precise layout and typography of the original manuscript, ensures consistent rendering across different devices and platforms, supports high-quality printing, enables precise control over page breaks and formatting, and preserves complex typographical elements and mathematical notation
- EPUB format provides reflowable text suitable for various screen sizes, supports embedded fonts and styling, enables responsive layouts, offers built-in accessibility features, and maintains consistent reading experience across different e-reader devices
- MOBI format ensures compatibility with older e-reader devices, supports basic formatting and styling, enables offline reading, provides reliable performance on legacy devices, and maintains consistent display across different Kindle generations

- KFX format takes advantage of enhanced Kindle features, supports advanced typography and layout options, enables enhanced navigation and reading features, provides better support for complex formatting, and offers improved image quality and display capabilities
- Markdown output enables easy integration with web-based platforms, supports version control through Git, facilitates collaborative editing, provides clean and readable source code, and allows for seamless conversion to other formats
- LaTeX output provides precise control over typography, mathematical notation, and complex document structures, making it ideal for technical and academic publications
- DOCX output offers widespread compatibility with word processors, supports rich formatting and styles, enables collaborative editing through track changes, and maintains consistent layout across different platforms, making it ideal for technical and academic publications
- HTML output provides precise control over typography, mathematical notation, and complex document structures, making it ideal for technical and academic publications. It offers responsive design capabilities, cross-platform compatibility, and seamless integration with web technologies, while supporting interactive elements and accessibility features
- RTF output provides a flexible and powerful document preparation system, offering broad compatibility with word processors, support for rich text formatting, and the ability to maintain consistent styling across different platforms

Throughout the development of this test book, we have paid particular attention to several critical areas:

*Typography and Layout* We test various font styles, sizes, and weights, along with different emph formats, line spacing options, and page layout configurations. This ensures that the visual hierarchy and readability are maintained across all formats.

*Mathematical Content* Special care has been taken to verify that mathematical equations, symbols, and expressions are rendered correctly, maintaining both their appearance and semantic meaning across different output formats.

*Cross-References* We extensively test the handling of internal references, ensuring that links to figures, tables, equations, and sections remain functional and accurate in all output formats.

*Metadata and Navigation* The book includes comprehensive metadata and carefully structured navigation elements to test the generation of tables of contents, indices, and other navigational aids.

This test book also serves as a reference implementation for future conversion projects. By documenting the challenges encountered and solutions developed during its creation, we aim to provide a valuable resource for others undertaking similar digital conversion projects.

We welcome feedback from users who employ this test book in their own conversion workflows. Your experiences and suggestions will help us continue to refine and improve the conversion process.

*The Development Team*

r26D

December 2024

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# Foreword

The digital transformation of books represents one of the most significant developments in the history of publishing since Gutenberg’s printing press. As we move further into the digital age, the preservation and accessibility of literary works have become paramount concerns for publishers, librarians, and technologists alike.

This test book serves a unique purpose in the realm of digital conversion. It stands not as a traditional narrative or technical manual, but as a carefully crafted validation tool for the complex process of converting traditional printed works into various digital formats. Each element within these pages—from simple paragraphs to complex mathematical equations, from basic tables to intricate figures—has been specifically designed to test and demonstrate the capabilities of modern conversion systems.

The challenges in creating accurate digital versions of books are numerous and often subtle. Typography must be preserved while remaining adaptable to different screen sizes. Mathematical equations must maintain their precision across formats. Figures and tables must remain clear and properly referenced. Cross-references must stay accurate and functional. All of these elements must work seamlessly whether the reader is viewing a PDF on a computer screen, an EPUB on a tablet, or a KFX file on an e-reader.

What makes this project particularly valuable is its comprehensive approach to testing. The conversion pipeline demonstrated here handles not only the transformation of  $\text{\LaTeX}$  source files to various output formats but also ensures the preservation of essential metadata, proper generation of tables of contents, and accurate handling of bibliographic references. This systematic approach helps identify potential issues before they affect real-world conversion projects.

As we continue to bridge the gap between traditional printed books and digital formats, tools and methodologies like those tested in this volume become increasingly important. They help ensure that our literary and academic heritage remains accessible to future generations, regardless of how technology evolves.

