Latex

dendenxu

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Contents

1 Section

Hello, world.

1.1 Subsection

Structuring a document is easy.

1.1.1 Subsubsection

Paragraph Some more text.

Subparagraph Even more text.

2 Another section

$$f(x) = x^2 \tag{1}$$

$$f(x) = x^2$$

This formula is an equation. $f(x) = ax^2 + bx + c$

$$a + b = c$$
$$c + d = e$$

$$\begin{aligned} a + b &= c \\ c &= d + e \end{aligned}$$

$$\begin{aligned} f(x) &= x^2 \\ g(x) &= \frac{1}{x} \\ F(x) &= \int_b^a \frac{1}{3}x^3 \end{aligned}$$

$$\begin{matrix} 1 & 0 \\ 0 & 1 \end{matrix}$$

$$\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

Extra Paragraph This is for splitting the pages.

3 Photo And Figure

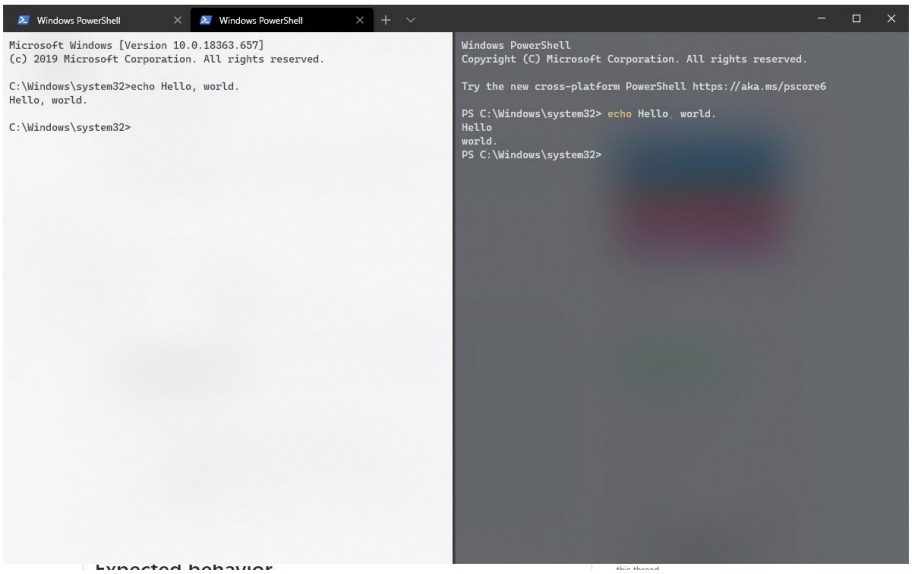
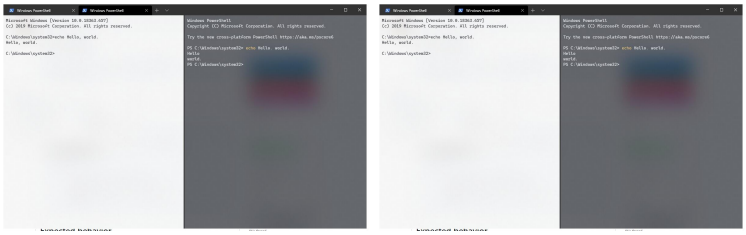


Figure 1: A Windows Terminal.

4 Another another section

Wow Figure 1 shows a split terminal.



(a) An Echo (b) Another Echo

Figure 2: Two Terminal, Four Echos

Figure 3: Dummy Figure

Table 1: Dummy Table No.0

5 Try Using BibTex

This is a random citation [1] here. And this would be another citation: [2]. Here's another [3] one.

5.1 Footnote

Random citation [1] embedded in text. This is some example text[1].

5.2 Refer to Footnote

I'm referring to footnote 1.

6 Drawing Tables

Sometimes we use what's already given in latex to elegantly draw some tables. They may look more "academic" if you compare it with excel or other tools.

6.1 Ordinary Table

This would be an ordinary little table for us to use. Multiple fun stuff like multi-row and multi-column can come in handy when doing customization.

