Manual for `swimgraf.sty`

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1. Introduction

`swimgraf.sty` is a LaTeX 2_ε style file for drawing graphs and producing written records of a swimmer's times. The data is stored in a text file (by default, `swg.dat` in the current directory). The package defines two public macros:

- `\swimgraph` plots the times, with separate lines for short course and for long course times, for a single event for a range of dates specified by the user, together with any records (including possibly age-specific ones) requested.
- `\swimtext` produces a written record of results in all events for a range of dates specified by the user.

The macros are defined precisely in Section 11. Please report bugs to me.

2. Installation

- Put `swimgraf.sty` and `swimgraf.cfg` in a directory from which TeX reads input files. (In MiKTeX the directory might be something like `\miktex\localtexmf\tex\latex\swimgraf`.)
- Let TeX know that `swimgraf` has arrived. (In MiKTeX, "refresh the filename database".)
- Get the packages `PSTricks` and `keyval` from CTAN if you don't have them.
- If you want to use Palatino rather than Computer Modern as your font, get also the package `mathpazo` and check that the line

  ```
  \RequirePackage{mathpazo}
  ```

  in `swimgraf.sty` is uncommented. (If you want to use the standard Computer Modern fonts, check that this line is commented out.)

- If you want to include the world records for female swimmers on your graphs (in addition to a swimmer's times), copy the file FWORLD.DAT to a working directory (maybe \swimming) and rename it FW.DAT. Similarly if you want to include world records for male swimmers, copy the file MWORLD.DAT to the same directory and rename it MW.DAT. Several other records files are available: FCANADA.DAT and MCANADA.DAT (Canadian adult records) (call them FN.DAT and MN.DAT), FCANADA*n*.DAT for n =11–17 (female Canadian age-specific records) (call them FA*n*.DAT), and FONTARIO*n*.DAT for n = 8–17 (female Ontario Provincial Standards) (call them FB*n*.DAT). Other records and standards may become available on my web page, http://www.economics.utoronto.ca/osborne/latex.

- Edit the file swimgraf.cfg to set the directory in which you store records files. (When you edit the file you'll see that you can set many other parameters. All of them can alternatively be set in the first optional argument of \swimgraph.)

- Put the documentation files readme.txt, swimgraf.pdf, sample1.dat, sample2.dat, 100br1.tex, 100br1.pdf, 100br2.tex, 100br2.pdf, text1.tex, text1.pdf, text2.tex, and text2.pdf, in an appropriate directory. (In MiKTeX the directory might be something like \miktex\localtexmf\doc\latex\swimgraf.)

3. Example

The following example illustrates the basic features of the package. Bells and whistles are discussed in Section 12.

The sample data file sample1.dat is:

```
% Sample data file for \swimgraph
Alison
f
1988-5-9

m=TSC Club Meet
d=2001-2-5

r=100 breast 1:21.65
c=s
```

```
m=U of T Sprint
d=2001-3-2

r=50 breast 38.6
r=100 breast 1:18.4

d=2001-3-3
r=50 free 33.21
r=100 fly 1:20.34

m=Ralph Hicken
d=2001-4-5

r=100 breast 1:20.2
c=l
r=50 free 32.45

m=TSC Finale Meet
d=2001-6-15

r=100 breast 1:18.26
r=50 free 33.51
```

The first line is a comment (ignored by both `\swimgraph` and `\swimtext`). The next three lines give the swimmer's name, sex, and date of birth. (Sex and date of birth are needed to determine which records to display on the graph.) The subsequent lines define meet names (`m=`), meet dates (`d=`), results (`r=`), and course lengths (`c=`). Meet names, meet dates, and course lengths persist until changed—they don't need to be specified for every result. (Blank lines are included in the file only to make it more readable. Comments (lines starting with %) can also be included for this purpose.)

The file `100br1.tex` is:

```
\documentclass[12pt]{article}
\usepackage{swimgraf}

\begin{document}

\swimgraph[xunit=0.43mm,yunit=4.5mm,datafile=sample1.dat]%
{100 breast}{2000-12-1}{2001-9-5}{1:05}{1:30}
```

```
\end{document}
```

(Note that if the file in which the data is stored were named `swg.dat`, the keyvalue specification `datafile=` could be omitted from the optional argument of `\swimgraph`.)