*Brett*

Digital Knowledge Preservationist

r26D

December 2024

# Introduction

This test book serves as a comprehensive demonstration of  $\text{\LaTeX}$  features and their conversion to various digital formats. Throughout these pages, you'll encounter examples of different formatting elements, mathematical equations, cross-references, and other technical components that are essential to verify in the conversion process.

## 1. Purpose and Structure

The primary purpose of this book is to validate the conversion pipeline from  $\text{\LaTeX}$  source files to multiple output formats including:

- **PDF** files for high-quality printing and digital distribution
- **EPUB** files for e-readers and mobile devices
- **MOBI** format for older Kindle devices
- **KFX** format for modern Kindle devices
- **Markdown** for web-based platforms
- **DOCX** for compatibility with Microsoft Word and other word processors
- **HTML** for web-based platforms

## 2. Key Features Demonstrated

### 2.1. Mathematical Equations

Here's a sample equation with a label for cross-referencing:

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

As shown in Equation 1, we can reference equations throughout the text.

## 2.2. Figures and Tables

Figures will be demonstrated throughout this book. Here's a simple example:

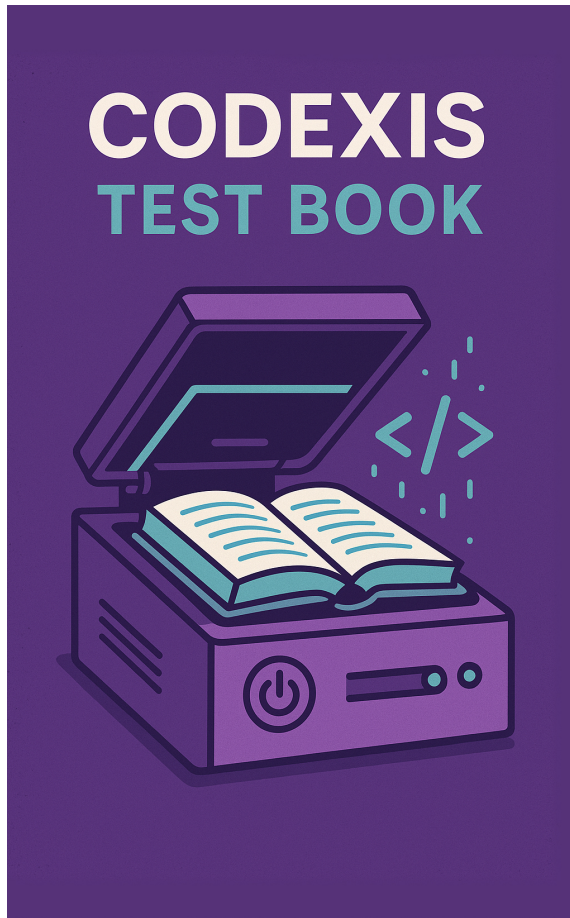


Figure 1.: Sample figure demonstrating image inclusion

Figure 1 shows how images are included and referenced.

## 2.3. Tables

Tables are essential in technical documentation:

<b>Format</b>	<b>Extension</b>	<b>Priority</b>
PDF	.pdf	1
HTML	.html	2
Markdown	.md	3
EPUB	.epub	4
KFX	.kfx	5
MOBI	.mobi	6

Table 1.: Output format priorities

## 2.4. Cross-References

This document demonstrates various types of cross-references:

- References to equations (like Equation 1)
- References to figures (like Figure 1)
- References to tables (like Table 1)
- References to sections (like Section 3)

## 3. Typography

This section showcases various typographical elements:

- **Bold text** for emphasis
- *Italic text* for subtle emphasis
- `Monospace text` for code or technical terms
- *Emphasized text* that adapts to context
- Footnotes<sup>1</sup>

## 4. Code Listings

Code can be displayed using the listings package:

```
1 defmodule Finance do
2   def calculate_margin(revenue, cost) do
3     # Calculate profit margin
4     margin = revenue - cost
5     margin
6   end
7 end
```

1: Re-style the code listing

---

1 Like this example footnote

## 5. Book Organization

The remainder of this book is organized as follows:

**Chapter 1** Outlines Bucky's relevance in a digital world

**Chapter 2** Demonstrates complex mathematical equations, and their formatting

**Chapter 3** Showcases various figures and table layouts

**Chapter 4** Explores advanced typographical features

**Chapter 5** Tests bibliographic references and citations

**Appendices** Contain additional test cases and reference material

Each chapter is designed to test specific aspects of the conversion process while maintaining readability and proper formatting across all output formats.



