All Tables Test - New TestDFGenerator test_suite

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1 Python set-up

```
from IPython.display import HTML, display
import matplotlib as mpl
import matplotlib.dates as mdates
import matplotlib.pyplot as plt
import numpy as np
import pandas as pd

import great_tables as gter
import great_tables.utilities as gtu
from great_tables import GT, sGT
gter.logger.setLevel(gter.logging.WARNING)
```

...code build completed.

2 A Hard-Rules table

Second level index has mixed types. Range of magnitudes. Picking out years.

```
level_1 = ["A", "A", "B", "B", 'C']
level_2 = ['Int', 'Float', 'Float', 3, 'Longer Text']

multi_index = pd.MultiIndex.from_arrays([level_1, level_2],
        names=["Level 1", "Level 2"])
start = pd.Timestamp.today().normalize()  # Today's date, normalized to midnight
end = pd.Timestamp(f"{start.year}-12-31")  # End of the year

hard = pd.DataFrame(
{'years!': np.arange(2000, 2025, dtype=int),
'a': np.array(np.round(np.linspace(-100000, 100000, 25), 0), dtype=int),
```

```
'b': 9.3 ** np.linspace(-12, 12, 25),
'c': np.linspace(-1601, 4000, 25),
'd': pd.date_range(start=start, end=end, periods=25),
'e': ('once upon a time, risk is hard to define, not in Kansas anymore, '
        'neutrinos are hard to detect,  '
        'Adam Smith is the father of economics'.split(',') * 5)
}).set_index('years!')
# hard = hard.head()
hard.columns = multi_index
hard
```

Table 1: Quarto generated caption

Level 1 Level 2 years!	A Int	Float	B Float	3	C Longer Text
2000	-100000	2.388937e-12	-1601.000	2025-03-13 00:00:00	once upon a time
2001	-91667	2.221711e-11	-1367.625	2025-03-25 05:00:00	risk is hard to define
2002	-83333	2.066191e-10	-1134.250	2025-04-06 10:00:00	not in Kansas anymore
2003	-75000	1.921558e-09	-900.875	2025-04-18 15:00:00	neutrinos are hard to detect
2004	-66667	1.787049e-08	-667.500	2025-04-30 20:00:00	Adam Smith is the father of econom
2005	-58333	1.661955e-07	-434.125	2025-05-13 01:00:00	once upon a time
2006	-50000	1.545619e-06	-200.750	2025-05-25 06:00:00	risk is hard to define
2007	-41667	1.437425e-05	32.625	2025-06-06 11:00:00	not in Kansas anymore
2008	-33333	1.336805e-04	266.000	2025-06-18 16:00:00	neutrinos are hard to detect
2009	-25000	1.243229e-03	499.375	2025-06-30 21:00:00	Adam Smith is the father of econom
2010	-16667	1.156203e-02	732.750	2025-07-13 02:00:00	once upon a time
2011	-8333	1.075269e-01	966.125	2025-07-25 07:00:00	risk is hard to define
2012	0	1.000000e+00	1199.500	2025-08-06 12:00:00	not in Kansas anymore
2013	8333	9.300000e+00	1432.875	2025-08-18 17:00:00	neutrinos are hard to detect
2014	16667	8.649000e+01	1666.250	2025-08-30 22:00:00	Adam Smith is the father of econom
2015	25000	8.043570e+02	1899.625	2025-09-12 03:00:00	once upon a time
2016	33333	7.480520e+03	2133.000	2025-09-24 08:00:00	risk is hard to define
2017	41667	6.956884e+04	2366.375	2025-10-06 13:00:00	not in Kansas anymore
2018	50000	6.469902e+05	2599.750	2025-10-18 18:00:00	neutrinos are hard to detect
2019	58333	6.017009e+06	2833.125	2025-10-30 23:00:00	Adam Smith is the father of econom
2020	66667	5.595818e+07	3066.500	2025-11-12 04:00:00	once upon a time
2021	75000	5.204111e+08	3299.875	2025-11-24 09:00:00	risk is hard to define
2022	83333	4.839823e+09	3533.250	2025-12-06 14:00:00	not in Kansas anymore
2023	91667	4.501035e+10	3766.625	2025-12-18 19:00:00	neutrinos are hard to detect
2024	100000	4.185963e+11	4000.000	2025-12-31 00:00:00	Adam Smith is the father of econom

`sGT` format

```
sGT(hard, 'A table with varied columns.')
```

Illustrate some alternatives.