Table 2: First Table

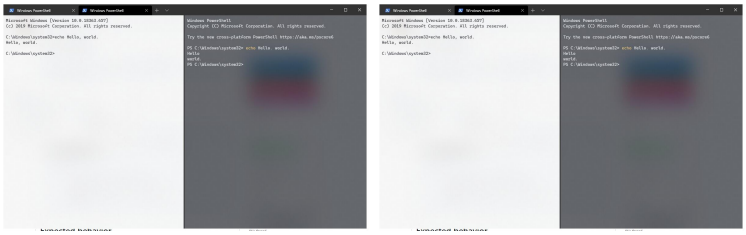
Value1 α	**Value2** β	**Value3** γ
12		a
12	1110.10	a
	10.10	b
1234		a
		b
1	1100.10	a
3	11.10	b
5	10.11	v

[1] Hello footnote

6.2 Longtable

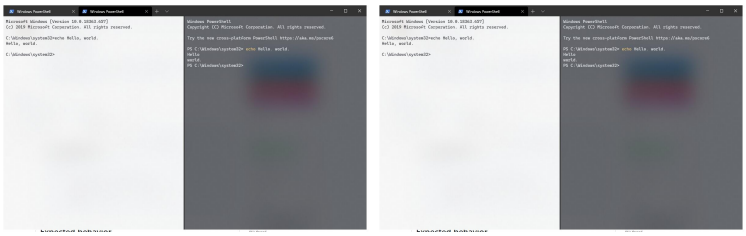
This guy here has the ability to cross multiple page if its too large to fit in one page. However when it comes to the ordinary one, the information would just be truncated. What's the overhead of using such multi-page table? Probably it's that you have to specify two kinds of header for both the original and next-page version of our table.

Ramdom Figure Let's add some random figure so that we may see the magic of long table.



(a) An Echo (b) Another Echo

Figure 4: Two Terminal, Four Echos



(a) An Echo (b) Another Echo

Figure 5: Two Terminal, Four Echos

Table 3: Multipage table.

Value 1 α	**Value 2** β	**Value 3** γ
1	1110.10	a
2	10.10	b
3	23.11	c
3	23.11	c
3	23.11	c
3	23.11	c

Value 1	Value 2	Value 3
α	β	γ
3	23.11	c

6.3 Dummy Figure

Let's fill in the space again.

Figure 6: See! A horse!

6.4 Sideways Table

Well, guess the floating implementation of such sideways table isn't perfect. Like I've talked about in the previous comment, you use [!h] and the table goes to somewhere strange. When you omit it, table gets back magically. Boy, it's magic.

Table 4: Landscape table.

Value 1	**Value 2**	**Value 3**	**3**	**4**	**5**
α	β	γ	γ	γ	γ
1	1110.10	a	a	a	a
2	10.10	b	b	b	b
3	23.11	c	c	c	c
3	23.11	c	c	c	c
3	23.11	c	c	c	c
3	23.11	c	c	c	c
3	23.11	c	c	c	c
3	23.11	c	c	c	c
3	23.11	c	c	c	c
3	23.11	c	c	c	c
3	23.11	c	c	c	c
3	23.11	c	c	c	c
3	23.11	c	c	c	c
3	23.11	c	c	c	c
3	23.11	c	c	c	c
3	23.11	c	c	c	c
3	23.11	c	c	c	c
3	23.11	c	c	c	c

6.5 Gimme CSV

Wow, so, you can export figures out of excel and other tools in a CSV file(line break), and the file can be easily imported as a plot.

Table 5: Auto generated table for csv file.

A	B	C	D	E	F
43.97	0	734	528	14.23	18.26
44.01	0.04	731	525	14.11	18.14
44.04	0.07	729	523	14.04	18.06
44.07	0.10	726	520	13.93	17.94
44.11	0.14	720	514	13.70	17.71
44.14	0.17	718	512	13.63	17.63
44.17	0.20	714	508	13.48	17.47
44.21	0.24	711	505	13.37	17.35
44.24	0.27	706	500	13.18	17.15
44.27	0.30	700	494	12.96	16.92
44.31	0.34	696	490	12.81	16.76
44.34	0.37	690	484	12.59	16.53
44.37	0.40	685	479	12.40	16.33
44.41	0.44	679	473	12.19	16.10
44.44	0.47	672	466	11.93	15.83
44.47	0.50	664	458	11.64	15.52
44.51	0.54	659	453	11.46	15.33
44.54	0.57	651	445	11.17	15.02
44.57	0.60	642	436	10.85	14.68
44.61	0.64	633	427	10.52	14.34
44.64	0.67	625	419	10.24	14.04
44.67	0.70	616	410	9.92	13.70
44.71	0.74	607	401	9.60	13.36
44.74	0.77	597	391	9.25	12.99
44.77	0.80	587	381	8.91	12.62
44.81	0.84	577	371	8.56	12.25
44.84	0.87	567	361	8.22	11.89
44.87	0.90	554	348	7.77	11.41

6.6 Oneline CSV

Or we can just use the one line version right? Do remember to add [H].