# 1. Buckminster Fuller’s Vision in the Digital Age

In an era defined by global interconnectedness, environmental challenges, and rapid technological change, the visionary ideas of R. Buckminster Fuller resonate with remarkable clarity. Fuller’s concept of Spaceship Earth and his emphasis on doing “more with less” offer crucial insights for our contemporary world [Ful69].

## 1.1. Comprehensive Anticipatory Design Science

Fuller’s approach to Design Science centered on anticipating humanity’s needs while maximizing resource efficiency. His geodesic domes exemplified this philosophy, creating maximum space with minimum material. Today, this principle manifests in various forms:

- Sustainable architecture and Green Building
- Resource-efficient manufacturing processes
- Optimization algorithms in computer science
- Energy-efficient transportation systems

## 1.2. Spaceship Earth in the Digital Era

The metaphor of Spaceship Earth is perhaps even more relevant in our interconnected digital age [Ful68]. Just as Fuller envisioned Earth as a finite spacecraft with limited resources requiring careful management, we now face similar challenges:

**Resource Management** Digital infrastructure requires significant energy and material resources

**System Integration** Global networks mirror Fuller’s concept of worldwide interdependence

**Environmental Impact** The need to balance technological progress with ecological preservation

### 1.3. Ephemeralization in Modern Technology

Fuller’s concept of Ephemeralization—doing more with less—perfectly describes many modern technological trends [Ful38]:

- Cloud computing replacing physical infrastructure
- Miniaturization of electronic devices
- Digital documents replacing paper
- Virtual meetings reducing travel needs

### 1.4. Synergetic Geometry and Network Theory

Fuller’s work in Synergetics finds parallels in modern network theory and computational geometry:

- Blockchain technology’s distributed networks
- Social network structures
- Optimization algorithms in artificial intelligence
- Biomimetic design principles

### 1.5. Global Challenges and Fuller’s Solutions

Many of Fuller’s proposed solutions to global challenges remain relevant:

**Energy** His emphasis on renewable resources aligns with current sustainability efforts

**Housing** Modular and efficient design principles inform modern architecture

**Education** Universal access to knowledge through technology

**Cooperation** Global problem-solving through networked communities

## 1.6. Future Implications

Fuller's vision of humanity's potential continues to inspire solutions to contemporary challenges:

- Sustainable development practices
- Renewable energy technologies
- Global communication networks
- Resource-efficient design

As we face increasingly complex global challenges, Fuller's integrated approach to problem-solving becomes more valuable. His vision of a world that works for everyone, achieved through technological innovation and systemic thinking, provides a framework for addressing current and future challenges [\[Ful81\]](#).



## 2. Complex Mathematical Equations

This chapter demonstrates various mathematical equations and their formatting across different output formats. We'll explore both inline and display mathematics, using examples from various fields.

### 2.1. Basic Equations

Let's begin with some fundamental equations. The quadratic formula states that for an equation  $ax^2 + bx + c = 0$ , the solution is:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \tag{2.1}$$

### 2.2. Complex Analysis

In complex analysis, we often encounter Euler's formula:

$$e^{ix} = \cos x + i \sin x \tag{2.2}$$

A special case of this is Euler's Identity, one of the most beautiful equations in mathematics [\[Dun99\]](#):

$$e^{i\pi} + 1 = 0 \tag{2.3}$$

## 2.3. Linear Algebra

In linear algebra, we work with matrices and vectors. Consider the eigenvalue equation:

$$A\mathbf{v} = \lambda\mathbf{v} \tag{2.4}$$

Where  $A$  is a square matrix,  $\mathbf{v}$  is an eigenvector, and  $\lambda$  is an eigenvalue [Str06].

## 2.4. Differential Equations

The ordinary differential equation for simple harmonic motion is:

$$\frac{d^2x}{dt^2} + \omega^2x = 0 \tag{2.5}$$

## 2.5. Statistical Formulas

In statistics, we frequently use the normal distribution, whose probability density function is:

$$f(x) = \frac{1}{\sigma\sqrt{2\pi}}e^{-\frac{(x-\mu)^2}{2\sigma^2}} \tag{2.6}$$

This formula is essential in many statistical applications [Ros14].