When you run this file through TEX, you get a plot of all the results for the 100m breast in the file `sample1.dat` between 2000-12-1 and 2001-9-5, with the lowest time on the graph 1:05 and the highest time 1:30. If you have the appropriate records files (`FW.DAT`, `FN.DAT`, `FA12.DAT`, `FA13.DAT`, `FB12.DAT`, and `FB13.DAT`), the result should be the same as `100br1.pdf`. (If you do not have all these files, you could change the arguments of `\ExecuteOptions` in `swimgraf.cfg` to include only the ones you have.)

Notice that both short course (dark) and long course (light) records and times are plotted. Note also that the Canadian record plotted on the graph reflects the fact that the swimmer turns 13 on May 9.

If you change the argument `100 breast` to `50 free` and adjust the low and high times appropriately, you'll get a graph of the swimmer's times for the 50 free.

(As you may notice, when you run the file through TEX, four temporary files are written (with the extension `tmp`). You can delete these files once the `dvi` has been created.)

You can create a written, rather than graphical, depiction of the same data by using the macro `\swimtext`, as in the file `text1.tex`, as follows.

```
\documentclass[12pt]{article}
\usepackage{swimgraf}

\begin{document}

\swimtext[datafile=sample1.dat]{2000-12-1}{2001-9-5}

\end{document}
```

(Again, if your data is in a file called `swg.dat` you can omit the optional argument.) When you run this file through TEX your output should resemble `text1.pdf`.

If you keep data for more than one swimmer, a convenient way to do so is to put files relating to each swimmer in a separate directory.

4. Dates

The format for all dates is `yyyy-mm-dd`. Leap years are ignored in `\swimgraph`, in the sense that `xxxx-2-29` is plotted as if it were `xxxx-3-1` (and for that matter, `xxxx-2-39` is the same as `xxxx-3-11`).

5. Times

Times may be written in any of the formats `m:s.i`, `m:s`, and `s`. Times specified in seconds (i.e. in the forms `s`) are interpreted correctly if `s` exceeds 59. For example, two minutes and ten seconds can be specified in any of the following ways:

- `2:10.0`
- `2:10`
- `130`
- `130.0`
- `1:70.0`
- `1:70`

(There doesn't seem to be a good reason to use either of the last two formats, but they are OK.)

6. Data files

A data file has the following structure.

First line Ignored by both `\swimgraph` and `\swimtext` (whether or not it starts with %).

Second line Swimmer's name. Will appear in titles. May be any text string (using proper TEX syntax).

Third line Swimmer's sex, either `f` or `m`. (Used by `\swimgraph` to determine which records to include in graph, if any are called for.)

Fourth line Swimmer's date of birth (in the standard date format). Used by `\swimgraph` to determine which age-specific records to put on the graph.

(Note that comments may not appear in between these lines.) Every subsequent line must be either blank, start with % (a comment line, ignored by both macros), or consist of a single letter followed by = and an arbitrary text string. The letter preceding = determines how the string following it is interpreted, as follows.

`m` Meet name. Used on graph; used in text if not overridden by `M=` setting. May be any text.

`M` Full meet name. If present **after** `m=`, used for meet name in text. If absent, text uses `m=`.

`r` Result to be put in both text and graph, with label on graph above point representing time. Format: `<distance> <stroke> <time>`.

distance One of `50`, `100`, `200`, `400`, `800`, `1500`, `4x50`, `4x100`, or `4x200`. (Note that "m" should not be included.)

stroke One of `free`, `breast`, `back`, `fly`, `MR` (medley relay), `FR` (free relay).

time A time in one of the allowed formats (see Section 5).

`u` Result to be put in both text and graph, with label on graph *under* point representing time. Same syntax as for `r=`.

`R` Result to be put in both text and graph, with no label on graph. Same syntax as for `r=`. (If you don't want to label any result on the graph, you can use the option `nolabels` in `\swimgraph`.)

`x` Result to be put only in text. Same syntax as for `r=`.

