BD TECH CONCEPTS LLC

Technical Writing, Editing, and Diagrams
Document Conversion and Typesetting
\LaTeX Consulting and System Programming

Brian Dunn

November 7, 2019
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Impress with Professional Documentation

Every communication which you have with a customer is a form of marketing, including downloadable reference material and documentation, white papers, journal articles, and owners’ manuals. Excellent technical literature is accurate, well-organized, and impressive in appearance, helping establish your company’s authority and professionalism.

BD TECH CONCEPTS LLC will edit, format, and typeset your documents to a higher standard. Principles from engineering, programming, typesetting, design, and American-English grammar are applied with professional document-creation tools to meet your company’s need for quality technical literature, freeing you and your staff to return to what you do best.

Specialties:

• \LaTeX programming — Advanced document-creation and typesetting system. Optimal typesetting quality, stability, and programming flexibility. Single-source, with conversion to multiple output formats — PDF, EPUB, HTML/CSS.

• Technical writing and editing — books, monographs, manuals, white papers, case studies, journal articles, diagrams, illustrations, and procedures.

• Realtime embedded software for industrial controls.
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Technical Writing and Communications

Research — Evaluate — Clarify — Document — Communicate

BD TECH CONCEPTS LLC provides technical writing and communications services, including:

- Technical editing for books, monographs, white papers, case studies, journal submissions, and engineering/business proposals.
  - (See: Technical Editing)
- Document design, layout, editing, and proofing.
  - (See: Book & Monograph Design)
- Diagrams and illustrations.
  - (See: Diagrams)
- Document conversion.
  - (See: Printed Document to PDF Conversion)
- Owner’s manuals for real-world devices.
  - (See: Owner’s Manuals and Procedures)
- Software documentation.
  - (Example: \LaTeX to HTML Converter — the lwarp package)
  - (Also: \LaTeX todata package)
- Patent applications with diagram callouts linked to the text.
- Software test procedures and state-machine analysis.
  - (See: Software-Related Documentation)

Specialties:

- \LaTeX — programmable advanced document-creation and typesetting system.
- Real-time embedded software engineering — industrial controls.

Also see: About Us.
Improved Technical Communications

Marketing

• Create a great impression by improving your technical and marketing documents. Potential customers, purchasing managers, and applications engineers are influenced by the quality of your technical literature.
• Publish nicely edited, formatted, and typeset technical books, white papers, case studies, and journal submissions.

Sales

• Remove objections, avoid misunderstandings, and create superior proposals by including thorough documentation, including user-interface and operating-logic design illustrations and state diagrams.

Engineering

• Free your staff to work on developing new products instead of worrying about polishing documentation to publication quality.
• Improve product design through user-interface and operating-logic analysis and diagramming.
• Develop software from a full specification, including outlier conditions.
• Preserve institutional memory to speed the design of subsidiary products and survive personnel turnover.
• Re-publish quality journal articles on your own company’s home page, with improved technical editing and typesetting.

Production

• Develop multilingual training aids with documentation which has been designed for clear translation.
• Help ensure employee safety with clearly presented warnings.
• Improve performance with easy-to-locate information.

Quality Control

• Work from clear and complete specifications, including full software test procedures.

Customer Service

• Reduce returns and support costs through clear customer communications.

Legal

• Improve patent applications with professional typesetting to USPTO requirements, and quality diagrams automatically and permanently cross-referenced to the text.
• Reduce legal issues and negative press by providing complete, clear, and consistent documentation and warnings.

BD TECH CONCEPTS LLC — Translating “Engineer” into “Human!”
Technical Editing

Applications for Technical Editing

- Books, Monographs, Texts
- White Papers
- Case Studies
- Journal Articles
- Patent Applications
- Engineering Proposals
- Catalogs and Brochures
- Operating Manuals

Improved Technical Content

- Improved typesetting of mathematics, tables, units, fractions, and user-interface controls.
- Mathematics typeset according to math or engineering standards, as appropriate.
- Consistent formatting of dimensions vs. quantities, and ranges of numbers with units.
- Improved diagrams and photos. Suggestions for additional diagrams or illustrations to clarify content.
- Consistent and improved labeling of warnings, cautions, and notes. Suggested additions or change of importance.
- Consistency checks between different statements in different sections of the document.
- Catch missing exponents, units, labels, specifications.
- Verify unit conversions.
- Verify significant digits.
- Verify trademark vs. copyright.
- Consistent type-case for brand and product names.
- Define any undefined acronyms.
- Clarify procedural instructions to reduce misinterpretation.
- State-machine tables or diagrams to clarify and specify all possible user-interface interactions.
- Highlighted description lists or paragraph headings to quickly locate and identify important content.
- Repeated text is factored to a common source to avoid minor differences between instances.
- Diagram labels may be converted to numbered “pins” and an accompanying table. The pins take less space on the diagram, and the table allows easier translation or updates since text is not placed directly on the diagram. Patent applications require numbered diagram pins, and references to these pins are automatically maintained and updated as changes occur, permanently maintaining the link between the diagram and the text. See Labels, pins, call-outs, patent-application diagrams.
**Improved Text**

- Spelling
- Grammar
  - Dropped articles
  - Insure / ensure / assure, effect / affect, etc.
  - Simplification and rearrangement of complex sentences for improved clarity.
- Punctuation
  - Hyphenation of compound adjectives.
  - Hyphen / number range / minus sign / en-dash / em-dash
  - Opening / closed quote marks / inch mark / angular seconds / double prime
  - Apostrophe / foot mark / angular minutes / prime
  - End-of-sentence space / flexible-width inter-word space / fix-width unbreakable space / short unbreakable space
  - Serial comma, Harvard comma, Oxford comma
  - × vs x (“times” vs “lower-case x”)
- Structural organization
  - Sectioning
  - Cross-references with active hyper-links.
  - Footnotes and end-notes
  - Figures and captions
  - Equations
  - Table-of-Contents, List-of-Figures, List-of-Tables
  - Indexes
  - Glossaries
  - Bibliography
  - PDF meta-data

**Repair of Broken Documents**

- Conversion from bitmaps and scanned images to real text, tables, equations, and vector diagrams.
- Repair and establish consistent labels, units, and captions.
- Prevent diagrams, illustrations, and photos from overlapping nearby text.
- Re-organize out-of-order or broken section, figure, or equation numbering.
- Correct broken itemized, enumerated, and description lists.
- Strip and reapply formatting to fix inconsistent styling.
- Fix or verify inconsistent or obsolete contact information and hyperlinks.
Book & Monograph Design

“... if you have a technical-writing project that is stalled, or one that needs a new look, Brian Dunn at BD TECH CONCEPTS can help you.”

Sprucing Up Content
GEAR TECHNOLOGY MAGAZINE

Be the expert

Prove your professional authority by self-publishing your own technical book or monograph. Whether available for free download, or printed and sent ahead to prospective clients, the fact that you literally “wrote the book” means instant recognition and credibility. An early investment in authoring your own book can yield results for years to come.

“Writing the book] has served me well over the past 28 years. Initially it got me job interviews (22 interviews out of 25 copies sent out in 1989) and as late as last month I used it as material in a training class in Texas.”

Charles D. Schultz, P.E.
BEYTA GEAR SERVICE

Example Technical Book Design

Figure 1 shows an example book project, single-sourced from one LaTeX document-system source to create a printed version, a tablet version, and an HTML website version.

Downloadable samples include:

* Formatted for screen and print: Introduction to Gear Design — Print — PDF
* Formatted for hand-held tablet: Introduction to Gear Design — Tablet — PDF
* HTML website: Introduction to Gear Design — Website — HTML

Converted from an old scanned printout, this book now has all-new diagram conversions along with improved editing, numbering, typesetting, internal/external hyperlinks, and formatting for print, tablet, or HTML. Used with permission.

“Both versions look good ... I very much like the work you have done ... Thanks for your hard work.”

Charles D. Schultz, P.E.
BEYTA GEAR SERVICE
INTRODUCTION TO GEAR DESIGN
2nd Edition

Charles D. Schultz, P.E.
BESTA GEAR SERVICE
Woolfard, IL

INTRODUCTION TO GEAR DESIGN

Chapter 6 — How Should They Look? 4

Table 6.9: Popular Tooth Forms

<table>
<thead>
<tr>
<th>Type</th>
<th>Normal &amp; Whole</th>
<th>Dedendum</th>
<th>Fill</th>
<th>Acknowledges</th>
<th>Dedendum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full</td>
<td>Depth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step</td>
<td>Depth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flat</td>
<td>Depth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Per</td>
<td>Depth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shape</td>
<td>Depth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed</td>
<td>Depth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weld</td>
<td>Depth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drill</td>
<td>Depth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mill</td>
<td>Depth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Follow tooth also called "contra-rotation." 5

INTRODUCTION TO GEAR DESIGN

Chapter 5 — How Should They Be Made? 42

Figure 5.8: Honing Diagrams — (Pre-Shave)

Honing: The honing process is similar to shaving except that the cutters are coated with an abrasive material. An honing machine can also be adapted to shaving, using most of the limitations discussed above still apply. Honing has been used to produce "hot" gears that are too hot for normal forming processes. It is possible to coat non-rotating gears that are not suitable for honing. This is a very "hot" area of gear research and is best studied by reading technical papers and manufacturer's literature.

Hyperlinks are colored, including in-text Figure and Table references, and each entry in the Table of Contents, List of Figures, and List of Tables.
Owner's Manuals and Procedures

A reformat of your product's owner's manuals can create a great impression for potential customers.

A third-person editorial review of your owner's manuals can result in a cleaner document, better-informed customers, and reduced service calls.

Improved cross-references, enhanced diagrams, additional notes and explanations, and an outsider's perspective on the operation of your product — all help bring your product manuals up to a professional standard.

Examples

- Real-world products and devices:
  - Sample: Camping trailer owner's manual:
    Camping Trailer Manual — PDF, including Figure 2, a sample wiring diagram.
    Camping Trailer Manual — HTML (This is a sample conversion from \LaTeX{} to HTML via the \LaTeX{} to HTML Converter — the lwarp package.)

  - Sample: Automatic door-closer installation manual:
    Automatic Door Closer Installation Manual — PDF

    Figure 3 show a side view of one possible installation, along with the door and frame. See the manual for additional installation options and diagrams.
Figure 3: Parts Diagram — Automatic Door Closer — Side View

Figure 4: Control Box — Front Panel

• Industrial controls and related software:
  
  – Sample: CNC Control Box:
    CNC Control Box — Setup Instructions — PDF
    A redesigned CNC sub-component control-box front panel is shown in Figure 4. The new panel includes international key and display icons, a more intuitive key placement, and an accompanying operating-logic redesign which provides a simpler and more consistent user experience.
  
  – Sample: Fryer user’s manual:
    Fryer — User’s Manual — PDF
    Figure 5 is a diagram from the fryer’s user’s manual. An all-new operating logic and improved key icons resulted in a superior product design. See State machines for a discussion of the benefits provided by this product-design process.

• Single-source documentation suite — information factoring and re-use:
  
  Documentation integrity and ease of updates are each improved by the proper factoring and automated re-use of common blocks of information. When done at too fine of a level, context is lost, and when done at too coarse of a level, re-usability is lost.

  – Sample:
    Initial Specification — PDF
    Final Operating Specification — PDF
    Software Test Procedure — PDF
    Fryer — User’s Manual — PDF
Software-Related Documentation

User's Manual and Source-Code Documentation

Figure 6 is an excerpt from the Lwarp v0.78 Manual (1.3 MB PDF). This manual is a combined user's manual and source-code documentation, an example of “literate programming”.

For more information, see \LaTeX{} to HTML Converter — the \texttt{lwp} package.
Operating Procedures

• Elaborate software operating procedures benefit from the inclusion of additional diagrams to help explain the logical connections of the various functions and processes which are involved. Typesetting is used to indicate user-interface functions, and screen images are used to highlight important selections.

  – Sample: How to set up sales-tax handling in the SQL-Ledger® double-entry accounting system:
    SQL-Ledger — Handling Sales Taxes — PDF

  Figure 7 demonstrates a conceptual-logic diagram, showing the relationship between the various legislated sales-taxes, their software accounts, their software tax-rate settings. Also shown is how several at a time may be selected/deselected for a particular customer/vendor account, and also for a collection of parts/services on a particular invoice. The flowing arrows show the application of individual sales taxes through the various accounts and selections for each individual item on the invoice.

• Diagrams are also used to illustrate the changing state of the system as a the user progresses through the required operations. Typesetting is used to highlight user-entry typing, display, warnings and notes.

  – Sample: How to move the Debian operating system to a new harddrive:
    Moving Debian “Wheezy” and grub2 to a New Drive — PDF

  Copying an entire operating system to a new harddrive can involve several steps, during which entire groups of directories are added and removed at different times. Figure 8 is one of several which help the user keep track of what is going where during the transfer process.

Test procedures

Each time software is changed, it should be validated for proper operation before being released for general use. This important function must be carefully thought out. A thorough test procedure will test each software function, including
Figure 8: Directory Tree — OS Transfer to a New Drive

all hardware interfaces plus associated noise and error handling conditions, and the proper software response to each possible input given each possible current state.