## 3. Figure and Table Layouts

This chapter demonstrates various approaches to laying out figures and tables in technical documentation.

### 3.1. Basic Figure Placement

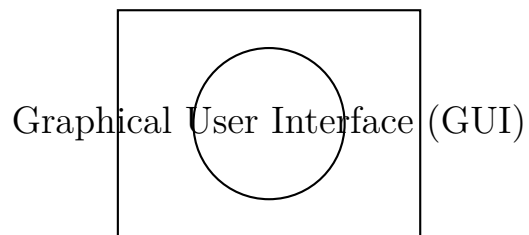
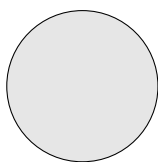


Figure 3.1.: A simple GUI element drawn with *TikZ*

### 3.2. Multiple Figures



(a) Circle



(b) Square

Figure 3.2.: Basic geometric shapes

Format	dpi	Color Space	Size
JPEG	300	RGB	Medium
PNG	300	RGBA	Large
GIF	72	Indexed	Small

Table 3.1.: Image format comparison

### 3.3. Complex Tables

### 3.4. Flowcharts

2: diagram not displaying in epub or markdown

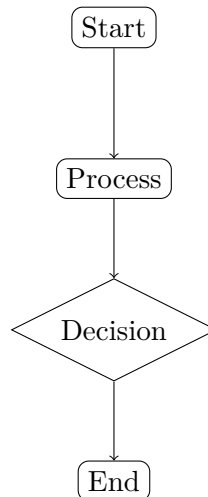


Figure 3.3.: Basic flowchart

This diagram demonstrates the standard elements of a flowchart as described in [Knu97].

### 3.5. Vector Graphics Formats

When creating figures for technical documentation, vector graphics formats like Scalable Vector Graphics (SVG) provide several advantages over raster formats. Vector graphics remain sharp at any scale, resulting in higher quality figures in both print and digital formats.

3: SVG not displaying correctly in epub

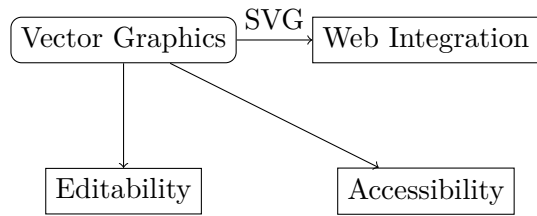


Figure 3.4.: Benefits of SVG for documentation

Unlike raster formats, SVG files can be edited with text editors and integrated directly into web documentation without quality loss.



## 4. Advanced Typographical Features

This chapter explores advanced typographical features and their implementation across different output formats.

### 4.1. Font Families

Different font families serve different purposes in technical documentation:

- Roman text for the main body (Serif Font)
- Sans serif text for headings (Sans Serif Font)
- `Monospace text` for Source Code
- Math for  $e = mc^2$

### 4.2. Text Emphasis

Various forms of emphasis help convey meaning [Bri04]:

- **Bold text** for strong emphasis
- *Italic text* for titles or terms
- *Slanted text* for subtle variation
- `SMALL CAPS` for acronyms
- *Swash characters* for decorative elements
- **Colored text** for warnings

### 4.3. Special Characters

Typography often requires special characters:

- Em dash for something —like that —like this
- En dash for ranges like 0–100
- Ellipsis for ...
- Quotation marks: “smart quotes”
- Ligatures: fi, fl, ffi, ffl

### 4.4. Page Layout

Page layout elements include:

**Headers** Running headers with chapter titles

**Footers** Page numbers and additional information

**Margins** Adequate white space for readability

**Columns** Single or multiple column layouts

### 4.5. Lists and Indentation

Different list styles serve different purposes:

1. Numbered lists for sequences
  - Bullet points for unordered items
  - \* Custom markers for special lists

## 4.6. Emoji Support

Emoji support uses Noto Color Emoji with HarfBuzz (LuaLaTeX).

Testing common emojis: 😊 👍 🎉 ★ 📖

Testing project-specific emojis:

- 🤖 Robot emoji – for AI/automation concepts
- 🐝 Bee emoji – for Hive references
- 💻 Computer emoji – for development topics
- 🛠️ Wrench emoji – for tools and configuration
- ✨ Sparkles emoji – for innovative concepts
- 🎯 Target emoji – for goals and objectives
- ✔️ Checkmark emoji – for completed items
- 🔄 Cycle emoji – for processes
- 📊 Chart emoji – for metrics and progress
- 🔒 Lock emoji – for security topics
- 👥 People emoji – for team references
- 💡 Lightbulb emoji – for concepts
- 🚀 Rocket emoji – for performance



## 5. Bibliographic References and Citations

This chapter demonstrates various ways to handle bibliographic references and citations in technical documentation.