Table 2: Quarto generated caption

	A		B		C
years!	Int	Float	Float	3	Longer Text
2000	-100,000	2.389p	-1,601.00	2025-03-13	once upon a time
2001	-91,667	22.217p	-1,367.62	2025-03-25	risk is hard to define
2002	-83,333	206.619p	-1,134.25	2025-04-06	not in Kansas anymore
2003	-75,000	1.922n	-900.88	2025-04-18	neutrinos are hard to detect
2004	-66,667	17.870n	-667.50	2025-04-30	Adam Smith is the father of economics
2005	-58,333	166.196n	-434.12	2025-05-13	once upon a time
2006	-50,000	1.546u	-200.75	2025-05-25	risk is hard to define
2007	-41,667	14.374u	32.62	2025-06-06	not in Kansas anymore
2008	-33,333	133.681u	266.00	2025-06-18	neutrinos are hard to detect
2009	-25,000	1.243m	499.38	2025-06-30	Adam Smith is the father of economics
2010	-16,667	11.562m	732.75	2025-07-13	once upon a time
2011	-8,333	107.527m	966.12	2025-07-25	risk is hard to define
2012	0	1.000	1,199.50	2025-08-06	not in Kansas anymore
2013	8,333	9.300	1,432.88	2025-08-18	neutrinos are hard to detect
2014	16,667	86.490	1,666.25	2025-08-30	Adam Smith is the father of economics
2015	25,000	804.357	1,899.62	2025-09-12	once upon a time
2016	33,333	7.481k	2,133.00	2025-09-24	risk is hard to define
2017	41,667	69.569k	2,366.38	2025-10-06	not in Kansas anymore
2018	50,000	646.990k	2,599.75	2025-10-18	neutrinos are hard to detect
2019	58,333	6.017M	2,833.12	2025-10-30	Adam Smith is the father of economics
2020	66,667	55.958M	3,066.50	2025-11-12	once upon a time
2021	75,000	520.411M	3,299.88	2025-11-24	risk is hard to define
2022	83,333	4.840G	3,533.25	2025-12-06	not in Kansas anymore
2023	91,667	45.010G	3,766.62	2025-12-18	neutrinos are hard to detect
2024	100,000	418.596G	4,000.00	2025-12-31	Adam Smith is the father of economics

````
```{python}
#| label: tbl-hard-rules-3
#| tbl-cap: Quarto generated caption

display(sGT(hard.sample(5).sort_index(), 'No v rules, but h rules',
        vrule_widths=(0,0,0),
        hrule_widths=(1,0,0)))

display(sGT(hard.sample(5).sort_index(),
        'Change default date and integer formats',
        default_date_str='%m-%d', default_integer_str='[{x:d}]'))

display(sGT(hard.sample(5).sort_index(),
        'Change padding, debug mode lines',
        default_date_str='%m-%d', default_integer_str='[{x:d}]',
        padding_trbl=(10, 10, 20, 20), debug=True))
```
````

Here is the raw output.

```
f = sGT(hard.head(4), debug=True)
print('HTML output\n')
print(f._repr_html_())

print('\n\n\nTeX output\n')
print(f._repr_latex_())
```

```
HTML output
```

Table 3: Quarto generated caption

	A		B		C
years!	Int	Float	Float	3	Longer Text
2012	0	1.000	1,199.50	2025-08-06	not in Kansas anymore
2013	8,333	9.300	1,432.88	2025-08-18	neutrinos are hard to detect
2015	25,000	804.357	1,899.62	2025-09-12	once upon a time
2016	33,333	7.481k	2,133.00	2025-09-24	risk is hard to define
2020	66,667	55.958M	3,066.50	2025-11-12	once upon a time

	A		B		C
years!	Int	Float	Float	3	Longer Text
2007		14.374u	32.62	06-06	not in Kansas anymore
2009		1.243m	499.38	06-30	Adam Smith is the father of economics
2013		9.300	1,432.88	08-18	neutrinos are hard to detect
2015		804.357	1,899.62	09-12	once upon a time
2020		55.958M	3,066.50	11-12	once upon a time