• Sample: Software test procedure:

Fryer — Software Test Procedure — PDF

Illustrated in the PDF and in Figure 9 are:

– an overview of the product,
– the use of a state machine in tabular form (also see Figure 10 for the same information in diagram form,)
– statements of specification,
– a checklist for each state’s actions,
– additional tests to perform where necessary,
– ESD noise and power-loss recovery testing, and
– typeset user-interface buttons and displays.

State machines

It is useful to create a state machine including every possible combination of input, output, and software state. The creation of this state machine can, in itself, reveal design flaws or force decisions about combinations which nobody had thought of before.

The state machine, if created and incorporated into the initial design process, can be used as a guide for the software engineers to ensure that they have a complete description of the correct action of the program.

When described in graphical format, the state machine makes a valuable part of the software test procedure, describing in an easy-to-use visual format the correct operation of the program.

When converted to a table format, the state machine may be implemented in software, resulting in an easily maintained piece of code, readily adaptable to design changes or future product versions. A software state machine also avoids the nightmare of large blocks of heavily nested conditional code and its associated mysterious functional glitches.
Displaying and Selecting Presets

Specification

While Idle, press Select to display the time, temperature, and auto compensation settings for the currently selected preset. The unit returns to Idle after the second.

While Idle, press a key 1–9 to display that preset’s settings for five seconds.

Press another key 1–9 to switch to a different preset.

Press Select to switch to the selected preset. The unit returns to Idle.

Press Cancel during the five seconds to instantly return the unit to Idle.

ST-View-Preset

<table>
<thead>
<tr>
<th>Setting</th>
<th>Display for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time Display</td>
<td>Time for the preset</td>
</tr>
<tr>
<td>Temp Display</td>
<td>Temp for the preset</td>
</tr>
<tr>
<td>Count Display</td>
<td>Counter</td>
</tr>
<tr>
<td>Valve LED</td>
<td>Off</td>
</tr>
<tr>
<td>Auto Comp. LED</td>
<td>Auto comp. for the preset</td>
</tr>
<tr>
<td>Heat LED</td>
<td>Regulates to setpoint +0°F, -4°F</td>
</tr>
<tr>
<td>Heater</td>
<td>Regulates to setpoint +0°F, -4°F</td>
</tr>
<tr>
<td>Speaker</td>
<td>—</td>
</tr>
<tr>
<td>5 Seconds Pass</td>
<td>ST-Idle</td>
</tr>
<tr>
<td>25 Seconds Pass</td>
<td>—</td>
</tr>
<tr>
<td>Start Closed</td>
<td>ST-Cooking</td>
</tr>
<tr>
<td>Start Opened</td>
<td>—</td>
</tr>
<tr>
<td>0–9 Pressed</td>
<td>Show another preset</td>
</tr>
<tr>
<td>0 Held 5 sec</td>
<td>—</td>
</tr>
<tr>
<td>0 Held 10 sec</td>
<td>—</td>
</tr>
<tr>
<td>⊗ Held 10 sec</td>
<td>—</td>
</tr>
</tbody>
</table>

Press two presets with different values, then verify that from Idle, 1–9 shows different presets.

Verify that 1–9 followed by Select changes to the new preset. Start a cycle for each of two different presets, and verify that the time and temp has been changed to each preset value.

• Sample: State machines and user-interface:

Fryer — Final Operating Specification — PDF

A sample state machine in diagram form is in Figure 10. States are in shown in green, machine actions in red, and movement to/from other states is in blue. Key icons or text show the user-initiated or other actions required to move to another state. The same information may be presented in tabular form, as shown previously in Figure 9.

Design reviews

During the process of creating a state machine to describe a piece of software, certain functional and user-interface design improvements can become evident, especially in embedded software with minimal front-panel interfaces, resulting in a cleaner and easier-to-use product.

Universal icons instead of English-language text, consistent state-transition actions, simpler key combinations and editing methods, more meaningful visual and audible feedback, unplanned special-case situations, error handling, and in some cases a reduction in the total number of keys or feedback LEDs — all are possible improvements from a full design review.

Even something as simple as a change of the icon on a key’s label can make it more obvious what that key does — such as converting a right arrow into a curved clockwise arrow to illustrate that the key causes something to rotate, or using a small arrow icon for a key which produces smaller changes, and a larger arrow icon for a key which produces larger changes.
Figure 10: State Machine — Editing Presets
Sales Literature

Load Cells

Load cells are physical transducers used to convert a force into an electrical signal, and have many industrial and scientific applications.

Sample load cells white paper  A white paper serves to educate your customers, showing them how and why a product may benefit them, whereas a data sheet or catalog shows them which product to use.

A white paper may include a theory of operation, authoritative references to external sources, technical diagrams, math, algorithms, test results, and other science- or engineering-related information.

Sample: Load Cells — Introduction and Applications — White Paper — PDF

Figure 1: Pancake Load Cell

Figure 10: Example creep/response curve of a shear-beam load cell

Figure 11: Load Cells — White Paper
Roboshop Conveyors

“Looks great! You obviously know what you’re doing. You’ve cleaned up the problems that you advised me about and I like what you did. The separation of the pictures, the slanted background, the improved text and general arrangement is much better. The size is great and it does matter!”

F.G.

ROBOSHOP, INC.

Sample Roboshop sales brochure  Roboshop Sales Brochure — PDF

Cleaned up an original document, making it 15% of its original file size. Reformat and layout. Improved contrast and brightness in some of the images. Optical character-recognition conversion from image to text. Light editing, including improved formatting of fractions and units. See Figure 12.

Original text and images ©Roboshop, Inc.

Figure 12: Sales Brochure — Roboshop, Inc.
Terminal Block Enclosure

**Sample specification sheet**  Terminal Block Specification Sheet — PDF

Figure 13 shows a specification sheet for a 4-pole terminal block. (See the PDF for a high-quality image.)

- The layout has been reformatted to place the more general information near the top, and the specific details near the bottom.
- Proper contrast is used in the title, making the brochure easy to identify when mixed with others of the same style.
- Benefits are highlighted.
- Fractions, units, and numeric ranges are correctly typeset.
- Proper inch marks are used (v.s. quote marks).
- Backgrounds have been added for the heading and the main body.
- Sufficient page margin/bleed is provided to allow for printer crop/margins or A4/letter format printing.

![Figure 13: Specification Sheet — Terminal Block](image-url)
Lamp and Resistor Order Form

Sample order form  Lamp Order Form — PDF

Figure 14 shows an order form for a lamp and resistor combination. (See the PDF for a high-quality image.)

- Diagram has been re-rendered from a hand-drawn original.
- Options have re-organized for consistency.
- Dimensions have been adjusted for more specificity.

Figure 14: Order Form — Lamp and Resistor
American Go Association

Thousands of years old, go (also known as wei-qi and baduk) is the oldest board game still played in its original form. A very small number of simple rules allow even young children to learn the game, and yet generations of study are still yielding new strategies. It was only very recently that a computer was finally able to beat the strongest human players.

![Lacquer Go Board](image)

**Figure 15**: Lacquer Go Board

The American Go Association is the official national organization of American go players, cooperating with similar national organizations around the world.

The AGA logo and the following brochures were updated for the AGA with new editing, layout, and typesetting. This literature is copyrighted by the American Go Association, and is used with permission.

**AGA logo** The AGA logo has been converted from a high-resolution scan of the original 1982 version, which was created by hand on a drafting board using pre-fabricated lettering and ink drawings. This scan was cleaned for dust, converted to a vector line drawing, then given additional custom editing to produce an optimal result while preserving the human touch and historical feel of the original.
The Rule of Ko

Since the game continues after a capture in regular Go, a problem could arise as illustrated in the following diagram:

![Diagram of the rule of Ko]

In the upper left, when one cage captures a black stone, the original position is not repeated. So, this is not ko. If White recaptures the single attacking stone then the game continues without impediment. The upper right demonstrates the same concept. Since the game continues after a capture in regular Go, a problem could arise as illustrated in the following diagram:

In the upper right, Black can make the initial capturing move, and White is captured (recreating the exact board position). The player whose stone was captured could be recaptured (recreating the exact board position). The player who made the initial capturing stone must play elsewhere before retaking the attacking position, the player whose stone was captured could be recaptured (recreating the exact board position). The player who made the initial capturing stone must play elsewhere before retaking the attacking position, the player whose stone was captured could be recaptured (recreating the exact board position). The player who made the initial capturing stone must play elsewhere before retaking the attacking position, the player whose stone was captured could be recaptured (recreating the exact board position).

In the lower area, after which White must play elsewhere before retaking the attacking position, the player whose stone was captured could be recaptured (recreating the exact board position). This rule prevents an endlessly-repetitive situation, as illustrated in the following diagram:

In the lower left, one empty intersection, so Black could recapture it, however, the capturing white stone would then have only one empty intersection, so Black could recapture it, recreating the exact board position. The player who made the initial capturing stone must play elsewhere before retaking the attacking position, the player whose stone was captured could be recaptured (recreating the exact board position). The player who made the initial capturing stone must play elsewhere before retaking the attacking position, the player whose stone was captured could be recaptured (recreating the exact board position). The player who made the initial capturing stone must play elsewhere before retaking the attacking position, the player whose stone was captured could be recaptured (recreating the exact board position).

What is Go?

In the world's oldest board game, and it is still played just as it was thousands of years ago, tiny and only black and white stones are used together with circular markers called ko stones. As black and white stones compete for space on the board, the game is fast and skillful. Each move must be made on an empty intersection, and if White recaptures the single black stone the game is not ko, but if White recaptures the single black stone then the game is not ko.

The Chinese name is go and the Japanese name is baduk. In Korean, it is called byeolgo and in Japanese, the game is called shogi.

In the upper right, Black can make the initial capturing move, and White is captured (recreating the exact board position). The player whose stone was captured could be recaptured (recreating the exact board position). The player who made the initial capturing stone must play elsewhere before retaking the attacking position, the player whose stone was captured could be recaptured (recreating the exact board position).

In the upper left, Black can make the initial capturing move, and White is captured (recreating the exact board position). The player whose stone was captured could be recaptured (recreating the exact board position). The player who made the initial capturing stone must play elsewhere before retaking the attacking position, the player whose stone was captured could be recaptured (recreating the exact board position).

In the upper left, one empty intersection, so Black could recapture it, however, the capturing white stone would then have only one empty intersection, so Black could recapture it, recreating the exact board position. Since the game continues after a capture in regular Go, a problem could arise as illustrated in the following diagram:

In the upper left, one empty intersection, so Black could recapture it, however, the capturing white stone would then have only one empty intersection, so Black could recapture it, recreating the exact board position. Since the game continues after a capture in regular Go, a problem could arise as illustrated in the following diagram:

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In the upper left, one empty intersection, so Black could recapture it, however, the capturing white stone would then have only one empty intersection, so Black could recapture it, recreating the exact board position.
Go
The Ancient Game

Rules of Go
1. The board is initially empty.
2. Black plays first.
3. On a turn, either place a stone on a vacant intersection or pass (giving a stone to the opponent to keep as a prisoner).
4. Stones may be captured by tightly surrounding them. Captured stones are taken off the board and kept as prisoners.
5. It is illegal to make a suicidal move.
6. It is illegal to repeat a board position. (This is the ko rule).
7. Play continues until both players have passed consecutively and white has passed last.
8. At the end of the game, score one point for each intersection you have surrounded, minus one point for each of your stones held prisoner. The high score wins.

These are the American Go Association rules. Rules vary slightly from one country to another. See www.usgo.org for more information.

Scoring Example
In the diagram above, White has 8 points in the center and 7 points at the upper right. Two white stones (shown below the board) are prisoners. White's score is
\[8 + 7 - 2 = 13\].
Black has 3 points at the upper left and 9 at the lower right. One black stone is a prisoner. Black's score is
\[3 + 9 - 1 = 11\].
White wins.

Capturing Examples
Stones are captured in blocks of one or more stones. A block is a contiguous group of stones connected along the lines on the board. In the diagram above, Black has captured two white stones, shown as prisoners.

Figure 17: Rules Brochure — American Go Association

Problem 1-2, from Gokyo Shumyo — Hayashi Genbi

Figure 18: The Corner Challenge
Diagrams

Software Documentation

Figure 19: Lwarp Package — File Structure

Labels, pins, call-outs, patent-application diagrams

Save time and energy! Diagram pins may be automatically cross-referenced to the patent application’s text, permanently linking them together, and avoiding the need to manually renumber every time there is a change in the diagram’s annotations. Patent application figures may be created from drawings, photographs, or CAD views. Formatting to U.S. Patent and Trademark Office standards is also available.

Figure 20: Diagram Label Pins — Mountain Bicycle
Figure 21: Diagram Label Pins — LP Gas System
Mathematical and dimensional figures

![Figure 22: Flat-Oval Pipe Dimensions](image)

Connection diagrams

![Figure 23: Pressure-Control Air Connections](image)
Processes, relationships, and state machines

![Diagram of processes, relationships, and state machines](image)

**Figure 24:** SQL-Ledger Tax Overview

![Diagram of electrical system](image)

**Figure 25:** Electrical System Overview
Figure 26: Directory Structure

Figure 27: State-Machine Diagram
Conversions to vector line drawings

Figure 28: Load Cell Diagrams — Vector Conversions

Conversion from a photograph to a line drawing clarifies the important details, leaves open space for labels and pins, and is more easily reproduced in a black/white print.