### 5.1. Citation Styles

There are several common citation styles [17]:

- Author-Date: Author-Date Citation
- Numerical: Numerical Citation
- Author-Title: Author-Title Citation

### 5.2. Reference Types

Different types of sources require different citation formats:

**Books** Basic book citation [Knu97]

**Articles** Journal article citation [Ros14]

**Online** Web resource citation [Wik24]

### 5.3. Cross-References

Internal cross-references can point to:

- Figures (like Figure 3.3)
- Tables (like Table 3.1)

- Equations (like Equation [2.2](#))
- Sections (like Section 4 on typography)

## 5.4. Bibliography Management

Good bibliography management involves:

- Consistent formatting using BibTeX or BibLaTeX
- Complete information for each reference type
- Proper sorting of references
- Accurate cross-references throughout the document

## 5.5. Advanced Citation Features

Modern bibliography tools support advanced features:

- Multiple bibliography sections
- Custom citation styles
- Automatic DOI linking
- Citation filtering and sorting

## 5.6. Reference Management Software

Several tools assist in managing references:

**BibTeX** The traditional L<sup>A</sup>T<sub>E</sub>X bibliography tool

**BibLaTeX** Modern replacement for BibTeX

**Zotero** Open-source reference manager

**Mendeley** Reference manager with social features

**EndNote** Commercial reference management software

## 5.7. Citation Best Practices

When citing sources, remember to:

- Use consistent citation styles throughout
- Include all required citation elements
- Verify citations against original sources
- Update citations when sources change

According to [17], proper citation is essential for:

- Giving credit to original authors
- Enabling readers to locate sources
- Supporting academic arguments
- Avoiding plagiarism



# A. Test Cases and Examples

This appendix provides additional test cases and examples for validating various aspects of the conversion process.

## A.1. Complex Mathematical Expressions

Here are some additional mathematical expressions to test rendering:

$$\oint_C \mathbf{B} \cdot d\mathbf{l} = \mu_0 \left( I_{enc} + \epsilon_0 \frac{d\Phi_E}{dt} \right) \tag{A.1}$$

$$\nabla \times \mathbf{E} = -\frac{\partial \mathbf{B}}{\partial t} \tag{A.2}$$

## A.2. Multi-Column Layout

This section demonstrates multi-column layout capabilities. The text should flow naturally between columns while maintaining proper spacing and formatting.

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris.

Design Science principles can be applied to improve document layout and readability across different formats and devices.

Symbol	Description
§	Section
¶	Paragraph
©	Copyright
†	Dagger
‡	Double dagger
\$	Dollar
#	Hash
&	Ampersand
%	Percent
_	Underscore

Table A.1.: Special Characters Test

### A.3. Special Characters and Symbols

### A.4. Code Listings with Syntax Highlighting

#### A.4.1. Python Example

```

1 class DocumentConverter:
2     def __init__(self, input_file, output_format):
3         """Initialize the converter."""
4         self.input_file = input_file
5         self.output_format = output_format
6
7     def convert(self):
8         """Convert the document to specified format."""
9         try:
10            with open(self.input_file, 'r') as f:
11                content = f.read()
12            return self.process_content(content)
13        except Exception as e:
14            raise ConversionError(f"Failed to convert: {e}")

```

#### A.4.2. Elixir Example

```

1 defmodule DocumentConverter do

```

```

2  @moduledoc """
3  A simple document converter example.
4  """
5
6  defstruct [:input_file, :output_format]
7
8  @doc """
9  Initializes a new DocumentConverter struct.
10 """
11 def new(input_file, output_format) do
12   %__MODULE__ {
13     input_file: input_file,
14     output_format: output_format
15   }
16 end
17
18 @doc """
19 Converts the document to the specified format.
20 Returns {:ok, result} or {:error, reason}.
21 """
22 def convert(%__MODULE__ {input_file: input_file} = converter) do
23   case File.read(input_file) do
24     {:ok, content} ->
25       process_content(converter, content)
26
27     {:error, reason} ->
28       {:error, {:conversion_failed, reason}}
29   end
30 end
31
32 end