	A		B		C
years!	Int	Float	Float	3	Longer Text
2001		0.00	-1,367.62	03-25	risk is hard to define
2006		0.00	-200.75	05-25	risk is hard to define
2013		9.30	1,432.88	08-18	neutrinos are hard to detect
2015		804.36	1,899.62	09-12	once upon a time
2016		7,480.52	2,133.00	09-24	risk is hard to define

```
<div class="greater-table">
<style>
    #T4HD5XXJXVBZO  {
    border-collapse: collapse;
    font-family: "Roboto", "Open Sans Condensed", "Arial", 'Segoe UI', sans-serif;
    font-size: 0.9em;
    width: auto;
    border: none;
    overflow: auto;
    }
    /* tag formats */
    #T4HD5XXJXVBZO caption {
        padding: 8px 10px 4px 10px;
        font-size: 0.99em;
        text-align: center;
        font-weight: normal;
        caption-side: top;
    }
    #T4HD5XXJXVBZO thead {
        /* top and bottom of header */
        border-top: 1px solid #0ff;
        border-bottom: 1px solid #0ff;
        font-size: 0.99em;
        }
    #T4HD5XXJXVBZO tbody {
        /* bottom of body */
        border-bottom: 1px solid #f0f;
        }
    #T4HD5XXJXVBZO th  {
        vertical-align: bottom;
        padding: 8px 10px 8px 10px;
    }
    #T4HD5XXJXVBZO td {
        /* top, right, bottom left cell padding */
```

```
        padding: 4px 10px 4px 10px;
        vertical-align: top;
    }
    /* class overrides */
    #T4HD5XXJXVBZO .grt-hrule-0 {
        border-top: 0px solid #f00;
    }
    #T4HD5XXJXVBZO .grt-hrule-1 {
        border-top: 0px solid #b00;
    }
    #T4HD5XXJXVBZO .grt-hrule-2 {
        border-top: 0px solid #900;
    }
    /* for the header, there if you have v lines you want h lines
       hence use vrule_widths */
    #T4HD5XXJXVBZO .grt-bhrule-0 {
        border-bottom: 1.5px solid #f00;
    }
    #T4HD5XXJXVBZO .grt-bhrule-1 {
        border-bottom: 1px solid #b00;
    }
    #T4HD5XXJXVBZO .grt-vrule-index {
        border-left: 1.5px solid #0f0;
    }
    #T4HD5XXJXVBZO .grt-vrule-0 {
        border-left: 1.5px solid #0f0;
    }
    #T4HD5XXJXVBZO .grt-vrule-1 {
        border-left: 1px solid #0a0;
    }
    #T4HD5XXJXVBZO .grt-vrule-2 {
        border-left: 0.5px solid #090;
    }
    #T4HD5XXJXVBZO .grt-left {
        text-align: left;
    }
    #T4HD5XXJXVBZO .grt-center {
        text-align: center;
    }
    #T4HD5XXJXVBZO .grt-right {
        text-align: right;
        font-variant-numeric: tabular-nums;
    }
    #T4HD5XXJXVBZO .grt-head {
        font-family: "Times New Roman", 'Courier New';
        font-size: 0.99em;
    }
    #T4HD5XXJXVBZO .grt-bold {
        font-weight: bold;
    }
</style>
<table id="T4HD5XXJXVBZO">
<caption> (id: T4HD5XXJXVBZO)</caption>
<thead>
<tr>
<th class="grt-left"></th>
<th class="grt-center grt-bhrule-0 grt-vrule-index" colspan="2">A</th>
<th class="grt-center grt-bhrule-0 grt-vrule-0" colspan="2">B</th>
<th class="grt-center grt-bhrule-0 grt-vrule-0" colspan="1">C</th>
</tr>
```

```
<tr>
<th class="grt-left">years!</th>
<th class="grt-center grt-vrule-index" colspan="1">Int</th>
<th class="grt-center grt-vrule-1" colspan="1">Float</th>
<th class="grt-center grt-vrule-0" colspan="1">Float</th>
<th class="grt-center grt-vrule-1" colspan="1">3</th>
<th class="grt-center grt-vrule-0" colspan="1">Longer Text</th>
</tr>
</thead>
<tbody>
<tr>
<td class="grt-left">2000</td>
<td class="grt-right grt-vrule-index">-100,000</td>
<td class="grt-right grt-vrule-1"> 2.389p</td>
<td class="grt-right grt-vrule-0">-1,601.00</td>
<td class="grt-center grt-vrule-1">2025-03-13</td>
<td class="grt-left grt-vrule-0">once upon a time</td>
</tr>
<tr>
<td class="grt-left grt-hrule-0">2001</td>
<td class="grt-right grt-hrule-0 grt-vrule-index">-91,667</td>
<td class="grt-right grt-hrule-0 grt-vrule-1"> 22.217p</td>
<td class="grt-right grt-hrule-0 grt-vrule-0">-1,367.62</td>
<td class="grt-center grt-hrule-0 grt-vrule-1">2025-03-25</td>
<td class="grt-left grt-hrule-0 grt-vrule-0"> risk is hard to define</td>
</tr>
<tr>
<td class="grt-left grt-hrule-0">2002</td>
<td class="grt-right grt-hrule-0 grt-vrule-index">-83,333</td>
<td class="grt-right grt-hrule-0 grt-vrule-1"> 206.619p</td>
<td class="grt-right grt-hrule-0 grt-vrule-0">-1,134.25</td>
<td class="grt-center grt-hrule-0 grt-vrule-1">2025-04-06</td>
<td class="grt-left grt-hrule-0 grt-vrule-0"> not in Kansas anymore</td>
</tr>
<tr>
<td class="grt-left grt-hrule-0">2003</td>
<td class="grt-right grt-hrule-0 grt-vrule-index">-75,000</td>
<td class="grt-right grt-hrule-0 grt-vrule-1"> 1.922n</td>
<td class="grt-right grt-hrule-0 grt-vrule-0">-900.88</td>
<td class="grt-center grt-hrule-0 grt-vrule-1">2025-04-18</td>
<td class="grt-left grt-hrule-0 grt-vrule-0"> neutrinos are hard to detect</td>
</tr>
</tbody>
</table></div>
```