Figure 29: Gas and Sensor Lines — Vector Conversion
Retracing a diagram from an old scan allows for improvements in clarity, such as improved labeling and the rerouting of pin arrows.

**Figure 30:** Double-Helical Gap-Width Diagram — Vector Conversion

**Figure 31:** Camping Trailer — Side View — Line Drawing
Figure 32: LP Tank Valve — Handle and Connection — Line Drawing
A technique known as "hob dipping" (feeding the hob past final depth at the finish) is similar in principle to crown hobbing. Shaving is often used to provide finely polished surfaces (as low as 6 \( \mu \)m) and can help minimize the limitations discussed above. Honing has been used to produce very fine finishes (as low as 0.1 \( \mu \)m). As shaving machines can also be adapted to honing most of the limitations discussed above still apply. Honing is a very "hot" area of gear research and is best studied by reading technical papers and manufacturer's literature.

**Table 4.9: Popular Tooth Forms**

<table>
<thead>
<tr>
<th>Tooth Form</th>
<th>Normal</th>
<th>Whole</th>
<th>Addendum</th>
<th>Dedendum</th>
<th>Circ. Pitch</th>
<th>Circ. Pitch / 2</th>
<th>Addendum</th>
<th>Dedendum</th>
<th>Whole</th>
<th>Depth</th>
<th>Fillet</th>
<th>Radius Normal</th>
<th>Pressure Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Shave</td>
<td>20</td>
<td>0.20</td>
<td>1.25</td>
<td>0.20</td>
<td>3.1416</td>
<td>1.5708</td>
<td>0.20</td>
<td>0.20</td>
<td>1.25</td>
<td>0.20</td>
<td>1.25</td>
<td>1.06</td>
<td>3.1416</td>
</tr>
<tr>
<td>Basic Rack</td>
<td>25</td>
<td>0.25</td>
<td>1.50</td>
<td>0.25</td>
<td>3.1416</td>
<td>1.5708</td>
<td>0.25</td>
<td>0.25</td>
<td>1.50</td>
<td>0.25</td>
<td>1.50</td>
<td>1.25</td>
<td>3.1416</td>
</tr>
<tr>
<td>Live Rack</td>
<td>30</td>
<td>0.30</td>
<td>1.75</td>
<td>0.30</td>
<td>3.1416</td>
<td>1.5708</td>
<td>0.30</td>
<td>0.30</td>
<td>1.75</td>
<td>0.30</td>
<td>1.75</td>
<td>1.50</td>
<td>3.1416</td>
</tr>
<tr>
<td>Full Fill</td>
<td>1.25</td>
<td>0.125</td>
<td>0.75</td>
<td>0.125</td>
<td>varies</td>
<td>3.1416</td>
<td>varies</td>
<td>varies</td>
<td>0.75</td>
<td>0.125</td>
<td>0.75</td>
<td>0.63</td>
<td>varies</td>
</tr>
<tr>
<td>Full Depth</td>
<td>1.25</td>
<td>0.125</td>
<td>0.75</td>
<td>0.125</td>
<td>3.1416</td>
<td>1.5708</td>
<td>0.75</td>
<td>0.75</td>
<td>0.75</td>
<td>0.125</td>
<td>0.75</td>
<td>0.63</td>
<td>3.1416</td>
</tr>
<tr>
<td>Pre-Grind</td>
<td>25</td>
<td>0.25</td>
<td>1.25</td>
<td>0.25</td>
<td>3.1416</td>
<td>1.5708</td>
<td>0.25</td>
<td>0.25</td>
<td>1.25</td>
<td>0.25</td>
<td>1.25</td>
<td>1.00</td>
<td>3.1416</td>
</tr>
<tr>
<td>Nick</td>
<td>1.75</td>
<td>0.175</td>
<td>0.85</td>
<td>0.175</td>
<td>3.1416</td>
<td>1.5708</td>
<td>0.175</td>
<td>0.175</td>
<td>0.85</td>
<td>0.175</td>
<td>0.85</td>
<td>0.63</td>
<td>3.1416</td>
</tr>
</tbody>
</table>

Notes:
1. Values listed are called "standard pitches".
2. Not all sizes should be used for new designs.

**Figure 5.8: Hob-Dipping Diagram — (Pre-Shave)**

Sharing cutters are often designed for a specific application, and "off the shelf" tooling availability may be limited. A technique known as "sub-dipping" (feeding the hob past finish depth at the ends of the cut) is sometimes used to minimize this problem (see Figure 5.8).

Honning

The honing process is similar to sharing except that the cutters are coated with an abrasive material. As sharing machines can be adapted to honing most of the limitations discussed above still apply. Honing has been mostly produced very finely polished surface finishes (as low as 0.1 \( \mu \)m) and to finish surface hardened parts that are not suitable for gear grinding. This is a very "hot" area of gear research and is best studied by reading technical papers and manufacturer's literature.

For more information, see Book & Monograph Design.
Slide Rule Guide

Thanks, it looks great! Very impressive conversion!

W.S.

THE SLIDE RULE UNIVERSE

An example of a document from 1956, scanned with optical character recognition, typeset with the \LaTeX\ document system, presented with scalable vector graphics (svg) format for display and print quality.


Scanned from the original document:

Ex: \[
\frac{2.02 \times 120 \times 0.0925}{1.15 \times 0.81} = 18 \div 8 \times 10^1 \approx 20
\]

SRO: It is not necessary to read any intermediate results. Perform as \(2.02 \div 1.15 \times 120 \div 0.81 \times 9.25\). Divide: Set HLN on D2-0-2. Bring C1-1-5 under HLN.

Multiply: Move HLN to C1-2-0. Divide: Bring C8-1-0 under HLN. Multiply: Move bin to C9-2-5. Read under HLN, D2-4-1.

ANS: 24.1

Figure 34: PDF Conversion — Slide Rule Guide — Before

Electronic format from the final document:

Ex:

\[
\frac{2.02 \times 120 \times 0.0925}{1.15 \times 0.81}
\]

AA:

\[
\frac{2 \times (1 \times 10^2) \times (9 \times 10^{-2})}{1 \times (8 \times 10^{-1})} = 18 \div 8 \times 10^1 \approx 20
\]

SRO: It is not necessary to read any intermediate results. Perform as \(2-0-2 \div 1-1-5 \times 120 \div 0.81 \times 9.2-5\).

1. Divide: Set HLN on D2-0-2. Bring C1-1-5 under HLN.
2. Multiply: Move HLN to C1-2-0.
3. Divide: Bring C8-1-0 under HLN.
5. Read under HLN, D2-4-1.

ANS: 24.1

Figure 35: PDF Conversion — Slide Rule Guide — After
Authors interested in self-publishing their work should consider the benefits of professional editing, document design, and typesetting. We provide **Book & Monograph Design**, **Technical Editing** and layout of **Technical Documents**, as well as traditional editing and document design for **Classical Documents**.

BD TECH CONCEPTS LLC primarily uses the **LaTeX** document preparation system, known for its high-quality typesetting, extreme stability over the decades, excellent programmability, and easy document maintenance. See **Document Formats**.

**Technical Documents**

Businesses and self-published authors greatly benefit from outsourcing document editing, design, and typesetting. Rather than wrestling with a word processor, have BD TECH CONCEPTS LLC organize and format your work for you, using an advanced programmable document-typesetting system.

See how **Technical Editing** can improve your book in general grammar and spelling, and structural organization and cross-referencing.

**Book & Monograph Design** has a technical book design, formatted for tablet use. A properly formatted **PDF** file has advantages over the **EPUB** format when complicated math and diagrams are involved.

**Classical Documents** has samples of a more general nature. Technical book samples are below.

**Book Design**

See **Book & Monograph Design** for an example of a technical book edit and redesign, including text scan-to-PDF conversion and vector-diagram conversions.
White Paper

See Sample load cells white paper for an example technical white paper.

Figure 9: Creep curve of a typical force transducer

Figure 10: Example creep/response curve of a shear-beam load cell

4.2 Creep and creep recovery
Creep: Load-cell creep, as shown in fig. 9, is the final settling of the load cell after force is applied.
Creep recovery: The similar final settling once force is removed.

The load cell outputs most of its response quickly, but may slowly settle a bit as the force is held for a long amount of time. [1]
Bartel and Yaniv [1] have done testing for load cell linearity, hysteresis, repeatability, temperature effects, and creep.
An example creep/recovery curve [1, fig. 3] for a shear-beam load cell is shown in fig. 10.

4.3 Other factors influencing the response curve
The output of a load cell can be further influenced by the following factors: [22, sec. 3.5]

Front Panel Illustration and Call-Outs

Sample: CNC Control Box Setup — PDF

Call-outs are identifiers used to specify the specific user-interface elements being discussed in the text. In this example, each call-out is used to point to a piece of information in the display, is used again in a small table of descriptions of each element, and yet again in the accompanying text.
**Additional Keys**

While in Idle Mode, the numeric keypad, the keys F2–F4, and the jog keys (↶) are inactive.

**Program Mode**

**Entering Program Mode**

Program Mode is used to set the “work-zero” positions of each drive to match a new part which is to be cut.

1. From Idle Mode, press and hold the key for four seconds.
2. The display changes to the programming display, shown here.

![Program Mode Display](image)

**Selecting the Drive**

1. Select a drive with F1.
2. The display changes to the next drive and shows that drive’s relative angle and absolute angle.

**Figure 38:** Front-Panel Illustration and Call-Outs
Diagram Call-Outs and Installation Sequence

Sample: Automatic Door Closer Installation Manual — PDF

Diagram call-outs ("pins") may refer to the same part in several views at the same time. As seen in the PDF document, these views are repeated in mirror-image to assist with left/right opening doors. Each installation is on its own set of pages, with the same instructions and callouts repeated again for each set. Repeating these instructions in mirror-image reduces confusion and helps to avoid improper installations.

Figure 2.3 — Adjustment and Connection — Top View

Figure 2.4 — Adjustment and Connection — Side View

1. Verify the location of the hinges at (G).
2. Place the fixed arm onto the closer at (A) such that the adjustable arm (C) will aim straight out from the wall when attached to the fixed arm at (D) and the small bracket at (B).
3. Attach the fixed arm onto the closer at (A) using the large locking washer and the large nut.
4. Adjust the length of the adjustable arm (C) so that it will attach to the fixed arm at (D) and the small bracket at (B).
5. Attach the adjustable arm to the bracket at (B) using a small locking washer and a small nut.
6. Attach the adjustable arm to the fixed arm at (D) using a small locking washer and a small nut.
7. Tighten the locknut at (E).
8. Attach the cap onto the stud at (F).

Figure 39: Connection Instructions — Automatic Door Closer
Operating Sequences and Inline Key/Display Icons

Sample: Fryer FC-1234 User's Manual — PDF

Printing the key icons directly inline in the text helps the user to quickly locate the corresponding key on the unit. Likewise, visually replicating the LED display in the text shows the user exactly what each message looks like.

Editing a Preset

To change a preset’s settings:

1. Hold a key for five seconds. The speaker beeps and the unit flashes the time for the selected preset.
2. Enter a new time. The display is solid while entering a new time. Press Select when finished entering the new time.
3. The unit begins flashing the temperature. Enter a new temperature and press Select to finish entering the new value.
4. The display now flashes the new temperature which you just entered. Press Select to accept this new temperature.
5. The unit begins flashing either or along with the auto-compensation indicator.
   (a) Press to toggle auto-compensation on/off.
   (b) Press Select when finished.
6. Finally, the unit flashes all three settings at once. Press Select to accept the values and return to idle.

Notes:

• The unit returns to the preset which was last used, not necessarily the one which you just edited.
• At any time, the Cancel key may be used to cancel editing and return to idle with no changes.
• Likewise, if no key presses are seen for 25 seconds, the unit returns to idle without any changes.
• No preset is actually changed unless the final key is pressed while all the new values are flashing at once.

Clearing the Counter

To reset the counter: After filtering or changing the oil, hold the Cancel key for ten seconds to reset the counter to zero.

Power Loss

When the unit loses power, food continues to cook in the vat of hot oil even though the timer is not counting down. For this reason, if the lid is still closed when power is restored to the unit, the cooking cycle in progress must be canceled. The unit will sound an alarm and the display will alternate between and . Open the lid and discard the food. The unit returns to idle. Depending on how long power was out, the unit may have to heat the oil for a while to return it to the ready temperature.
Problems and Mathematics

“Thanks, it looks great! Very impressive conversion!”

W.S.

THE SLIDE RULE UNIVERSE

Sample: “Slide Rule Guide” — PDF


Special typesetting is used to present example problems in an attractive format. A consistent structure is used to present each example math problem, how to mentally compute an approximate answer, then how to perform the operations necessary to arrive at the exact answer.

Figure 41: Problem Example and Mathematics
Page Layout and Table


Chapter XVI

TRIGONOMETRIC FUNCTIONS

XVI-A SCALES

The S scale for sines and cosines; the T scale for tangents (or cotangents) and the ST scale for the sine or tangent of small angles.

