setup_maxima-init.wxm

GNU General Public License 2020 Stephen Athel Abbott.

A development system setup document for Geometric Algebra with wxMaxima
that may be used to locate and show how to edit the path definition file
named init-maxima.mac; then checks that there are no stdin errors due to
batchload initialization;
contains...
User Path Definition
Initialization
Loading of functions (intrinsic and GA specific)
Pseudoscalar definition (specifies the space dimension) and
Calculation of the inverse pseudoscalar used to generate the dual of a multivector
Enumeration of the standard basis for the specified dimension

using pseudoscalar set {e1,e2,e3} to show that path definition works;

User Path Definition

the variable below may or may not have a value after wxMaxima has been started,
however, the user path definition will give it a value for the GAwxM project code;

```
(%i1)  display(wxMuserdir)$
```


Result

the path definition file, maxima-init.mac must be located, moved and edited;
after the first extraction from the download the file should be found alongside
the folder holding all of the project code, /GAwxM;

the file contains the variable, wxMuserdir, and this allows the paths
in file_search_maxima to be extended to point to both the GA and GC functions, and
the initialization functions, wherever the user documents are located;

when wxMaxima is started a user directory is established by the CAS, and the
path to this folder shows us where the CAS might first look for a user path
definition file since we may wish to have our development code elsewhere
(even on another drive); so we can move the maxima-init.mac file to the folder
given by the variable, maxima_initdir below;

```
(%i2)  ldisplay(maxima_userdir)$
       maxima_initdir:strimr("maxima",maxima_userdir)$
       ldisplay(maxima_initdir)$
```


Result

having moved the path definition file, maxima-init.mac to the folder given by
the variable, maxima_initdir above, we may now see how it needs to be edited;

```
(%i5)  ldisplay(file_search_maxima)$
```


Result

the code below contains the first two lines from the file
named init-maxima.mac;
"userdir" is the location of the folder /GAwxM/ holding all of the
sub-folders for the project code;
the first line must be edited to point to the location of the folder
named /GAwxM/ after the file maxima-init.mac has been moved to maxima_initdir

```
(%i6)  userdir:"C:/Maxima_user/"$
       ldisplay(userdir)$
       wxMuserdir:userdir$
       ldisplay(wxMuserdir)$
```


Result

If the download of the project has been to a folder other than C:/Maxima_user/,
then the value of the string variable, userdir should be edited both here and
in the maxima-init.mac file

this setup document will keep appending each time it is run in order
to test the maxima-init.mac file held within the maxima_initdir folder;
the duplicated paths will do no harm and help to show how the
maxima-init.mac file operates when wxMaxima is started; it also
shows how and why the variable "userdir" must be edited within
the maxima-init.mac file

here is the next line of code from the file named init-maxima.mac

```
(%i10)  fylenames:simplode([wxMuserdir,"GAwxM/GA_functions/###.wxm"])$
        ldisplay(fylenames)$
```


Result

and the next line from the file, init-maxima.mac

```
(%i12)  file_search_maxima: append (file_search_maxima,[fylenames])$
        ldisplay(file_search_maxima)$
```


Result

once the paths are estabished by the file named init-maxima.mac we can
just use the code from the initialization document itself named
initialization.wxm

Initialization

batchload GA specific (maxima) function files;

```
(%i14)  ext:["wxm"]$
        file_type_maxima:append(ext,file_type_maxima)$
        batchload("initialize_fns")$
```

the pseudoscalar and its inverse
the lowest useable dimension pseudoscalar should be {e1,e2} i.e. Plen = 2
e.g. for four dimensions edit Pseudos:{e1,e2,e3}$ to Pseudos:{e1,e2,e3,e4}$

```
(%i1)  Pseudos:{e1,e2,e3}$
       Pvar:listofvars(Pseudos)$
       Plen:length(Pvar)$
       I:Pseudos$
       ni:(Plen-1)*Plen/2$
       Ii:(-1)^ni*I$
       kill(ni)$
       ldisplay(Pvar)$
```


Result

```
(%i9)  batchload("initialize_lsts")$
```


Result

end of Initialization