TeX output

```
\begin{tikzpicture}[
    auto,
    transform shape,
    nosep/.style={inner sep=0},
    table/.style={
        matrix of nodes,
        row sep=0.125em,
        column sep=0.375em,
        nodes in empty cells,
        nodes={rectangle, scale=0.635, text badly ragged},
```

```
    row 1/.style={nodes={text=black, anchor=north, inner ysep=0, text height=0, text depth=0}},
    row 2/.style={nodes={text=black, anchor=south, inner ysep=.2em, minimum height=1.3em, font=\bfserie
    row 3/.style={nodes={text=black, anchor=south, inner ysep=.2em, minimum height=1.3em, font=\bfserie
    column  1/.style={nodes={align=left  }, text height=0.9em, text depth=0.2em, inner xsep=0.375em, in
    column  2/.style={nodes={align=right }, nosep, text width=6.59em},
    column  3/.style={nodes={align=right }, nosep, text width=7.41em},
    column  4/.style={nodes={align=right }, nosep, text width=7.41em},
    column  5/.style={nodes={align=center}, nosep, text width=8.24em},
    column  6/.style={nodes={align=left  }, nosep, text width=23.89em},
    column  7/.style={text height=0.9em, text depth=0.2em, nosep, text width=0em}   }]
\matrix (T4HD5XXJXVBZO) [table, ampersand replacement=\&]{
      \&          \&           \&           \&            \&                                \& \\
 \grtspacer \& A\grtspacer \& \grtspacer \& B\grtspacer \& \grtspacer \& C\grtspacer
 years!\grtspacer \& Int\grtspacer \& Float\grtspacer \& Float\grtspacer \& 3\grtspacer \& Longer Text\
 2000 \& -100,000 \&    2.389p \& -1,601.00 \& 2025-03-13 \& once upon a time              \& \\
 2001 \&  -91,667 \&   22.217p \& -1,367.62 \& 2025-03-25 \&  risk is hard to define       \& \\
 2002 \&  -83,333 \&  206.619p \& -1,134.25 \& 2025-04-06 \&  not in Kansas anymore        \& \\
 2003 \&  -75,000 \&    1.922n \&   -900.88 \& 2025-04-18 \&  neutrinos are hard to detect \& \\
};

\path[draw, thick] (T4HD5XXJXVBZO-1-1.south west)  -- (T4HD5XXJXVBZO-1-7.south east);
\path[draw, semithick] ([yshift=-0.0625em]T4HD5XXJXVBZO-3-1.south west)  -- ([yshift=-
0.0625em]T4HD5XXJXVBZO-3-7.south east);
\path[draw, thick] ([yshift=-0.3125em]T4HD5XXJXVBZO-7-1.base west)  -- ([yshift=-0.3125em]T4HD5XXJXVBZO
7-7.base east);
\path[draw, very thin] ([xshift=-0.1875em, yshift=-0.0625em]T4HD5XXJXVBZO-2-2.south west)  -- ([yshift=
0.0625em]T4HD5XXJXVBZO-2-7.south east);
\path[draw, very thin] ([xshift=-0.1875em]T4HD5XXJXVBZO-1-2.south west)  -- ([yshift=-
0.3125em, xshift=-0.1875em]T4HD5XXJXVBZO-7-2.base west);
\path[draw, ultra thin] ([xshift=0.1875em, yshift=-0.0625em]T4HD5XXJXVBZO-1-3.south east)  -- ([yshift=
0.3125em, xshift=0.1875em]T4HD5XXJXVBZO-7-3.base east);
\path[draw, ultra thin] ([xshift=0.1875em, yshift=-0.0625em]T4HD5XXJXVBZO-1-5.south east)  -- ([yshift=
0.3125em, xshift=0.1875em]T4HD5XXJXVBZO-7-5.base east);



\end{tikzpicture}
```