XVI-B READING THE SCALES

Angles (θ) measured in degrees, are indicated by the numbered marks. On many slide rules, the S and T scales have two angles associated with the numbered marks: θ (values of θ increase from left to right) and (90° – θ); values of (90° – θ) increase from right to left and are sometimes printed in red.

Ex: On the S scale, mark 70°20’ represents both θ = 20° and (90° – θ) = 70°.

Angles not numbered on the scale are positioned by counting the number of primary marks in the space between labeled angles.

Fractons of angles are located between primary marks and may be expressed either in tenths of degrees or minutes (60 min. = 1 deg.) depending upon the make of the slide rule.

<table>
<thead>
<tr>
<th>Number of marks</th>
<th>DEGREES</th>
<th>MINUTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of spaces</td>
<td>1 4 9 1</td>
<td>2 3 6</td>
</tr>
<tr>
<td>Value of space</td>
<td>0.5 0.2</td>
<td>0.1</td>
</tr>
<tr>
<td></td>
<td>30° 20°</td>
<td>10°</td>
</tr>
</tbody>
</table>

Figure 42: Instruction Manual — Examples and Table
To insure good work the spaceband box should be kept thoroughly clean. If the machine locks up properly, and the back knife andenter on the distributer-bardiagonally, and if the distributer-box is not set properly the same thing will occur.

The size of a pica em, as understood before Linotype's unit of measurement, was one-sixth of an inch, or .014. The length of molds is calculated on a basis of .014, or the pica em. This point system—adopted for convenience in measuring—is nearly identical with that of Didot, as adopted by the United States Typefounders' Association. Table 1: Point System

<table>
<thead>
<tr>
<th>Font</th>
<th>No. Points</th>
<th>Point</th>
<th>Em Space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ruby</td>
<td>5</td>
<td>.070</td>
<td></td>
</tr>
<tr>
<td>Nonpareil</td>
<td>6</td>
<td>.084</td>
<td></td>
</tr>
<tr>
<td>Agate</td>
<td>5⅓</td>
<td>.077</td>
<td></td>
</tr>
<tr>
<td>Bourgeois</td>
<td>9</td>
<td>.140</td>
<td></td>
</tr>
<tr>
<td>Long Primer</td>
<td>10</td>
<td>.154</td>
<td></td>
</tr>
<tr>
<td>Small Pica</td>
<td>11</td>
<td>.168</td>
<td></td>
</tr>
<tr>
<td>Pica</td>
<td>12</td>
<td>.166</td>
<td></td>
</tr>
</tbody>
</table>

In operation there is no vibration, and the machine may be safely placed in any building of ordinary strength. See Figures 27 and 28 (Figure 27) enough to allow two thin matrices to pass between points 2 and 3 (Figure 27). Figures 27 and 28 show the matrix measurements are made on the basis of .014 of an inch, or a pica em. The width of a point is calculated on a basis of .014, or a pica em. The thickness of a slug is calculated according to the point system. Each point requires one-half horsepower to drive it, but the allowance of one-half horsepower is recommended to insure steadiness of motion.

The proper adjustment and care of the Linotype with illustrations. Price, $3.00

The proper adjustment and care of the Linotype with illustrations. Price, $3.00

Two Machines—No. 1

Figure 25: Linotype Manual

Figure 27: Distributor Box — Rails

Figure 28: Distributor Box — Rails

Figure 28

In the public domain.

Figure 43: Book Design — Linotype Manual, by F. H. McCall
Classical Documents

Businesses and self-published authors greatly benefit from outsourcing document editing, design, and typesetting. Rather than wrestling with a word processor, have BD TECH CONCEPTS LLC organize and format your work for you, using an advanced programmable document-typesetting system.

See how Technical Editing can improve your book in general grammar and spelling, and structural organization and cross-referencing.

Book & Monograph Design has a technical book design, formatted for tablet use. A properly formatted PDF file has advantages over the EPUB format when complicated math and diagrams are involved.

Technical Documents has samples of a more technical nature. Traditional book samples are below.

The following sample documents were sourced from HTML format and processed in multiple stages into the LaTeX document system for layout of the final printed pages. Processing included an automatic document conversion, replacement of left-over artifacts of the conversion process, and extensive custom-designed algorithmically-controlled processing to convert multi-level HTML index reference links to proper page references for the final printed index.
*McGuffey's Fifth Eclectic Reader*, by William Holmes McGuffey

The full book: McGuffey's Fifth Eclectic Reader — 6 M PDF

A school child's reader from the 1800s.

Being a collection of works, a \LaTeX{} macro was developed to automatically generate a chapter heading with title, an optional lead-in with the author's name and an optional suffix, and birth/death years if given, plus a table-of-contents entry with author, and an index entry sorted by last name. Likewise for illustrations. (See \LaTeX{} tocdata package.)

Also demonstrated are the advanced typesetting of verse, dialog, and essays, special sections for remarks, exceptions, and examples, and the use of diacritics for phonetic symbols.

![Figure 44: From *McGuffey's Fifth Eclectic Reader* by William Holmes McGuffey](image)

In the public domain.
**Great Astronomers, by Sir Robert S. Ball**

The full book: [Great Astronomers — 10 M PDF](#)

An interesting and highly-readable survey of historic astronomers and their work.

Typeset for a 6 × 9” double-sided page. 270 pages, including portraits, photos, and several diagrams.

---

*Figure 45: From Great Astronomers, by Sir Robert S. Ball*
Rob Roy, by Sir Walter Scott

The full book: Rob Roy — 3 M PDF

An historical novel.

Typeset in the style of the original, for double-sided letter paper. 500+ pages, including historical notes and research.

Updated 2016-03-07: Now includes a glossary and additional edits.

In the public domain.

**Figure 46:** From *Rob Roy*, by Sir Walter Scott
Flatland, by Edwin A. Abbott

CHAPTER 1
OF THE NATURE OF FLATLAND

I call our world Flatland, not because we call it so, but to make its nature clearer to you, my happy readers, who are privileged to live in Space.

Imagine a vast sheet of paper on which straight lines, Triangles, Squares, Pentagons, Hexagons, and other figures, instead of remaining fixed in their places, move freely about, on or in the paper, but invisible to each other, they of different lengths, and without the power of rising above or sinking below it, very much like shadows — only hard and with luminous edges — and you will then have a pretty correct notion of my country and countrymen. Also, a few years ago, I should have thought my universe was round, but now my mind has been opened to higher views of things.

In such a country, you will perceive at once that it is impossible that there should be anything of what you call a "solid" kind; but I dare say you will suppose that we could at least distinguish by sight the Triangles, Squares, and other figures, moving about as I have described them. On the contrary, we could see nothing of the kind, not at least so as to distinguish one figure from another. Nothing was visible, nor could be visible, to us, except Straight Lines; and the necessity of this I will speedily demonstrate.

Place a penny on the middle of one of your tables in Space; and leaning over it, look down upon it. It will appear a circle.

But now, drawing back to the edge of the table, gradually lower your eye till it is touching, or nearly so, the edge of the table at the point where the penny is, and you will find the penny becoming more and more oval to your view, and at last when you have placed your eye exactly on the edge of the table it will appear a straight line. The same thing would happen if you were to treat in the same way a Triangle, or a Square, or any other figure cut out of pasteboard. As soon as you look at it with your eye on the edge of the table, you will find this figure appearing more and more oval to your view, and at last when you have placed your eye exactly on the edge of the table, it will appear a straight line.

In the public domain.

Figure 47: From Flatland, by Edwin A. Abbott
A History of Art for Beginners and Students

Chapter 2

MEIEVAL

 Mediæval Painting. From the Beginning of the Christian Era to the Renaissance.

The Middle Ages, or period between the Roman Empire and the Renaissance, which was the revival of learning in Italy, was a period of great artistic achievement. The paintings of this period were done by such famous artists as Giotto, Cimabue, and Duccio. The paintings were done on walls and ceilings of churches, and were often very large. The paintings were done in tempera on canvas, and were very colorful. The paintings were done in the Romanesque style, which was a style of painting that was developed in Italy. The Romanesque style was characterized by the use of bright colors, and by the use of linear perspective. The paintings were done on walls and ceilings of churches, and were often very large. The paintings were done in tempera on canvas, and were very colorful. The paintings were done in the Romanesque style, which was a style of painting that was developed in Italy. The Romanesque style was characterized by the use of bright colors, and by the use of linear perspective. The paintings were done on walls and ceilings of churches, and were often very large. The paintings were done in tempera on canvas, and were very colorful. The paintings were done in the Romanesque style, which was a style of painting that was developed in Italy. The Romanesque style was characterized by the use of bright colors, and by the use of linear perspective.

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Document Formats

**\LaTeX Document-Typesetting System**  See [\LaTeX to HTML Converter — the lwarp package](#) for information about a new native \LaTeX-HTML5 generation package.

Advantages of \LaTeX:

- Publication-quality document-creation and typesetting system.
- Easy-to-use commands for common actions.
- Full support for cross-referencing, indexing, bibliography, book-sized documents, and technical information.
- Excellent typesetting of mathematics.
- Extensive documentation and community support.
- Heavily used in the fields of science and engineering.
- Often used “behind the scenes” to generated well-typeset output for other programs.
- Stable document format — The first widely-used version was \LaTeX 2.09, released in 1985. The next, and current, version is \LaTeX 2ε, released in 1994. Work continues on \LaTeX 3, designed to be backwards-compatible, much of which is available for use in \LaTeX 2ε right now.
- Updated with thousands of packages, covering every area of technical documentation.
- Programming language — \LaTeX is a token-based macro-expansion virtual machine, with an emphasis on document design and typesetting. Lua\LaTeX has been also been developed, allowing user-programmable Lua code, integrated into \LaTeX internals.
- Plain-text document source:
  - Document contents and structuring commands may be manipulated via regular-expression search/replace. This is especially powerful when working on document format conversions.
  - Easy version control and source management.
  - Crash-proof safety. No document corruption or losses.
  - Age-resistant accessibility. No frequently-changed proprietary format breaking your documents.
  - Explicit and visible control tags. No hidden behaviors changing things behind the scene.
  - \LaTeX code is easily produced by external programming, including simple shell scripts or awk code.
- Available on every major platform and operating system.
\[
\int z^n \arctan z \, dz = \frac{z^{n+1}}{n+1} \arctan z - \frac{1}{n+1} \int \frac{z^{n+1}}{1+z^2} \, dz \quad (n \neq -1)
\]

\[
i^n \operatorname{erfc} z \sim \frac{2}{\sqrt{\pi}} \frac{e^{-z^2}}{(2z)^{n+1}} \sum_{m=0}^{\infty} \frac{(-1)^m (2m+n)!}{n! \, m! \, (2z)^{2m}} \quad (z \to \infty, |\arg z| < \frac{3\pi}{4})
\]

- Website mathematics are typeset by \LaTeX, then converted to SVG format for website display, or are displayed via MathJax. HTML ALT tags carry the \LaTeX source for the math expression. (Copy/paste the above expressions into a text editor to see the \LaTeX source.)
- SVG format output scales and prints beautifully for everything from hand-held display to full-page PDF. (Change the font or window size in your browser to watch the formulas scale smoothly, and print this website to see full-resolution mathematics on the printout, subject to browser support.)
- Avoids the typesetting limitations of MathML format.
- SVG format has wider e-reader and browser support than MathML.
- MathJax display is optional, allowing widespread browser support so long as network access is available, or where MathJax is installed locally.

**OpenOffice / LibreOffice Suite**

- Open Document Format (ODF) has been adopted by numerous world-wide government agencies.
- May be converted to DOC format.

**Output Formats**

- **PDF** formatted for full-page documents — Extra margin for binding. Full table of contents, index, cross-references, diagrams, mathematics.
- **PDF** formatted for tablet or hand-held — Reduced page size, no paper margins, increased font size. Preserves table of contents, index, cross-references, diagrams, and mathematics.
- **HTML5** with SVG diagrams and mathematics, or MathJax mathematics.
- **ODT** and related — Open Document word-processing text and related formats, for stability and portability.
Projects

BD TECH CONCEPTS LLC is currently or recently has been involved in the following projects:

**\LaTeX\, lwarp package — Native \LaTeX\, to HTML5 generation:** Using the \LaTeX\, lwarp package, academic and technical authors may produce the best possible \LaTeX\, documents with full control over exact formatting and typesetting, while still easily generating a web version from the same source. Native \LaTeX\, is used all the way to the final generation of HTML5 tags, allowing the author to use a deeper set of packages and custom macros compared to other methods, along with all pdf1atex graphics types. Math is converted to svg images for smooth display scaling, accompanied by its \LaTeX\, source stored in the ALT tag, allowing copy/paste of \LaTeX\, math into other applications. The MathJax tools may also be used to display math. See \LaTeX\, to HTML Converter — the lwarp package.

**\LaTeX\, keyfloat package:** Provides a key/value interface for \LaTeX\, floats, subfloats, and rows of floats. See \LaTeX\, keyfloat package.

**\LaTeX\, tocdata package:** Adds information such as an author or artist to each line of a Table of Contents or List of Figures entry, as well as section headings and figures. Support is provided for the titletoc and tocloft packages. See \LaTeX\, tocdata package.