`c` Course length: must be either `s` (short course) or `l` (long course). Default is `s` at start of `\swimgraph` and `\swimtext`. Persists until changed (doesn't need to be set for each result). Should be reset whenever course length changes. Must be set **after** the first result to which it applies.

`a` Age range for event (e.g. `11`, or `11-12`, or `10 \& under`). Persists until changed. May be any text string. Used only by `\swimtext`.

`t` Type of event (e.g. Finals, Prelims). Used only by `\swimtext`. May be any text string.

`p` Swimmer's place in the event (e.g. 1st, 2nd, 65th). Used only by `\swimtext`. May be any text string.

`P` Swimmer's place in the event among her own age (e.g. 1st among 9 year olds, 65th among 11 year olds). (Intended for events in which swimmers of more than one age compete.) Used only by `\swimtext`. May be any text string.

`w` Winning time. Used only by `\swimtext`.

`1` Identity and/or time of winner. Used only by `\swimtext`. May be any text string.

`2` Identity and/or time of second place swimmer. Used only by `\swimtext`. May be any text string.

`3` Identity and/or time of third place swimmer. Used only by `\swimtext`. May be any text string.

`4` Identity and/or time of fourth place swimmer. Used only by `\swimtext`. May be any text string.

`o` Any other remarks about result. Used only by `\swimtext`. May be any text string.

7. Month and year labels

Month labels appear on a graph only for full months. Year labels appear for years that consist of at least one full month.

8. Package options

`landgraph` Defines margins appropriate if you use the `landscape` option in the `article` style. (That is, designed to be used if your file specifies `\documentclass[12pt,landscape]{article}`, or something like that.) When you create the Postscript file from the `dvi` you need to use the appropriate options. For `dvips`, for example, you need `dvips -t landscape <filename>`.

`i` where `i` is `a`, `b`, `c`, `d`, `e`, `f`, `j`, `n`, `w`, `x`, `y`, or `z`. Include on the graph the record series that is in the file `Si.dat`, where `S` is the swimmer's sex (either `f` or `m`). (If a file does not exist, you will be warned (but you won't get an error).)

By default, the configuration file `swimgraf.cfg` executes the options `a`, `b`, `n`, and `w`.

9. Macro options

The `\swimgraph` macro accepts as optional arguments any set of key values from the following list. (Defaults values are set in `\swimgraf.cfg`.)

xunit Value of the xunit. Can be any legal PSTricks value for xunit. (E.g. a dimension is OK.) Defaults to 0.4mm in the standard configuration file `swimgraf.cfg`.

yunit Value of the yunit. Can be any legal PSTricks value for yunit. (E.g. a dimension is OK.) Defaults to 3.5mm in the standard configuration file `swimgraf.cfg`.

framesep The amount of white space around the text boxes containing the names of records on a graph. Can be any legal PSTricks value for framesep. (E.g. a dimension is OK.) Defaults to 0pt in the standard configuration file `swimgraf.cfg`.

nolabels If present without an argument, labels indicating the meet names are not put on a graph.

datafile Name of file containing swimmer's results. If none is specified, `swg.dat` is used.

recordpath Path to files containing records.

`i`**sccolor** Color of short course record for record series `i`.

`i`**lccolor** Color of long course record for record series `i`.

sccolor Color of line on graph of swimmer's short course times.

lccolor Color of line on graph of swimmer's long course times.

labelcolor Color of meet labels on graph.

monthlinecolor Color of vertical lines marking divisions between months on graph.

yearlinecolor Color of vertical lines marking divisions between years on graph.

oneseclinecolor Color horizontal lines every second on graph.

fiveseclinecolor Color horizontal lines every five seconds on graph.

labelfontsize Font size for meet labels on graph (e.g. `\small`).

keyvsep Vertical distance between top of graph and base of key at top.

monthvsep Vertical distance between baseline of graph and month labels.

yearvsep Vertical distance between baseline of month labels and year labels.

titlevsep Vertical distance between baseline of year labels and title.

labelvsep Vertical distance between plotted dots and meet labels.

tlabelpos Horizontal distance between "time" label and y-axis.

linewidth Line width for plot of swimmer's times.

reclinewidth Line width for record lines.