3 A Table with TeX

```
index = pd.Index(["A", "B", "$C_1$", "C_2 not tex", '$\\cos(A)$'])
tex = pd.DataFrame(
{'x': np.arange(2020, 2025, dtype=int),
'b': np.random.random(5),
'a1': [f'$x^{i}$' for i in range(5,10)],
'a2': [f'$\\sin({i}x\\pi/n)$' for i in range(5,10)],
'a3': [f'$x^{i}$' for i in range(5,10)],
'a4': [f'\\(x^{i}\\)' for i in range(5,10)],
}).set_index('x')
tex = tex.head()
tex.columns = index
tex
```

Table 5: Quarto generated caption

x	A	B	C_1	C_2 not tex	$\cos(A)$
2020	0.32411	x^5	$\sin(5x\pi/n)$	x^5	x^5
2021	0.21317	x^6	$\sin(6x\pi/n)$	x^6	x^6
2022	0.63919	x^7	$\sin(7x\pi/n)$	x^7	x^7
2023	0.11213	x^8	$\sin(8x\pi/n)$	x^8	x^8
2024	0.68129	x^9	$\sin(9x\pi/n)$	x^9	x^9

Table 6: greater table output

x	A (%)	B	C_1	C_2 not tex	$\cos(A)$
2020	32.4%	x^5	$\sin(5x\pi/n)$	x^5	x^5
2021	21.3%	x^6	$\sin(6x\pi/n)$	x^6	x^6
2022	63.9%	x^7	$\sin(7x\pi/n)$	x^7	x^7
2023	11.2%	x^8	$\sin(8x\pi/n)$	x^8	x^8
2024	68.1%	x^9	$\sin(9x\pi/n)$	x^9	x^9

Table 4: Quarto generated caption: table displayed by default routine.

x	A	B	C_1	C_2 not tex	$\cos(A)$
2020	0.324114	x^5	$\sin(5x\pi/n)$	x^5	\(x^5\)
2021	0.213173	x^6	$\sin(6x\pi/n)$	x^6	\(x^6\)
2022	0.639189	x^7	$\sin(7x\pi/n)$	x^7	\(x^7\)
2023	0.112127	x^8	$\sin(8x\pi/n)$	x^8	\(x^8\)
2024	0.681293	x^9	$\sin(9x\pi/n)$	x^9	\(x^9\)

```
sGT(tex, 'GT Caption')
```

Ratio columns.

```
tex.columns = ["A (%)", "B", "$C_1$", "C_2 not tex", '$\\cos(A)$']
sGT(tex, 'Ratio columns in A', ratio_cols='A (%)')
```