**\LaTeX\, dtxdescribe package:** For \LaTeX\, package authors. Adds \texttt{\DescribeCounter}, \texttt{\DescribeBoolean}, etc. for describing additional object types, with enhanced index options. Also provides environments for generating examples, displaying source code, displaying user interfaces, and sidebars. Also provides formatting for \LaTeX\, object names. See \LaTeX\, dtxdescribe package.

**\LaTeX\, docsurvey package:** A survey of documentation for \LaTeX\, programmers. See Publications.

**Native \LaTeX\, to AsciiDoc generation:** A previous iteration of the lwarp package used native \LaTeX\, macros to generate AsciiDoc markup, which was then converted to DocBook or xhtml output. See \LaTeX\, to AsciiDoc / DocBook / XHTML Conversion for more details.

**Inconsolata LGC Markup — A font for editing document-markup languages:** A modified version of the popular Inconsolata font, previously enhanced by others to add Greek and Cyrillic, plus bold and italic variants (useful for syntax highlighting). Slightly enhanced to more clearly distinguish between glyphs commonly used in the markup of text documents. See Inconsolata LGC Markup — Font for details, or to download the font.

**DejaVu Markup — A font for editing document-markup languages:** A modified version of the DejaVu San Mono font. Slightly enhanced to more clearly distinguish between glyphs commonly used in the markup of text documents. See DejaVu Markup — Font for details, or to download the font.

Also see Publications.
\LaTeX{} to HTML Converter — the \lwarp{} package

\lwarp{}

\LaTeX{} HTML5

The \lwarp{} package converts \LaTeX{} to HTML by using \LaTeX{} to process the user’s document and directly generate HTML tags. External utility programs are only used for the final conversion of text and images. Math may be represented by SVG images or MathJax. Hundreds of \LaTeX{} packages are supported.

Documents may be produced by DVI or PDF \LaTeX{}, Lua\LaTeX{}, Xe\LaTeX{}; by several CJK engines, classes, and packages; or by customized systems such as perl\TeX{} and python\TeX{}. A texlua script automates compilation, index, glossary, and batch image processing, and also supports latexmk. Configuration is semi-automatic at the first manual compile. Support files are self-generated. Print and HTML versions of each document may coexist.

Assistance is provided for HTML import into EPUB conversion software and word processors.

Requirements include the commonly-available Poppler utilities (included with MiKTeX) and PERL. Detailed installation instructions are included for each of the major operating systems and TEX distributions.

A quick-start tutorial is provided, as well as extensive documentation for special cases, a general index, and a troubleshooting index. Automatic testing of package load order and image generation offers useful advice for resolving errors.

SVG math and many other generated images include \LaTeX{} expressions in the alt tags. MathJax may be used with advanced equation numbering under the direct control of \lwarp{}.

Complicated tables are supported, which copy/paste well into LibreOffice Writer.

Supported classes and packages include memoir and koma-script, cleveref, caption, mdframed, siunitx, and many popular packages for tabulars, floats, graphics, theorems, the title page, bibliography, indexing, footnotes, and editorial work.

\TeX{} is a self-modifying tokenized macro-expansion language. Since \lwarp{} is written directly in \LaTeX{}, it is able to interpret the document’s meaning at a deeper level than external conversions which merely approximate \TeX{}. HTML5 and CSS3 are leveraged to provide advanced features such as booktabs trim, multicolumns, side-by-side minipages, and JavaScript-free navigation.

\lwarp{} technology white paper

For an introduction to the technology used by the \lwarp{} package to convert HTML to \LaTeX{}, please see the publication *Producing HTML directly from \LaTeX{}: the \lwarp{} package*.

Latest News

v0.78: Fixed support files, graphics alt tags, babel-french hyperlinks, media9, media15, and multimedia. Added accessibility.

v0.77: Updated booktabs, chemformula.

v0.76: Updated MathJax, xr, xr-hyper, acro. Verified to work as-is with xcite. Improved documentation regarding multiple projects in the same directory.

v0.75: Fixes for \normalcolor, minipage \linewidth. Fixes for keyfloat and wrapfig.
**v0.74:** Added to tutorial. Improved support for `html` alt. text. Improved svg math. Improved lyluatex. Tested to work as-is with mathspec, unicode-math.

**v0.73:** Fixed `\include`. Improved memoir, koma-script, caption, datatool, threeparttable, `xy`, fancyvrb. Updated intopdf, tocdata, quotchap, versionotes, backnaur, musicography. Added stackengine, lyluatex (music scores).

**v0.72:** Fixed `\multicolumn`, `xr`, `xr-hyper`, soulutf8. Updated boxedminipage2e, zhlineskip. Added fontaxes, slantsc, tabfigures. Added `nfssext-cfr`, thus supporting cfr-lm and several other font packages. Added backnaur, hypbmsec, minibox, pdfcrypt, shapepar.

**v0.71:** Added support for `tabular` *"* columns. Updated chemfig, endfloat, textpos. Added media9, movie15, multimedia.

**v0.70:** Improved error handling. Fixes for \makebox, `\parbox`. MathJax updated, allows custom scripts, works with mhchem. textcomp, xunicode: Fix for `\textinterrobang`. Updated the changes package. Added autonum, changelayout, inputtrc, mathtools, metalogo.

**v0.69:** Improved handling for graphics, multirow. Fixes for \makebox, `\framebox`, minipage, array, longtable, tabularx/tabulary, supertabular/xtab. Update and improved formatting for keyfloat. Added ctable, edlist, eqparbox, ftcap, listliketab, minitoc, tocdata, topcapt.

**v0.68:** Improved error detection for image generation and `longtables`. Fixed threeparttable, hyperref, morefloats, listings. Added bigfoot, fnpara, footnotebackref, manyfoot, tablefootnote, threeparttablex. Added layouts, niceframe, perpage, showtags.

**v0.67:** Improved filename generation for symbols in section names. Added academicons, bbding, dingbat, eurysym, fontawesome, fontawesome5, marvosym, pifont, typicons. Added changes, easyReview, fitbox, foreign, gloss, karnaugh-map, multicap, nomencl, notes, struktex, umoline, xfakebold. Tested to work as-is with askmaps, curves, euro, karnaughmap, tikz-karnaugh.

**v0.66:** Added options to set image directory and prefix. Improved support for multiple projects in the same directory. Added support for `xr` and `xr-hyper`. Improved filename generation when special characters or macros are used in section names. Added a user-adjustable limit to the filename length. Fixed floats, indexing, minipages. Improved `html` output formatting, css for definition lists and table notes. Fixed, improved, or updated caption, subcaption, multicol, multicollrue, tocbasic, acronym, kotexutf, extramarks, fancyhdr. Added ar, ed, indentfirst, nameauth, truncate, and verified works as-is with changelog. Prevented the use of several obsolete packages.

**v0.65:** Added numerous Japanese classes and packages. Improved page layout. Added an `\includegraphics` `alt` tag option. Added an error if detects a duplicate `html` file name. Fixes for `tabular*`. Improved `html` validation for `\quad`, `\enskip`, figure captions. Added support for `fontspec` `\textsi` and `\sisshape`. Added multicols `\docolaction`. Added embraces, footnoterange, multicollrule, versionotes.

**v0.64:** Japanese: Added `utarticle` and related classes, improved `ujarticle` and related classes. Chinese: Fix for `biblatex` with CTEx. Koma-Script: Fixes for `scrlayer`, `scrlayer-scpage`, added `scpage2`. Updated addlines. Added `bsheaders`, `gmeometric`, `margin`, `mpage`, `scpage2`.


**v0.62:** Added option for `html` page titles to show section name before/after overall website name. Updated MiKTeX docs. Updated asymptote docs. Added `CTeX` and `xeCJK`. Fixed or updated `algorithm2e`, `chemfig`, `register`, `nicefrac`, `units`, `xfrac`, `textcomp`, `unicode`, `ulem`. Added `bitpattern`, `pdfcomment`, `pdfmarginpar`, `tram`, `unitsdef`, `xchangepage`, `xechangebar`, `Added musicography`, `octave`, `semantic-markup`. Added `2in1`, `flippdf`, `notespages`, `rviewport`, `twoup`.

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**v0.61:** Supports custom compilation commands, such as for \verbatim, \pygments, etc. Fixed paragraph tags in a tabular, captions for supertabular and xtab, \dvi \eps images, newfloat lists, css for footnotes. Added epsfig, psfrag, psfragx, psfollow, and a dozen other miscellaneous packages. Documentation and indexing improvements.

**v0.60:** Fixed longtable package slowdown and memory management with very long tables. Fixed listings package \html{} entity, and for use inside a \list{} environment. Fixed diagbox package \html{} paragraph tags. Added 2\up, twouip-gen, booklet. Added \bophook, draftfigure, fullminipage, grid-system, layaureo. Added leading, widows-and-orphans. Added fancytabs, thumb, thumbs.

**v0.59:** Improved error checking for \lwarpmk. Added support for \dvi latex. Added \lwarpmk \epstopdf to convert large numbers of \eps images. Fix for Mathjax chapter numbers. Added MathJax support for nicefrac, units. Added asymptote, pdfticks, psticks, pst-eps. Added breqn, Slunits. Added bxpapersize, canoniclayout, draftcopy, fnbreak, nccfancyhdr. Added accsupp, axessibility. Added unicode. Improved and now supports epstopdf. Tested to work as-is: eepic, sepfootnotes.

**v0.58:** Extensive improvements for indexing and glossaries. Added support for \makeindex. (Previously \xindy only.) Added indexing packages: \imakeidx, index, \repeatindex, splitidx. Added improved automation for \lwarpmk generation of indexing and glossaries. Added \pdfdoc-inclusion packages attachfile, attachfile2, intopdf, pdfpages, pdfx. Added package cases. Tested to work as-is with hvindex, notes2bib.

**v0.57:** Adds support for equation footnotes with MathJax. Adds \lateximage alt tag localization. Fixes for \lateximages, \href, \urhref, \rule, \boxframe, marginnote, ellipsis, breakurl. Adds support for float and rotfloat styles ruled and boxed. Adds packages \algorithm2e, \register, \ltabularx, \xellipsis, \trimclip, errata, \vowel, \xipiano. Verified to work as-is with packages gauss, phonrule, piano, Slunits, tikzcodeblocks.

**v0.56:** Added \lwarpmk \pdftosvg to convert user images to \svg. Added support for -shell-escape. Added support for array \w and \W columns, double \hlines and rules, \arydshln dashed rules. Improved \multicolumn parameter handling. Fixed \thinspace, paralist compact environments. Added \parnotes, quoting, \lua-checkhyphen, \tocenter, \underscore. Verified works as-is with babelbib, \bibunits, bodegraph, fast-diagram, \nicematrix, \altercommand.

**v0.55:** Fixes for file links, \EPUB conversion, float optional argument regression, \\phantomsection, overfull boxes in \lateximages. \QED symbol in a \lateximage, \centering etc. with koma-script. Adds ctldbg.

**v0.54:** Improved \lwarpmk error checking and messages. Added documentation regarding \bibx, \polyglossia, macros in section names. Added options for \xindy and \pdfx \pdflatex. \Figures and tables now honor \centering, etc. \Fixes for \tikz, \raggedtext, \hyperref, \glossaries, \textcomp, \latex \verse environment. Minor update for \memoir. Added \inputenc, \bibunits, \chngpage, \fastskip, \gridset. Prevents packages ae, \aecompl, \t1enc, \wasysym.

**v0.53:** Added a warning about corrupted images due to the need to recompile the document one more time. Added the \lwarpmk \cleanimages command.

**v0.52:** Fixes for memory overflow while generating numerous images, \equation$^*$ with \split, \tabbing inside a \lateximage, MathJax script. Adds \svg math scaling, global MathJax custom functions. Fixes for footnote numbering, paragraph tags, \kill in a \lateximage, problems when not utf8 encoding, \\textxorp\pdfstring in a section name. Adds verbatim footnotes with \fancybox, \fancyvrb. Fixes for special characters with \hyperref, \url. Updates for new versions of \graphicx, \endfloat.

**v0.51:** Improved \svg math, MathJax, tikz, \fancybox, and \textcomp. Various additional fixes. Added \mhchem, \chemfig, \chemformula, \chemmacros, \chemnum, \chemgreek, \epstopdf-base, \grid, \ltgrid.