```

### A.4.3. LaTeX Example

Listing A.1: Sample LaTeX Code

```

1 \documentclass [12pt]{article}
2 \usepackage{graphicx}

```

```
3 \usepackage{hyperref}
4
5 \begin{document}
6 \title{Sample Document}
7 \author{Test Author}
8 \date{\today}
9
10 \maketitle
11
12 \section{Introduction}
13 This is a test document.
14
15 \end{document}
```

## A.5. Figure Placement Tests

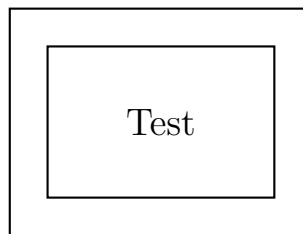


Figure A.1.: Nested Rectangle Test Figure

## A.6. Table Alignment Tests

<b>Left</b>	<b>Center</b>	<b>Right</b>
Text	123.45	999
Longer text	0.001	1
Very long text entry	789.123	5.5

Table A.2.: Table Alignment Test

## A.7. Cross-Reference Examples

Here are various ways to reference content:

- Simple reference: Figure [A.1](#)
- Page reference: page [22](#)
- Multiple references: Figures [A.1](#) and [3.3](#)
- Equation reference: Eq. ([A.1](#))
- Table reference: Table [A.2](#)

## A.8. Font and Style Tests

**Bold text** for emphasis

*Italic text* for emphasis

SMALL CAPS TEXT for variety

Monospace text for code

Sans serif text for headings

*Slanted text* for variation

Tiny text for size test

Huge text for size test

## A.9. List Types

### A.9.1. Bulleted List

- First level item
  - Second level item
    - \* Third level item

### A.9.2. Numbered List

1. First level item
  - a) Second level item

i. Third level item

### **A.9.3. Description List**

**Term 1** Description of first term

**Term 2** Description of second term

**Subterm** Nested description

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## Bibliography

- [Ful38] R. Buckminster Fuller. *Nine Chains to the Moon*. New York: Anchor Books, 1938.
- [Ful68] R. Buckminster Fuller. *Utopia or Oblivion: The Prospects for Humanity*. New York: Overlook Press, 1968. ISBN: 978-0-8795-1398-4.
- [Ful69] R. Buckminster Fuller. *Operating Manual for Spaceship Earth*. Carbondale: Southern Illinois University Press, 1969. ISBN: 978-0-8093-2461-3.
- [Ful81] R. Buckminster Fuller. *Critical Path*. New York: St. Martin's Press, 1981. ISBN: 978-0-312-17488-0.
- [Knu97] Donald E. Knuth. *The Art of Computer Programming, Volume 1: Fundamental Algorithms*. 3rd ed. Vol. 1. The Art of Computer Programming. Reading, Massachusetts: Addison-Wesley, 1997. ISBN: 0-201-89683-4.
- [Dun99] William Dunham. *Euler: The Master of Us All*. The Dolciani Mathematical Expositions. Washington, DC: Mathematical Association of America, 1999. ISBN: 978-0-88385-328-3.
- [Bri04] Robert Bringhurst. *The Elements of Typographic Style*. 3rd ed. Vancouver, BC: Hartley & Marks Publishers, 2004. ISBN: 0-88179-206-3.
- [Str06] Gilbert Strang. *Linear Algebra and Its Applications*. 4th ed. Belmont, CA: Brooks Cole, 2006. ISBN: 978-0-03-010567-8.
- [Ros14] Sheldon M. Ross. *Introduction to Probability and Statistics for Engineers and Scientists*. 5th ed. Amsterdam: Academic Press, 2014. ISBN: 978-0-12-394811-3. DOI: [10.1016/C2013-0-19165-3](https://doi.org/10.1016/C2013-0-19165-3).
- [17] *The Chicago Manual of Style*. 17th ed. Chicago: University of Chicago Press, 2017. ISBN: 978-0-226-28705-8.
- [Wik24] Wikipedia contributors. *LaTeX*. Accessed: 2024-01-15. Wikimedia Foundation. 2024. URL: <https://en.wikipedia.org/wiki/LaTeX>.



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