The `\swimtext` macro accepts as an optional argument the key value `datafile=xxx`, where `xxx` is the name of a file containing the swimmer's results.

10. Records

A record file has the following format.

First line Ignored. Can be used as identifying comment.

Second line Title of record as it will appear on graphs.

Subsequent lines Groups of three lines, consisting of an event name (e.g. `50 free`), followed by the short course record, followed by the long course record. If no record exists for an event, simply omit the event. If for some event a short course record exists but not a long course one, or vice versa, enter `0` for the missing record (*not* a blank line). Comments may be placed between groups of three lines, but not within any such group.

If you construct a record file, please send it to me so that I may make it publicly available. My website `http://www.economics.utoronto.ca/osborne/latex` may contain record files other than those on CTAN.

Records appear on a graph only if they are between the low and high times specified as arguments of `\swimgraph`.

11. Specification of macros

`\swimgraph[`*options*`]{`*event-name*`}{`*start-date*`}{`*end-date*`}{`*low-time*`}{`*high-time*`}`
Arguments:

options Sequence of keyvalues, as described in Section 9. Example: `xunit=0.43mm,yunit=3.8mm,nolabels,sclinecolor=red`.

event-name Event name, without `m` after distance. Examples: `50 free`, `200 IM`, `4x50 MR`.

start-date Starting date; may be any legal date (see Section 4).

end-date Ending date; may be any legal date (see Section 4) that is later than *start-date*.

low-time The lowest time for the *y*-axis of the graph. May be any legal time (see Section 5).

high-time The highest time for the *y*-axis of the graph. May be any legal time (see Section 5) that is larger than *low-time*.

`\swimtext[`*option*`]{`*start-date*`}{`*end-date*`}`
Arguments:

option The only possible option is `datafile=<filename>`.

start-date Starting date; may be any legal date (see Section 4).

end-date Ending date; may be any legal date (see Section 4) that is later than *start-date*.

12. An example illustrating some bells and whistles

The file `sample2.dat`, which is called by `100br2.tex` (which produces the output `100br2.pdf`) and `text2.tex` (which produces the output `text2.pdf`), illustrates several features of the package. In particular, in `100br2.pdf` one of the results for 2001-3-2 is not labeled (there are two results that day, one for Prelims and one for Finals), and the label for the first long course result appears below, rather than above, the point on the graph. Also this graph is in the landscape format. (When converting the `dvi` to Postscript, remember to specify landscape.) The file `text2.pdf` shows the effects of several of the "switches" that may apply to a result.

13. Errors

Some errors are trapped, and produce sensible error messages. Others produce error messages from TEX that are entirely useless. If you get such a message, check the syntax of your data and records files. Note that any text in a data file must have correct TEX syntax. For example, if your swimmer is an event for 11 and 12 year olds, you must enter `a=11 \& 12` rather than `a=11 & 12`.

14. Structure of style file

You don't need to know anything in this section to use the style file.

The datafile in the current directory specified in the optional argument, or `swg.dat` if none is specified, is scanned. After the first four lines are read, the macros `\swimgraph` and `\swimtext` examine every line that isn't empty or a comment (starting with %). Before using a line, the macro checks that the second character is =, under the assumption that the line contains at least three characters. (A line that contains fewer than three characters produces a funny error from TEX.) Information is collected from the lines; the information needed by PSTricks is written to temporary files, to be read later by `\dataplot`. `\swg@eventfound` is initially false. When a result line is found, `\swg@eventfound` is changed to true, and more lines are read (they will contain information relating to this result) until a line starting `m=`, `M=`, `d=`, `r=`, `u=`, or `R=` is found. If at this point `\swg@eventfound` is true, all the relevant information about the previous event is either written to temporary files (in the case of `\swimgraph`) or output (in the case of `\swimtext`), `\swg@eventfound` is switched back to false, and all the event-

specific switches except `c=` (course length) and `a=` (age for an event) are set back to empty. (The course length and age variables persist until they are re-set, the assumption being that a sequence of results are going to have the same values of these variables.)