**v0.50:** \SVG math now is converted using multiple \cpu processors/cores. Inline \svg math images are hashed and reused when identical. Improved \svg display math, \siunits units, \verbatim and \textcomp alignment. Additional fixes for \svg math, \authblk, \ntheorem. Added \xy, \epstopdf, \diagbox, \pbox, \bytefield, \axodraw2, \phfqt, \schemata, \dbfloatfix, \nonfloat, \morefloats.
v0.49: Added xcolor \rowcolors. Added vwcol, vertbars, hyphenat, lineno, fnlineno, figsize, hypdestopt, pagegrid, pdfrender, luacolor, resizegather. Several bug fixes.

v0.48: Updated compatibility for cleveref v0.21. Improved svg math, siunitx. Numerous minor fixes. Added colortrbl, chapterbib, acro, acronym, hyphenat, hypcap, stfloats, vmargin, fancyheadings, fancyref.

v0.47: Improves svg math baseline and sizing. Fixes for svg math in captions, subcaptions, and \nameref. Adds packages endheads, multitoc, sectionbreak, blowup, xurl.

v0.46: Fix for spaces in \usepackage. Additional improvements in svg math. Allows MathJax inside verse.

v0.45: Adds memoir. Adds cite, natbib, backref. Also works as-is with biblatex. Fixes bibliography italic names. Adds subfigure, prettyref, hanging, midpage, flafter, fltrace, changebar, endfloat, continue, fwlw, turnthenpage, footnpag, pagesel, textfit, titref. Fixes for underscores in labels, empty lines between tabular rows, svg math in minipages and lists and subfig.

v0.44: Added Koma-script classes and packages. Completed todonotes and luatodonotes. Added todo, easy-todo, fixmetodonotes, fixme, soulutf8, soulpos, cancel, section, fancyref, iffoddpage, preview, atbegshi, watermark, hang, \texttable. Improved algorithmicx, tocloft, HTML title and author options. Added list and trivlist environments. Fix for \multicolumn alignment for word processor conversion. Fix for MathJax when combined with images.

v0.43: Added FootnoteDepth for printing pending footnotes. Fixed for tabular column specifications, \multicolumn specifications, \bottomrule. Fixed for math \textit*, svg math in a section name, references in svg math. Made several macros robust for hyperref. Added todonotes and luatodonotes (but only disabled for now), and breakurl.

v0.42: Greatly-improved copy/paste into the LibreOffice word processor. Fix for text copy/paste of AMS Math environment numbers and names. Improved \ensuremath. Adding tabbing environment, overpic package. Improved textcomp and realscripts.

v0.41: Added tabular vertical rules, booktabs margin and trim.

v0.40: Improved \graphicspath, grffile. Improved \LaTeX and textcomp symbols. Fixes for bigdelim with improved HTML output, additional objects inside a lateximage, xltextra with X\LaTeX, tocibind, \multicolumnrow with older versions of xparse and multirow, \underline. Added support for adjmulticol, cuted, midfloat, pfnote, fnpos, dblfnote, stabular, tabsl, sectsty, anochap, quotchap.

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Sample Output

This website:

- Check the HTML code of these web pages for examples of the \lwr adaptation generator’s output.
- Download a 7 MB PDF print version of this website, to compare with the online HTML version.

Technical book conversion:

Print PDF: Introduction to Gear Design — Print — PDF
Tablet PDF: Introduction to Gear Design — Tablet — PDF
HTML version: Introduction to Gear Design — Website — HTML

Sample camping trailer manual:

PDF print version: Camping Trailer Manual — PDF
HTML version: Camping Trailer Manual — HTML
Download

Download the lwarp package from the lwarp page on CTAN — the Comprehensive \TeX\ Archive Network, or use your \TeX\ distribution’s update tools.

The lwarp v0.78 manual is also available here.

Supported \LaTeX\ Packages  Table 1 lists some of the various \LaTeX\ features which may be used. Hundreds of packages have been adapted for lwarp, and many more work without modification.

Package names are colored according to their support level:

\begin{itemize}
\item \textcolor{red}{name}: Supported as-is.
\item \textcolor{blue}{name}: Modified to work with HTML output, and also as print output in \texttt{svg} math or \texttt{lateximage} environments.
\item \textcolor{green}{name}: Emulated for HTML output.
\item \textcolor{brown}{name}: Ignored for HTML output, but provides source-level compatibility.
\end{itemize}

\begin{table}[h]
\centering
\begin{tabular}{ l | l }
\hline
\textbf{Category} & \textbf{Status and supported features} \\
\hline
Engines: & \texttt{dvi} \LaTeX, \texttt{pdfLaTeX}, \texttt{XeLaTeX}, \texttt{LuaLaTeX}, \texttt{upLaTeX} \\
Compiling: & \texttt{latexmk, perltex, pythontex, make} etc. \\
Classes: & \texttt{article, book, report, scartcl, scrbook, sccrept, memoir, CJK-related as listed below.} \\
Koma-script: & \texttt{scrextend, scrhack, scrlayer}. Others as listed below. \\
Memoir: & \texttt{memhfixc} \\
Languages: & \texttt{babel, polyglossia, cjkpunct, xeCJK}.
\texttt{Chinese}: & \texttt{CTeX, ctex, upzhkinsoku, xpinyin, zhlineskip, zhspacing}. \\
\texttt{Japanese}: & \texttt{upLaTeX, LuaLaTeX-ja, gentombow, lltex, plarray, plarydshln, plautopatch, plex, plexarray, plexarydshln, plexcolorbtl, plexdelarray, pxatbegshi, px-everyshi, pxftnright, pxgentombow, pxjahyper, pxpdfpages, pxpgfrcs, pxpgfmark, tascmac, xjatype. bxjsarticle and related, ltjsarticle and related, luatexja, luatexja-fontspec, ujarticle and related, utarticle and related.} \\
\texttt{Korean}: & \texttt{kotex, luatexko, xetexko.} \\
Page layout: & \texttt{2in1, 2up, a4, a4wide, a5comb, addlines, anysize, atbegshi, blowup, booklet, bophook, bounddvi, bxpapersize, canoniclayout, changelayout, changepage, chngpage, clrdblpg, continue, draftcopy, draftfigure, draftwatermark, ebook, everyshi, fancyhdr, fancytabs, flippdf, fullminipage, fullpage, fwlw, geometry, gmeometric, grid, grid-system, gridset, layaureo, layout, layouts, leading, ltxgrid, nccfancyhdr, notesspaces, nowidow, pagegrid, pagesel, pdfcrypt, pdfprivacy, preview, ragged2e, rmpage, scrlayer-scrpage, scrpage2, setspace, textarea, threadcol, thumb, thumbs, titlesp, toccenter, turnthepage, twoup, typearea, underlin, vmargin, watermark, widows-and-orphans, zwpagelayout.} \\
\hline
\end{tabular}
\caption{\LaTeX\ lwarp package — Supported features}
\end{table}
<table>
<thead>
<tr>
<th>Category</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sectioning:</td>
<td>Adds FileDepth for splitting the HTML output. Files may be numbered</td>
</tr>
<tr>
<td></td>
<td>sequentially or named according to section name. Common short words</td>
</tr>
<tr>
<td></td>
<td>and punctuation are removed from the filenames.</td>
</tr>
<tr>
<td></td>
<td>anonchap, bheaders, fncychap, hypbsec, indentfirst, quotchap, section,</td>
</tr>
<tr>
<td></td>
<td>sectionbreak, secdot, sectsty, titlesec.</td>
</tr>
<tr>
<td>Table of contents, figures,</td>
<td>Supported, with hyperlinks. minitoc, multitoc, shorttoc, titletoc,</td>
</tr>
<tr>
<td>tables:</td>
<td>tocbasic, tocloft, tocstyle.</td>
</tr>
<tr>
<td>Title page:</td>
<td>\maketitle, titlepage, authblk, titling.</td>
</tr>
<tr>
<td>Front &amp; back matter:</td>
<td>abstract, appendix</td>
</tr>
<tr>
<td>Indexing:</td>
<td>makeindex and xindy are supported, with hyperlinks.</td>
</tr>
<tr>
<td></td>
<td>hvindex, idlayout, imakeidx, index, makeidx, repeatindex, splitidx.</td>
</tr>
<tr>
<td>Glossary:</td>
<td>gloss, glossaries and xindy, nomencl.</td>
</tr>
<tr>
<td>Bibliography:</td>
<td>babelbib, backref, biblatex, bibunits, chapterbib, cite, hypernat,</td>
</tr>
<tr>
<td></td>
<td>natbib, notes2bib, showtags.</td>
</tr>
<tr>
<td>Cross-references:</td>
<td>bookmark, breakurl, cleveref, fancyref, hyphdestopt, hyperref,</td>
</tr>
<tr>
<td></td>
<td>perpage, prettypref, titlerref, url, varioref, xr, xr-hyper, xurl.</td>
</tr>
<tr>
<td>Margin notes:</td>
<td>marginal, marginfit, marginfix, scrlayer-notecolumn, versonotes.</td>
</tr>
<tr>
<td>Footnotes:</td>
<td>Adds Footnotedepth to print footnotes at section breaks. bigfoot,</td>
</tr>
<tr>
<td></td>
<td>dblfnote, endheads, endnotes, fixfoot, fnbreak, fnpara, fnpos,</td>
</tr>
<tr>
<td></td>
<td>footmisc, footnote, footnotebackref, footnoterange, footpag, manyfoot,</td>
</tr>
<tr>
<td></td>
<td>marginnote, ncc-footots, pagernote, parnotes, pfnote, seffootnotes,</td>
</tr>
<tr>
<td></td>
<td>sidenotes, tablefootnote.</td>
</tr>
<tr>
<td>Math:</td>
<td>Converted to svg images with HTML &gt; tags containing the \LaTeX</td>
</tr>
<tr>
<td></td>
<td>source for the math expression. \LaTeX{} supported as an alternative.</td>
</tr>
<tr>
<td></td>
<td>amsmath: \AMS environments are supported. User-defined macros are</td>
</tr>
<tr>
<td></td>
<td>available during conversion, due to native \LaTeX{} processing.</td>
</tr>
<tr>
<td>Theorems:</td>
<td>Native \LaTeX{} theorems, amsthm, ntheorem, theorem.</td>
</tr>
<tr>
<td>Additional math:</td>
<td>Math fonts via svg images, amscd, autonum, backnaur, bm, braket, breqn,</td>
</tr>
<tr>
<td></td>
<td>cases, delarray, guass, jkmath, mathspec, mathtools, nicematrix, pb-diagram,</td>
</tr>
<tr>
<td></td>
<td>resizegather, unicode-math, xfakebold, xy. Many others work as-is.</td>
</tr>
<tr>
<td>Display math with</td>
<td>Complicated math objects in display math, such as tikz-cd, etc.</td>
</tr>
<tr>
<td>\displaymathother:</td>
<td></td>
</tr>
<tr>
<td>Units and fractions:</td>
<td>nicefrac, Slunits, siunitx, units, unitsdef, xfrac.</td>
</tr>
<tr>
<td>Floats:</td>
<td>Appears where declared. captof, caption, cutwin, dbifloatfix, endfloat,</td>
</tr>
<tr>
<td></td>
<td>fix2col, flafter, float, floatflt, floatrow, fitrace, ftcap, hyphcap,</td>
</tr>
<tr>
<td></td>
<td>keyfloat, morefloats, multicap, newfloat, nonfloat, placeins, rotfloat,</td>
</tr>
<tr>
<td></td>
<td>stfloats, subcaption, subfig, subfigure, subfloat, topcap, trivfloat,</td>
</tr>
<tr>
<td></td>
<td>wrapfig.</td>
</tr>
<tr>
<td>Tabular:</td>
<td>tabular environment, array, arydshln, bigdelim, booktabs, colortbl,</td>
</tr>
<tr>
<td></td>
<td>ctable, diagbox, longtable, ltable, ltxtable, multirow, supertabular,</td>
</tr>
<tr>
<td></td>
<td>tabularx, tabulary, threeparttable, threeparttablex, xltabular, xtab.</td>
</tr>
<tr>
<td>Category</td>
<td>Status</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Graphics:</td>
<td><strong>graphics</strong> and <strong>graphicx</strong>.  <code>\includegraphics</code> supports width, height, origin, angle, and scale tags, and adds class. References to pdf files are changed to svg, other image types are accepted as well.  <code>\rotatebox</code> and <code>\scalebox</code> are supported as well as <code>\Hbox</code> can handle. rotating is emulated but all objects are unrotated. picture, tikz, and xy are converted to an svg image.  asymptote, curves, datatool, eepic, epsfig, epstopdf, ffigraph, fitbox, grffile, media9, movie15, multimedia, overpic, psfrag, psfragx, pst-eps, pstool, pstricks, rviewplot.</td>
</tr>
<tr>
<td>xcolor:</td>
<td><strong>Full package color names</strong>, any color models, and mixing.  <code>\textcolor{[fcolorbox]}</code>. Enhanced for html compatibility.</td>
</tr>
<tr>
<td>Lists:</td>
<td>Standard LaTeX environments, enumerate, enumitem, eqlist, hang, listliketab, paralist.</td>
</tr>
<tr>
<td>Environments:</td>
<td>Standard LaTeX environments.</td>
</tr>
<tr>
<td>minipage, \parbox:</td>
<td>Some html-imposed limitations. Nested minipages are supported. eqparbox, minipage, pbox, shapepar.</td>
</tr>
<tr>
<td>Quotations:</td>
<td>copyrightbox, csquotes, epigraph, quoting, verse.</td>
</tr>
<tr>
<td>Verbatim:</td>
<td>fancyvrb, moreverb, shortvrb, verbatim.</td>
</tr>
<tr>
<td>Frames:</td>
<td>boxedminipage2e, fancybox, framed, mdframed, niceframe, shadow, vertbars.</td>
</tr>
<tr>
<td>Multi-columns:</td>
<td>adjmulticol, multicol, multicolrule, vwcol.</td>
</tr>
<tr>
<td>Margins:</td>
<td>fullwidth, hanging, midpage.</td>
</tr>
<tr>
<td>Line numbering:</td>
<td>fnlineno, lineno.</td>
</tr>
<tr>
<td>Direct formatting:</td>
<td>\emph, \textsuperscript, \textbf, etc are supported.  \bfseries, etc. are only supported in some cases. cancel, ellipsis, embrac, enparen, hyphenat, lettrine, lips, lua-check-hyphen, luacolor, magaz, pdfrender, realscripts, relsize, scaleft, soul, soulpos, soulutf8, stackengine, textfit, thinspace, trimclip, truncate, ulem, umoline, underscore, uspace, xellipsis.</td>
</tr>
<tr>
<td>Acronyms:</td>
<td>acro, acronym.</td>
</tr>
<tr>
<td>Ordinals:</td>
<td>engord, fmtcount, nth.</td>
</tr>
<tr>
<td>Text ligatures:</td>
<td>Ligatures for symbols are supported. Ligatures for f, q, t are intentionally turned off because many simpler browsers do not display them correctly. Modern full-featured browsers re-create these ligatures on-the-fly.</td>
</tr>
<tr>
<td>Horizontal space:</td>
<td>html output for thin-unbreakable, unbreakable, \enskip, \quad, \qquad, \hspace.</td>
</tr>
<tr>
<td>Rules:</td>
<td>\rule with width, height, raise, text color.</td>
</tr>
<tr>
<td>HTML reserved characters:</td>
<td>&amp;, \textless, and \textgreater are converted to html entities.</td>
</tr>
<tr>
<td>Fonts:</td>
<td>Used as-is. Appearance in svg math expressions or embedded image environments. fontaxes, nfssext-cfr, slantsc, tabfigures.  Tested to work as-is: Special font macros in cfr-lm and others which use nfssext-cfr.</td>
</tr>
</tbody>
</table>
lwarp Supported Functions — continued