Table 6: Related to the figure, using pgfplots

x	y
1	11
2	12
3	31
4	0
5	0
10	−1
6	−10
7	20
12	30
8	31
9	32

Table 7: One line csv

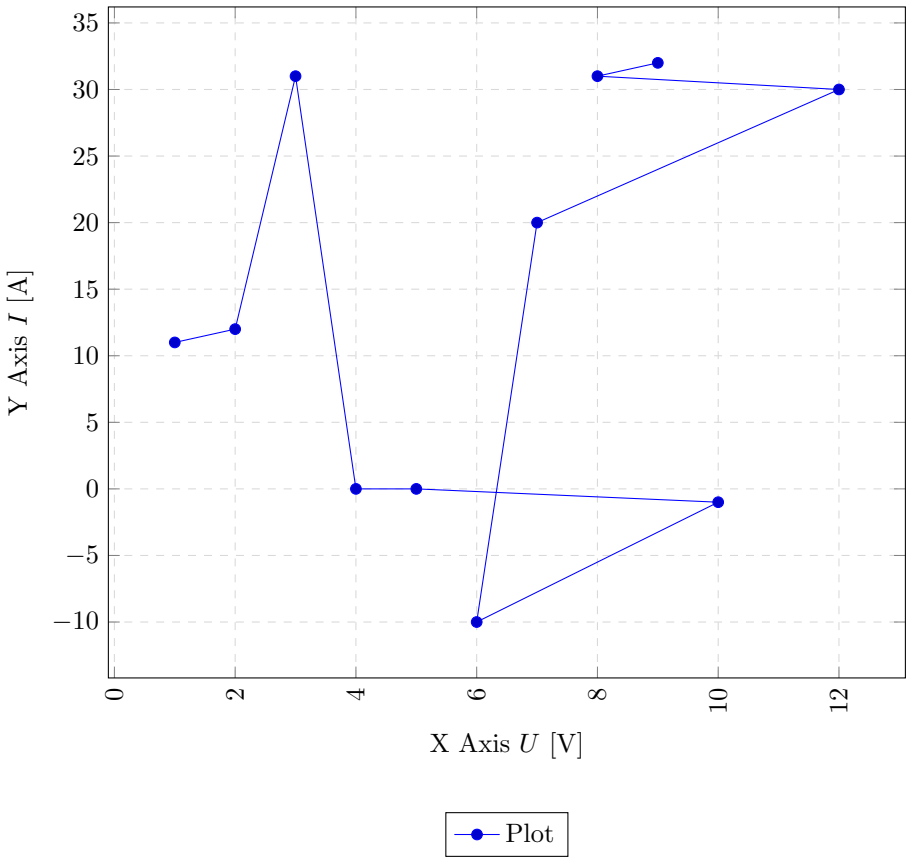
A	B	C	D	E	F
43.97	0	734	528	14.22624	18.26294
44.01	0.04	731	525	14.11335	18.14345
44.04	0.07	729	523	14.03819	18.06389
44.07	0.1	726	520	13.9256	17.9447
44.11	0.14	720	514	13.70096	17.70686
44.14	0.17	718	512	13.62624	17.62774
44.17	0.2	714	508	13.47704	17.46974
44.21	0.24	711	505	13.36535	17.35145
44.24	0.27	706	500	13.1796	17.1547
44.27	0.3	700	494	12.95736	16.91926
44.31	0.34	696	490	12.8096	16.7627
44.34	0.37	690	484	12.58856	16.52846
44.37	0.4	685	479	12.40491	16.33381
44.41	0.44	679	473	12.18519	16.10089
44.44	0.47	672	466	11.92976	15.83006
44.47	0.5	664	458	11.63904	15.52174
44.51	0.54	659	453	11.45799	15.32969
44.54	0.57	651	445	11.16935	15.02345
44.57	0.6	642	436	10.84616	14.68046
44.61	0.64	633	427	10.52459	14.33909
44.64	0.67	625	419	10.24011	14.03701
44.67	0.7	616	410	9.9216	13.6987
44.71	0.74	607	401	9.60471	13.36201
44.74	0.77	597	391	9.25451	12.98981
44.77	0.8	587	381	8.90631	12.61961
44.81	0.84	577	371	8.56011	12.25141
44.84	0.87	567	361	8.21591	11.88521
44.87	0.9	554	348	7.77144	11.41214