4 Greater_tables Test Suite

```
test_gen = gtu.TestDFGenerator(0, 0)
ans = test_gen.test_suite()
```

4.1 Test Table: basic

```
hrw = (0, 0, 0)
sGT(ans['basic'], "Basic", ratio_cols='z', aligners={'w': 'l'},
        hrule_widths=hrw)
```

Table 7: Output for test table basic

painstak-ings	autistic int	hori-zons float	piss float	raiser float	refraining datetime	round datetime	shut str	tearful float
0,690	2,330	0.004	1.94217	34.295k	2009-08-28	2020-11-09	bonded	154.912k
13,645	8,352	0.031	0.00000	169.470k	2026-06-01	2032-05-31	dose	95.045M
42,090	119	0.000	0.03613	178.458m	2021-05-18	2009-12-25	frisky	1.780
46,162	5,875	0.000	0.00000	15.578k	2029-03-13	2033-03-12	fructose	203.368M
53,535	2,393	0.010	0.00000	3.652G	2015-08-04	2018-10-10	encrypt	11.218
66,823	5,235	0.026	0.00786	1.247	2022-07-04	2020-11-09	churches	12.287M
68,802	7,039	0.007	0.00447	9.184k	2014-08-22	2033-03-12	girl	56.436
81,532	-4,903	9.210	0.00000	76.281	2014-08-22	2021-06-08	mana	2.381G
94,053	-86	0.740	1.91619	179.650k	2030-02-23	2011-03-14	precariously	5.397G
99,346	-9,117	0.000	0.00019	53.829M	2029-03-13	2032-05-31	reportedly	593.429k

Table 8: Output for test table timeseries

separatists	Heartened Wildlife Evolves str	Hogging Bulb Moments str	Thump Insupportable Ranged datetime
2008-09-02	imports	stairs	2007-05-08
2013-07-14	adopts	associating	2026-11-10
2014-04-30	patching	wrought	2028-12-07
2014-12-08	lager	retrofitted	2011-01-06
2016-01-21	millennia	plain	2011-01-06
2016-10-12	adapts	dimensionality	2009-05-31
2019-08-11	shutting	deepen	2009-05-31
2019-12-12	starker	finesse	2007-05-08
2020-01-08	things	shaded	2028-12-07
2021-05-29	expandable	trainees	2019-04-22
2022-06-11	quorum	intro	2032-02-23
2022-11-17	punditry	oppose	2017-05-18
2023-12-13	trimester	underpinned	2007-05-08
2024-02-28	takeover	flushing	2012-10-01
2025-12-01	cots	psychopathic	2019-11-11
2028-02-13	exhortation	dented	2012-11-17
2028-08-15	detainees	nonpublic	2026-11-10
2030-02-12	solids	prevailed	2007-05-08
2031-01-28	explored	deceive	2009-02-16
2031-06-24	diverted	flagged	2019-04-29

Comments go here.

4.2 Test Table: timeseries

```
hrw = (0, 0, 0)
sGT(ans['timeseries'], "Timeseries", ratio_cols='z', aligners={'w': 'l'},
        hrule_widths=hrw)
```

Comments go here.

4.3 Test Table: multiindex

```
hrw = (1.5, 1.0, 0.5)
sGT(ans['multiindex'], "Multiindex", ratio_cols='z', aligners={'w': 'l'},
        hrule_widths=hrw)
```

Comments go here.

Table 9: Output for test table multiindex

mark-ing	confirmable	fattest	Bethle-hem Pillar Thrives date	Fares Guide-line Things int	Heaping Nutri-tional Cakes int	Sparkling Adjoining Prescriptions float	Subway Scraper Strate-gize float
21,165	invasive	14,293	2027-05-30	950,527,854	746,873,891	1.81472	0.00000
	irreconcilable	15,913	2007-02-21	783,061,904	51,725,414	0.06333	0.00201
	thrives	2,659	2007-02-21	228,519,858	713,492,446	0.00000	0.03827
	thrives	51,266	2021-11-25	989,793,067	865,932,666	0.00000	0.09811
68,642	invasive	5,381	2032-07-11	195,752,961	822,678,106	3.66230	0.86233
	invasive	66,841	2012-11-22	764,971,744	904,002,366	0.19107	3.12595
	irreconcilable	53,503	2021-11-25	410,822,731	761,097,051	0.00000	0.21106
	irreconcilable	70,755	2027-05-30	745,879,589	356,314,550	0.89981	0.00000
	thrives	19,754	2022-06-15	568,299,103	165,229,578	0.00068	0.00000
	thrives	88,035	2008-01-30	7,390,826	283,709,128	0.00014	0.00343