<table>
<thead>
<tr>
<th>Category</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symbols:</td>
<td>Native \LaTeX\ diacriticals, academicicons, bbding, chemgreek, dingbat, euro, eurosym, fontawesome, fontawesome5, gensymb, marvosym, metalogo, metalogox, pifont, textalpha, textcomp, textgreek, typicons, unicode.</td>
</tr>
<tr>
<td>Files:</td>
<td>attachfile, attachfile2, hyperxmp, inputtrc, intopdf, pdfpages, pdfx, xmpincl.</td>
</tr>
<tr>
<td>Science and engineering:</td>
<td>algorithm2e, algorithmicx, ar, askmaps, axodraw2, bitpattern, blochsphere, bodegraph, bohr, bytefield, chemfig, chemformula, chemgreek, chemmacros, chemnum, circuitikz, elements, engtlc, fast-diagram, hepnicenames, heppennames, karnaughmap, karnaugh-map, listings, linop, mhchem, pfgantt, phfqt, physics, qcircuit, register, simpler-wick, slashed, structmech, struktex, tikz-karnaugh, tikzcodeblocks</td>
</tr>
<tr>
<td>Arts and humanities:</td>
<td>foreign, forest, lyluatex, musicography, nameauth, octave, phonrule, piano, schemata, semantic-markup, tikz-dependency, vowel, xpiano</td>
</tr>
<tr>
<td>Admonitions:</td>
<td>notes.</td>
</tr>
<tr>
<td>Editorial:</td>
<td>changebar, changelog, changes, easy-to-do, easyReview, ed, errata, fixme, fixmetodonotes, pdfcomment, pdfmarginpar, todo, todonotes, tram, xchangebar.</td>
</tr>
<tr>
<td>Accessibility:</td>
<td>accsupp, axessibility.</td>
</tr>
<tr>
<td>Debug:</td>
<td>chkfloat, cmdtrack, dprogress, lua-visual-debug, refcheck, srcltx, srctex, vpe, xbmks.</td>
</tr>
<tr>
<td>Working as-is:</td>
<td>Various utility, calculation, file, and text-only packages, such as calc, fileerr, somedefs, trace, xspace. Also, most math-only packages, including specialized typesetting for various fields of science and engineering.</td>
</tr>
</tbody>
</table>
\LaTeX keyfloat package

The keyfloat package provides a key/value user interface for quickly creating figures, or custom float types, with a single image each, figures with arbitrary contents, tables, subfloats, rows of floats, floats \[H\]ere, in the \[M]argin, or with text \[W]\rapped around them.

Key/value combinations may specify a caption and label, a width proportional to $\text{\textbackslash linewidth}$, a fixed width and/or height, rotation, scaling, a tight or loose frame, an $\text{\textbackslash arraystretch}$, a continued float, additional supplemental text, and an artist/author’s name with automatic index entry. When used with the todata package, the name also appears in the List of Figures.

Floats may be placed into a row environment, and are typeset to fit within the given number of columns, continuing to the next row if necessary. Nested sub-rows may be used to generate layouts such as two small figures placed vertically next to one larger figure.

Subfloats are supported by two environments. As an example, a typical command to include a figure with a framed image of half $\text{\textbackslash linewidth}$ could be:

\begin{verbatim}
\keyfig[hbp]{f, lw=.5,c={A caption}, l={fig : label}}{image}
\end{verbatim}

**Keyfloat introductory white paper**

For an introduction to the keyfloat package, please see the publication *A key/value interface for generating \LaTeX floats: the keyfloat package*.

**Latest News**

**v2.01**: Added keyfloats and keysubfloats \[M\] and \[W\]. Fixed KomaScript, font and color. Improved vertical space.

**v2.00**: Added custom float types and float authors.

**Download**

Download the keyfloat package from the [keyfloat page on CTAN](https://ctan.org/pkg/keyfloat) — the Comprehensive \TeX Archive Network, or use your \TeX distribution’s update tools.

The keyfloat v2.01 manual is also available here.
Figure 9: First in a group
A \keyparbox describing something.
With several paragraphs.

Table 9: Seventh in a group
A B C
d E F

Example 16: Subfigures — keysubfigs environment
\begin{keysubfigs}{3}{c=Subfigures,l=fig:subfigs}
\keyfig{lw=1,f,c={First Subfigure},l=fig:firstsubfig,t=Some Text}{image}
\keyfig{lw=1,f,r=90,c={Second subfigure},l=fig:secondsubfig,t={Lots of lots of lots of lots of text.}}{image2}
\begin{keyfloats}{1}
\keyfig{lw=1,f,c={Third subfigure},l=fig:thirdsubfig}{image}
\keytab{c={Fourth subfigure},l=fig:fourthsubfig}{
\begin{tabular}{l l}
A & B \\
C & D \\
E & F \\
\end{tabular}
}
\keyfig{lw=.5,f,c={Fifth subfigure},l=fig:fifthsubfig}{image}
\end{keyfloats}
\end{keysubfigs}

Subfloats are associated floats (a, b, ...) collected together into one common float.
\LaTeX\ \texttt{tocdata} package

Anthologies may be printed with the author alongside each title in the table of contents. Many commonly-recommended methods for doing this with \LaTeX\ place the author above or below the title and page number, but seldom on the same line.

The \texttt{tocdata} package provides some basic infrastructure to help add some information to a line in the table of contents. This function requires the use of either the \texttt{titletoc} or \texttt{tocloft} packages.

Additionally, user-level macros are provided which add the author’s name to a chapter or section, and add the artist’s name and optional additional text to a figure. Author and artist names are also added to the index.

tocdata works with the \texttt{TOC/LOF} formatting of the default \LaTeX\ classes, \texttt{memoir}, \texttt{koma-script}, and with \texttt{titletoc}, \texttt{tocloft}, \texttt{tocbasic}, and \texttt{tocstyle}.

<table>
<thead>
<tr>
<th>Latest News</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>v2.03</strong>: Fix for starred sections, supports additional classes and packages.</td>
</tr>
<tr>
<td><strong>v2.02</strong>: Fix for section name formatting.</td>
</tr>
<tr>
<td><strong>v2.01</strong>: Fix for \LaTeX\ core section entries.</td>
</tr>
<tr>
<td><strong>v2.00</strong>: Adds custom float types and float authors.</td>
</tr>
<tr>
<td><strong>v0.12</strong>: Adds improved spacing, improved paragraph handling, and optional text alignment.</td>
</tr>
</tbody>
</table>

Download

Download the tocdata package from the tocdata page on CTAN — the Comprehensive \TeX\ Archive Network, or use your \TeX\ distribution’s update tools.

The tocdata v2.03 manual is also available here.
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2. Other Methods ............................................... Various Authors 4  
3. How to use `tocdata` ......................................... Brian Dunn 5  
   3.1 Basic Setup ................................................ 5  
      3.1.1 Preamble ................................................ 5  
      3.1.2 Format control in the TOC/LOF ......................... 6  
   3.2 Mid-level application ..................................... 6  
      3.2.1 Adding TOC data per section ............................ 6  
      3.2.2 Adding LOF data per figure ............................. 6  
   3.3 High-level user macros .................................... 7  
      3.3.1 Sectioning commands with authors ...................... 7  
      3.3.2 Figure captions with artist names and extra text ... 7  
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   4.1 Requirements ............................................... 9  
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8. Lacquer Go Board .......................................... Katsushika Hokusai 17  
9. Omega — The End ............................................. Greek Alphabet 18  

**Figure 50:** `tocdata` Samples
\LaTeX\ dtxdescribe package

The \texttt{doc} package includes tools for describing macros and environments in \LaTeX\ source \texttt{.dtx} format. The \texttt{dtxdescribe} package adds additional tools for describing booleans, lengths, counters, keys, packages, classes, options, files, commands, arguments, and other objects. \texttt{dtxdescribe} also works with the regular document classes, for those who do not wish to use the \texttt{ltxdoc} class and \texttt{.dtx} files.

Each item is given a margin tag similar to \texttt{\DescribeEnv}, and is listed in the index by itself and also by category. Each item may be sorted further by an optional class. All index entries except code lines are hyperlinked.

The \texttt{dtxexample} environment is provided for typesetting example code and its results. Contents are displayed verbatim along with a caption and cross-referencing. They are then input and executed, and the result is shown.

Environments are also provided for displaying verbatim or formatted source code, user-interface displays, and sidebars with titles.

Macros are provided for formatting the names of inline \LaTeX\ objects such as packages and booleans, as well as program and file names, file types, internet objects, the names of certain programs, a number of logos, and inline dashes and slashes.

\texttt{dtxdescribe} works with the \texttt{ltxdoc} class, but also works with the standard classes as well, except that the \texttt{macro} and \texttt{environment} environments are not supported. Either \texttt{makeidx} or \texttt{splitidx} may be loaded by the user. \texttt{makeidx} will be used by default.

<table>
<thead>
<tr>
<th>Download</th>
</tr>
</thead>
<tbody>
<tr>
<td>Download the dtxdescribe package from the \texttt{dtxdescribe page on CTAN} — the Comprehensive \TeX\ Archive Network, or use your \TeX\ distribution's update tools.</td>
</tr>
</tbody>
</table>

The \texttt{dtxdescribe v1.02} manual is also available here.
Example 4: Booleans and Counters

Code:

\DescribeBoolean[examples]{sampleboolean} Some description.

Lengths have a leading backslash, but are otherwise described the same as the rest of the objects.

Figure 51: dtxdescribe Samples
**\LaTeX to AsciiDoc / DocBook / XHTML Conversion**

- A previously-written tool chain: \LaTeX AsciiDoc DocBook XHTML
- \LaTeX directly generates AsciiDoc output.
- Scalable vector graphics (svg) diagrams and mathematics.
- Format and content which responds to viewing media type (hand-held, tablet, screen, print).
- css customization
- Superceded by: \LaTeX to HTML Converter — the \texttt{lwarp} package.
The popular Inconsolata font is a mono-spaced font commonly used by programmers, and it already provides a clear differentiation between most glyphs, such as 0 and 0 for example.

Others have added Greek and Cyrillic glyphs, along with bold and italic versions useful for syntax highlighting, thus forming the Inconsolata LGC font.

Text-document markup languages (such as LaTeX, AsciiDoc, or markdown) have additional requirements. The ability to distinguish between the various kinds of quote marks and dashes becomes important. Most mono-spaced fonts do not clearly distinguish between each of these look-alike characters, as seen in Figure 52.

The following changes have been made to create the Inconsolata LGC Markup font:

- Shortened the hyphen to distinguish from the en-dash and em-dash.
- Lowered the minus to distinguish from the en-dash.
- The upright apostrophe and quote are replaced with simple vertical shapes, distinguishing from the text quotes and prime characters.
- Bolder bullet to distinguish from the center dot / multiply character.
- Numerous additional glyphs were corrected to pass font verification.
Visit the Inconsolata LGC Markup font’s web page at the Font Library.

Or, directly download the Inconsolata LGC Markup zip file right here.

Also see the DejaVu Markup — Font.

**DejaVu Markup — Font**

DejaVu Sans Mono is a mono-spaced font useful for programmers, and it already provides a clear differentiation between most glyphs, such as 0 and 0 for example. Compared to Inconsolata, DejaVu has a wider range of glyphs and a slightly cleaner design.

Text-document markup languages (such as LaTeX, AsciiDoc, or markdown) have additional requirements. The ability to distinguish between the various kinds of quote marks and dashes becomes important. Most mono-spaced fonts do not clearly distinguish between each of these look-alike characters, as seen in Figure 53.