Table 8: some table

A	B	C	D	E	F
43.97	0	734	528	14.22624	18.26294
44.01	0.04	731	525	14.11335	18.14345
44.04	0.07	729	523	14.03819	18.06389
44.07	0.1	726	520	13.9256	17.9447
44.11	0.14	720	514	13.70096	17.70686
44.14	0.17	718	512	13.62624	17.62774
44.17	0.2	714	508	13.47704	17.46974
44.21	0.24	711	505	13.36535	17.35145
44.24	0.27	706	500	13.1796	17.1547
44.27	0.3	700	494	12.95736	16.91926
44.31	0.34	696	490	12.8096	16.7627
44.34	0.37	690	484	12.58856	16.52846
44.37	0.4	685	479	12.40491	16.33381
44.41	0.44	679	473	12.18519	16.10089
44.44	0.47	672	466	11.92976	15.83006
44.47	0.5	664	458	11.63904	15.52174
44.51	0.54	659	453	11.45799	15.32969
44.54	0.57	651	445	11.16935	15.02345
44.57	0.6	642	436	10.84616	14.68046
44.61	0.64	633	427	10.52459	14.33909
44.64	0.67	625	419	10.24011	14.03701
44.67	0.7	616	410	9.9216	13.6987
44.71	0.74	607	401	9.60471	13.36201
44.74	0.77	597	391	9.25451	12.98981
44.77	0.8	587	381	8.90631	12.61961
44.81	0.84	577	371	8.56011	12.25141
44.84	0.87	567	361	8.21591	11.88521
44.87	0.9	554	348	7.77144	11.41214

6.7 Plot From CSV

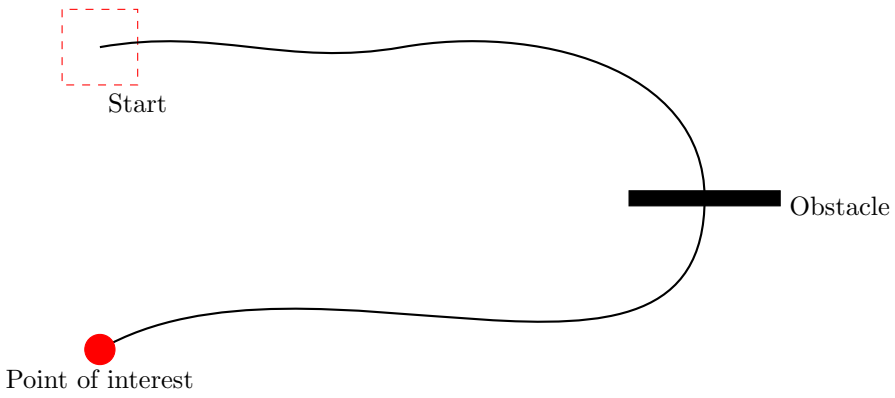
Figure 7: My first auto-generated plot.



6.8 Draw lines by hand

Well, well, well. When you want to make sure something is where you want it to be, you can simply use [H] with the support of package float.

Figure 8: Some self drawn figure



7 Code

7.1 Default stuff

We can use verbatim as the default code displayer. It won't highlight keywords or emphasis.

```
Text listed here will be printed using mono-space font.
Text listed here will be printed using mono-space font.
Text listed here will be printed using mono-space font.
Text listed here will be printed using mono-space font.
Text listed here will be printed using mono-space font.
Text listed here will be printed using mono-space font.
Text listed here will be printed using mono-space font.

␣␣␣␣Or␣we␣can␣use␣star␣to␣indicate␣that␣we␣want␣to␣render␣white␣space.
␣␣␣␣Text␣listed␣here␣will␣be␣printed␣using␣mono-space␣font.
␣␣␣␣Text␣listed␣here␣will␣be␣printed␣using␣mono-space␣font.
␣␣␣␣Text␣listed␣here␣will␣be␣printed␣using␣mono-space␣font.
␣␣␣␣Text␣listed␣here␣will␣be␣printed␣using␣mono-space␣font.
␣␣␣␣Text␣listed␣here␣will␣be␣printed␣using␣mono-space␣font.
␣␣␣␣Text␣listed␣here␣will␣be␣printed␣using␣mono-space␣font.
```

7.2 lstlisting

Trying to list we emphasis. Well, I don't think I'm gonna use this more than we should. Since the mindted package looks much much better.