Table 10: Output for test table multicolumns

	anniversary				potential
	carmen		guesthouse	leasing	carmen
insurmountable	milk	ugliness	macedonia	damon	expressive
12,538	295	737,079,280	3.383u	21.692M	340,578,270
15,497	6,797	110,541,915	164.388n	245.184m	993,872,892
16,270	7,742	984,809,158	2.268u	521.846M	589,546,769
25,647	7,650	336,829,303	363.209u	322.738	816,419,561
47,846	-6,433	364,341,348	1.366n	2.550k	937,381,023
58,766	-7,015	192,946,467	21.341u	67.151	775,046,471
79,762	-403	44,076,239	347.047n	137.999	556,293,804
83,650	9,859	615,061,019	123.926n	12.888k	997,832,026
93,480	-4,281	644,396,349	1.244n	3.942M	458,699,377
99,575	2,542	886,596,882	1.744u	5.594	936,005,665

4.4 Test Table: multicolumns

```
hrw = (0, 0, 0)
sGT(ans['multicolumns'], "Multicolumns", ratio_cols='z', aligners={'w': 'l'},
        hrule_widths=hrw)
```

Comments go here.

4.5 Test Table: complex

```
hrw = (1.5, 1.0, 0.5)
sGT(ans['complex'], "Complex", ratio_cols='z', aligners={'w': 'l'},
        hrule_widths=hrw)
```

Comments go here.

Table 11: Output for test table complex

			corral						courses		
			impute			resources	unveil		impute	resources	
freest	ginseng	veritable	burmese	defeat	sacks	expanse	fruits	knowledge	detergents	congratulations	pe
41,568	anything	3,498	8.52037	25.655k	1992	2031-02-27	2027	0.00017	18.839	2009	
	anything	53,225	0.00000	9.135M	2018	2010-10-29	1994	0.00001	-13.447G	2017	
	anything	66,469	0.00392	299.427M	1995	2014-07-19	2015	0.00002	104.090f	2026	
	biennial	20,558	0.00000	259.896	1997	2026-04-25	1994	0.00000	-2.467y	2009	
	injected	349	0.00002	121.756k	1991	2020-09-06	1994	0.00000	0.000y	2011	
	injected	9,786	0.00001	216.231	2017	2019-03-29	2026	0.05690	2.612n	2005	
	injected	22,688	0.00005	239.427k	2002	2006-09-25	1993	0.00001	88008178220.269Y	2028	
	injected	38,219	0.39205	41.996M	2012	2014-06-13	2016	0.00000	64.572n	2011	
	injected	60,326	0.41157	878.466m	1994	2015-08-22	2010	0.00000	-6.097G	2008	
	injected	83,180	3.91704	279.932	2029	2006-09-25	2002	0.00001	-4.502P	2021	
96,420	anything	6,979	4.36669	193.542M	2006	2009-05-29	1990	0.00090	5.089T	2027	
	anything	13,184	0.00000	48.730M	1993	2009-05-29	2013	6.92281	-553.381f	2001	
	anything	16,324	0.00003	1.162M	1996	2022-01-14	2021	0.00003	0.000y	1991	
	anything	31,859	0.07087	10.326	1996	2019-03-29	2024	0.00023	37.521k	2007	
	anything	73,582	0.27984	706.072m	2003	2014-06-13	1992	4.67508	-8.015p	2022	
	anything	86,572	0.00040	18.108	2014	2026-04-25	1991	2.04921	-0.000y	2004	
	biennial	51,500	0.00000	27.759M	2018	2019-03-29	1996	0.00000	-0.000y	2028	
	injected	3,930	0.01020	15.794k	2027	2009-05-29	2003	0.00000	0.000y	2009	
	injected	56,017	0.37955	14.470M	2008	2009-12-20	2026	1.47071	-0.000y	2014	
	injected	72,982	0.01078	65.477k	2001	2014-07-19	2004	0.97493	0.000y	1998	