The following changes have been made to create the DejaVu Markup font:

- Shortened the endash to distinguish from the hyphen and em-dash.
- Lowered the minus to distinguish from the en-dash.

Visit the DejaVu Markup font’s web page at the Font Library.
Or, directly download the DejaVu Markup zip file right here.

Also see the Inconsolata LGC Markup — Font.
Publications

Related to \LaTeX:

*Programming \LaTeX — A survey of documentation and packages:*  
An overview of \LaTeX books and documentation for those interested in programming \LaTeX. Also available at CTAN as the docsurvey package.  
Published in *TUGBOAT* — The Communications of the \TeX Users Group, vol. 38, no. 1, 2017.

*Producing HTML directly from \LaTeX: the lwarp package:*  
A white paper describing the technology used to make \LaTeX generate HTML.  
Published in *TUGBOAT* — The Communications of the \TeX Users Group, vol. 38, no. 1, 2017.

*A key/value interface for generating \LaTeX floats: the keyfloat package:*  
An introduction to the use of key/value options to create a wide variety of \LaTeX floats.  
Published in *TUGBOAT* — The Communications of the \TeX Users Group, vol. 38, no. 1, 2017.

Additional publications:

*Load Cells — Introduction and Applications:*  
A sample white paper.

Also see Tech Notes, Projects, Software-Related Documentation, and Owner’s Manuals and Procedures.
Tech Notes

The following are technical notes of interest to the users of \LaTeX, general markup languages, the Linux operating system, and so on.

For \LaTeX: \LaTeX notes

For Linux: Linux notes

\LaTeX notes

Transparency and colors

When including a PNG file with transparency, \LaTeX may distort the rest of the colors on the same page due to a conflict between RGB and CMYK color spaces. The methods mentioned online for fixing this color shift for lualatex are slightly out of date now with lualatex having made some recent changes.

To fix the color shift, place the following near the start of the document preamble. This code works with pdflatex, xelatex, and recent versions of lualatex. Older versions of lualatex will not need the line below which is commented as “for new versions”.

% to fix colors while transparency is in use:
\usepackage{iftex}
\ifXeTeX
\usepackage{eso-pic}
\AddToShipoutPicture{%
\makeatletter%
\special{%
 pdf: put @thispage <</Group << /S /Transparency /I true /CS /DeviceRGB>> >>
\makeatother%
}
}\else
\edef\pdfpageattr {\pdfvariable pageattr} % for newer versions
\pdfpageattr {/Group << /S /Transparency /I true /CS /DeviceRGB>>}
\else % pdflatex
\pdfpageattr {/Group << /S /Transparency /I true /CS /DeviceRGB>>}
\fi
\fi

Editor fonts

See DejaVu Markup — Font and Inconsolata LGC Markup — Font for monospaced editor fonts which have been slightly adjusted from their originals to more clearly distinguish between the various dashes, quotes, apostrophes, primes, bullet, and center dots/multiply. These fonts may be useful to anyone using a text markup language such as \LaTeX, Asciidoc, markdown, or pandoc, especially when marking up text where there is an important difference in meaning between the various dash lengths, or scientific literature where a prime mark should not be a quote mark.
TeX-Live installation on Linux — PATH to texbin

The “vanilla” Tex Live install recommends setting PATH to point directly to the Tex Live binaries, but some recommend an indirect symbolic link through /opt instead:

in /opt, each time a new install occurs:  
\texttt{ln -s /usr/local/texlive/20xx/bin/x86_64-linux /opt/texbin}

in ~/.cshrc, once only:  
\texttt{setenv PATH $HOME/bin:/opt/texbin:$PATH}

in ~/.bashrc, once only:  
\texttt{PATH=/opt/texbin:$PATH} (at the end)

Likewise for root’s .bashrc and .cshrc.

Multiple versions of TeX Live may be installed, selecting one at a time simply by changing the single symbolic link in /opt.

TeX-Live fonts

TeXLive has so many fonts that they can really slow down the font-selection boxes in graphics editors. Many fonts are available both as Type-1 and also OpenType or TrueType. To have Linux only use OT or TT fonts, skipping Type-1:

1. Copy the \texttt{texlive-fontconfig.conf} file to /etc/fonts/conf.d/09-texlive.conf.
2. Comment out Type-1 fonts:  
\texttt{<!-- ...type1.. -->}
3. Run \texttt{fc-cache -fsv} to inform Linux of the new fonts.

To keep Type-1 fonts but remove the most problematic:

1. \texttt{tlmgr remove --dry-run --no-depends collection-fontsextra}
2. \texttt{tlmgr remove --dry-run allrunes}
3. \texttt{tlmgr remove --dry-run drm}
4. etc.

Use \texttt{-dry-run} to preview the results, and remove \texttt{-dry-run} to make the changes. Run \texttt{fc-cache -fsv} to inform Linux of the new fonts.

Package-writing tools

Of interest to those using the .dtx format of literate programming:

Dating a package revision:

\texttt{\changes{v0.00}{2016/01/01}{2016/01/01}}

The forced space before the date causes the change log to sort the date to the front of the “General” category. While the next version is in-progress, the new version’s date can be entered as “PENDING”.
Describing packages, files, options, booleans, etc: The \LaTeX\ doc and \ltxdoc\ tools provide \DescribeMacro\ and \DescribeEnvironment\ which typeset the name in the margin and create index entries, both for the name of the macro or environment, and also under the category "environments" as needed. Additional tools may be useful to describe other objects:

\newcommand{\DescType}{\raggedleft\scriptsize#1}quad
\newcommand{\DescribePackage}[1]{%\leavevmode% marginpar{\DescType{Pkg}bfseries\textsf{#1}}% index{#1 (package)}% index{packages:#1}% ignorespaces%}

Similar for (operating-system) command, file, option, boolean, length, and counter, each of which will appear in the index under its own name, and also under each category. A more advanced version of these functions is found in the \LaTeX\ dtxdescribe package, which also adds sorting objects by class.

Margin tags: Useful to draw attention to the destination of cross-references, for example.

\newcommand{\margintag}[1]{% marginpar{#1} %}

Warning tags: To print a warning symbol and text tag in the margin:

\makeatletter
\newcommand{\watchout}[1][{}]{% @bsphack% marginpar{\textcolor{blue!70!black}#1\hspace{\fill}\includegraphics[height=3ex]{symbol_warning.pdf}}% @esphack%}
\makeatother

Typesetting package and environment names: To make names for packages and environments stand out:

\newcommand{\pkg}[1]{\textsf{#1}}\newcommand{\env}[1]{\texttt{#1}}

Likewise for brand names, Publications, ACR acronyms, and so on.

Linux notes

Font rendering

If your Linux fonts look ugly, check the following:

Ref: https://wiki.archlinux.org/index.php/Font_Configuration

File (Debian): ~/.config/fontconfig/fonts.conf
Compose keys, keyboard repeat, mouse acceleration

To directly enter characters such as the em-dash or ä:

Place in `.cshrc`, `.bashrc`, `.icewm/startup`, and any other desktop/windowing startup locations on your system:

```
setxkbmap -option compose:lwin
```

`lwin` selects the left “windows” key as the compose key. When this key is pressed, followed by other special keys, a final character is sent to the operating system. Examples include `<compose>---` for the em-dash and `<compose>¨a` for ä.

This is also a good place to set the keyboard repeat and mouse acceleration, for those window managers which may not provide their own tools to do so:

```
xset r rate 300 20
xset m 3/2
```

KDE debug messages

Bothered by extraneous KDE debug messages?

```
kdebugdialog
```

While this may be used to stop KDE messages, other warning messages may still appear in the console, and would have to be dealt with separately.

Apache2 configuration

Changes have been made to the Apache2 configuration files.

Later versions of the Apache2 web server have changed the management of its configuration files. This can affect web applications served from your own machine, even when only used by yourself on your own local machine.

`httpd.conf` is no longer used.

To add a configuration file:

1. Add `filename.conf` to `/etc/apache2/conf-available/`
2. `a2enconf <filename>` to activate the additional configuration file.
3. `service apache2 reload` to restart the server.

Kmail migration to Claws Mail

While there are a few scripts which try to help change from Kmail’s email format to Claws Mail’s MH format, Kmail has a few features which can cause problems. In particular, Kmail allows mail folders in either of two formats: `maildir` or `mbox`. The claws-mail conversion scripts tend to work only with the `maildir` format.

1. Ensure each Kmail folder is in `maildir` format instead of `mbox`:

   In the file system, look in the `Mail` file directory for a subdirectory for each Kmail mail folder, in which case that folder is in `maildir` format. If the Kmail mail folder does not exist as a filesystem subdirectory, then that Kmail
folder is in *mbox* format, and it must be converted to *maildir* instead. Do so by using Kmail to rename the current *mbox* format Kmail folder, such as by appending "*_old*" to its name. Create a new Kmail mail folder, being sure that the new folder is in *maildir* format. Copy the messages from the old to the new folder, then delete the old.

2. Remove any spaces from each Kmail folder name, possibly replacing each by an underscore.

3. Possibly flatten the folder tree.

4. Try the conversion script from [http://users.claws-mail.narkive.com/vHT20D8Y/migration-from-kmail](http://users.claws-mail.narkive.com/vHT20D8Y/migration-from-kmail) by Hanno Böck.
About Us

Brian Dunn — Technical Writer, Software Engineer, \LaTeX\ Programmer, Image Processor

I’m a software engineer and technical writer with excellent skills in the art and science of document typesetting and in the field of embedded industrial controls programming. I provide services for companies making real-world products who wish to save time and resources by outsourcing the final design of their technical documentation and literature.

Documentation is an important part of programming, and unlike many other programmers I actually enjoy producing inline code documentation and external software test procedures, state diagrams, user-interface descriptions, and so on. I also want these documents to look great, since they’ll be seen by current users trying to learn how to use the product, as well as potential customers doing their research before deciding what to buy. Clarity, completeness, organization, visual appeal, and grammar — these are things which matter.

Products which I have programmed include industrial controllers for time and temperature, product conveyor motors and solenoids, various display and key interfaces, and industrial networking. These are used in applications such as large dust-control factory air filters, numerous grills and ovens, an automated coffee maker for the railroad industry, a medical UV-treatment light timer, and test equipment such as a pulse-width timer. Each of these has been coded to allow them to survive real-world environments, including power interruption, noise injection, faulty sensors and controls, and programming/memory corruption.

Product documentation (manuals and/or literature) which I have written, edited, or reformatted and typeset include applications such as CNC bearings, mounts, and control software, HVAC equipment, metal-working shear, metal-working lathes, vacuum-testing equipment, a parts washer, pumps, mixers, heat-transfer coils, test equipment, food-production equipment and conveyors, motor speed limiters, an automatic door closer, a fryer control, PLC controller and industrial computer installations, RFID hardware, and a camping trailer user’s manual.

Scientific white papers which I have typeset have been for industries such as vacuum testing, hardness testing, optics, robotic control, and HVAC ducts, heat-transfer, and heat-storage units. I have also re-typeset a book about mechanical gear design.

In the process of doing all the above, I have also improved or redesigned a variety of diagrams and illustrations — both as simple as converting a low-resolution scan into a proper line drawing, and as complicated as explaining the logic behind a concept.

Having run a portrait photography business on the side (ref: the above image), I am also able to apply image-processing skills to technical documentation, greatly improving customer-supplied photography and logos as needed. Additional skills include business management, marketing, and accounting principles.

Finally, still being a programmer, I have recently been expanding the \LaTeX\ document-creation system to generate HTML code directly from a \LaTeX\ document, allowing the creation of a high-quality print version accompanied by an accurate HTML version of the same document for publication on the Internet.
Business Description

- Providing services in the area of technical writing and communications.
- Illinois-registered Limited Liability Company (LLC).
- Federal tax number (EIN) registered with the IRS.
- Fixed-price invoicing via 1099, based on units of output, billed according to a standard price schedule.

Background

- Decades of programming experience, including assembly, C, and FORTH languages.
- Embedded industrial-controls software engineering:
  - Microcontrollers — Assembly and C languages.
  - A wide range of commercial products.
  - Real-world survivability — adapting to power loss, electrostatic discharge, memory corruption, sensor malfunction, etc.
  - Libraries of re-usable code.
  - State-machine logic.
  - Application programs, software test procedures, software design reviews.
- Advanced \(\LaTeX\) document-creation system programming — More than a decade of experience:
  - \(\LaTeX\) to HTML Converter — the lwarp package — HTML generated directly by \LaTeX.
  - Algorithmically-generated \LaTeX code:
    * SQL database queries, automatically linked to related \LaTeX documents.
    * Automated assembly of modular directories of pieces of code and images into final document, converted to an HTML website.
  - \LaTeX to AsciiDoc converter, written entirely in \LaTeX / \TeX, allowing access to the DocBook tool chain, including xHTML and EPUB output.
- Complete FORTH compiler programming:
  - Token and subroutine-threaded full FORTH compilers — written in themselves.
  - Related development tools, including full editor.
  - Multi-tasking / multi-user programming on 8-bit microprocessors.
- HTML / CSS
- SQL
- AWK, CSH
- Linux systems administration.
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