Listing 1: Listing Using lstlisting

```
bool MIPSAssembler::CheckLineEnd(stringstream &str_stream)
{
    Trim(str_stream, '␣');
    if (str_stream.peek() == '#' || str_stream.peek() == '\n') {
        DiscardLine(input);
        return true;
    } else if (str_stream.peek() == '\r') {
        if (!Linux_warning) {
            Linux_warning = true;
            cerr << "WARNING:␣Processing␣CRLF␣file␣on␣Linux␣system
                ↪ ." << endl;
        }
        str_stream.get();
        if (str_stream.peek() != '\n') {
            cerr << "FATAL:␣Carrige␣Return␣encountered,␣however␣no
                ↪ ␣Line␣Feed␣is␣found,␣file␣corrupted." << endl;
            return false;
        }
        DiscardLine(input);
        return true;
    } else if (str_stream.peek() != EOF) {
        cerr << "FATAL:␣Unexpected␣line␣end." << endl;
        return false;
    } else
        return true;
}
```

7.3 List With Minted

Listing 2: List with minted.

```
1  bool MIPSAssembler::CheckLineEnd(stringstream &str_stream)
2  {
3      Trim(str_stream, ' ');
4      if (str_stream.peek() == '#' || str_stream.peek() == '\n') {
5          DiscardLine(input);
6          return true;
7      } else if (str_stream.peek() == '\r') {
8          if (!Linux_warning) {
9              Linux_warning = true;
10             cerr << "WARNING: Processing CRLF file on Linux
                   ↪  system." << endl;
11         }
```

```
12          str_stream.get();
13          if (str_stream.peek() != '\n') {
14              cerr << "FATAL: Carrige Return encountered, however
                ↪  no Line Feed is found, file corrupted." << endl;
15              return false;
16          }
17          DiscardLine(input);
18          return true;
19      } else if (str_stream.peek() != EOF) {
20          cerr << "FATAL: Unexpected line end." << endl;
21          return false;
22      } else
23          return true;
24  }
25  void MIPSAssembler::Trim(stringstream &str_stream, char ch)
26  {
27      while (str_stream.get() == ch) // Will consume an extra
        ↪  character, so we put it back
28          ;
29      str_stream.unget();
30  }
31
32  bool MIPSAssembler::Assert(stringstream &str_stream, char ch)
33  {
34      if (str_stream.get() == ch) return true; // Get next
        ↪  character an validate it
35      cerr << "FATAL: Unable to read the character: " << ch <<
        ↪  endl;
36      return false;
37  }
38
39  bool MIPSAssembler::TrimAssert(stringstream &str_stream, char
    ↪  trim, char assert)
40  {
41      Trim(input, trim);
42      if (!Assert(str_stream, assert)) return false;
43      Trim(input, trim);
44      return true;
45  }
46
47  void MIPSAssembler::GetToken(stringstream &str_stream, string
    ↪  &str)
48  {
49      str.clear();
        ↪  // Clear string buffer
```

```
50      while (!reserved_char.count(str_stream.peek()))
        ↪  str.push_back(str_stream.get()); // Get char if not
        ↪  reserved
51  }
52
53  bool MIPSAssembler::ReadConstant(stringstream &str_stream, int
    ↪  &constant)
54  {
55      if ((str_stream >> constant)) return true; // Try
        ↪  interpreting the string into an integer
56      cerr << "FATAL: Unable to read the constant." << endl;
57      return false;
58  }
59
60  bool MIPSAssembler::ReadRegister(stringstream &str_stream,
    ↪  map<string, int>::iterator &reg_iter)
61  {
62      string str;
63      GetToken(input, str);
64
65      // Return false if we cannot map the string to a register
66      if ((reg_iter = reg_map.find(str)) != reg_map.end()) return
        ↪  true;
67      cerr << "FATAL: Unable to map register: " << str << " to int
        ↪  value." << endl;
68      return false;
69  }
70  void MIPSAssembler::DiscardLine(stringstream &str_stream)
71  {
72      source_line_number++;
73      while ((str_stream.get() != '\n') && (!str_stream.eof()))
74          ;
75  }
```

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References

[1] J. J. Lee and C. Rice, "Welcome to america? international student perceptions of discrimination," *Higher Education*, vol. 53, no. 3, pp. 381–409, 2007, identifier: 4508. DOI: 10.1007/s10734-005-4508-3.

[2] S. R. Aragon and M. Rios Perez, "Increasing retention and success of students of color at research-extensive universities," *New Directions for Student Services*, vol. 2006, no. 114, pp. 81–91, 2006. DOI: 10.1002/ss.209.

[3] S. S. Starobin, "International students in transition: Changes in access to u.s. higher education," *New Directions for Student Services*, vol. 2006, no. 114, pp. 63–71, 2006. DOI: 10.1002/ss.207.