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```
#Real hackers use Bourne Shell
```

```
#Make an Ri Binding for SH
```

```
$for i in *.rib  
>do  
> ReadArchive $i  
>done
```

#But wait...

#RIB is just a list of commands...

\$ls bin

Attribute	Hyperboloid	Scale
AttributeBegin	Identity	Sides
AttributeEnd	LightSource	Sphere
Basis	Opacity	Surface
Clipping	Orientation	Torus
Color	Paraboloid	Transform
ConcatTransform	Patch	TransformBegin
Cone	PatchMesh	TransformEnd
Cylinder	PixelSamples	Translate
Disk	Polygon	WorldBegin
Display	Projection	WorldEnd
Format	ReverseOrientation	
GeneralPolygon	Rotate	

more

```
#We can execute RIB files!  
#EOL's are the only problem...  
#Force all parameters onto the same line  
  
#Now we can embed SH in RIB  
#or RIB in SH  
  
#Stupid...  
  
#But not stupid enough...
```

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#Lets just rewrite the renderer in SH

```
$cat bin/AttributeBegin
cp -r $ATTRIB /tmp/OldAttributes
rm -rf $ATTRIB/OldAttributes
mv /tmp/OldAttributes $ATTRIB

$cat Translate
echo 1 0 0 $1 >$ATTRIB/tmpMatrix
echo 0 1 0 $2 >>$ATTRIB/tmpMatrix
echo 0 0 1 $3 >>$ATTRIB/tmpMatrix
echo 0 0 0 1 >>$ATTRIB/tmpMatrix

matrixMultiply $ATTRIB/transform \
               $ATTRIB/tmpMatrix \
               $ATTRIB/tmpMatrix2
mv $ATTRIB/tmpMatrix2 $ATTRIB/transform
rm $ATTRIB/tmpMatrix
```

more

```
#use BC for the floating point maths:  
$cat dotProduct4  
bc <<!  
($1*$5)+($2*$6)+($3*$7)+($4*$8)  
!
```

```
#Now just add some classic RIB files:
```

```

          $$$$:
~####++
~@@@+

          o~####++
###PP$$$$##o~####++
###Po#####PPP~####++
###Po~~oPPPo~####++
###Po~~~###~####++
###PoPPPPP###~####++
###PP~~~~~P$~####++
###PP
###PP
###PP
###P
###P
###P
###P
###

```

o:ooo+o o++@@\$\$8
+P:oooPPPP:o:+#~~:~::~:
+++++PPPP88\$@~~,,+::PPP,#PP8
\$: 8PP888\$8@~,,+,+PP~,,PP+:+++++::~
::,,:::@P,8@o\$~,,+,+PPPP~~~P+,PPPPP+oooo++~:
:~,,,:::oo,##@,\$,::::PP\$\$:~::~:\$\$o8 +PPPPoo+\$:o
:~,,,:::ooP+P8~@##:::PPPP~~~, @@@@ @@P P
~~,,,:::PPPPP#P8,:@++++:::~~~~##+@@@@@PP\$\$\$\$8888o88Po
+~::,,:PPP\$#\$~8#:++++PPPP~~~##@@@@@@@@PP\$\$\$\$\$8+o888o
+:::,,++++\$\$~PP#++++PPPP~~~##@##### @@@@ \$\$\$\$\$\$ \$\$88P
o~ooo,,+++++~PP#8#++++:PP~~~##@##### @@@88@@\$\$\$\$\$ \$88P
o~ooooPPPP++8\$PP#88,@@Poo::~~##### @@@88\$@\$\$\$\$\$ 8\$@
ooPPP~P#oooPP888:@@@oo:#P###8##### #8888 888P 8+@@,P
P: ,+ ~P#@, ##oPo\$~\$o@@@,,:###8\$P P@@@@ @@@PPPo88+888o
:8\$,+++++ , o\$#\$+:,:#, ,P#P,8@@@@@\$\$\$\$88 P+++++8@@8888~
88\$##\$,8+P+ o\$#\$+: ,,+@ @~-@@\$\$\$\$88PP#+++++P 888P+
~#::+\$\$\$\$88#P## 8#P: P@@@, \$\$\$888PPP@oooo 8 \$\$8
+\$\$\$\$88#P+~@~ :@@@@@++oPP @88PPP@ ##@:PP #\$\$\$\$P
+\$\$\$8+#P~~ P88@@@@ P8o+ \$@@## ##8PPP #\$\$\$@P~
o\$~~P~:# ::,P@@@#@@@@@ #\$\$\$@## @##P@## ###@@P
8P++# \$\$,8+@@@#o\$@@@# @8ooo# @#:P@## ###@@P
o+,\$\$@P@@@@#o\$@:@# @8ooo# @@,P@## #####\$P
:o8@@@@#~o\$\$:@@ @8ooo8,,@8oP@@# @##\$P
+o8@@,~o88~@@@@@\$\$oo,88:o8\$@# o@@88PP
8P@,@:o88~@@@@@\$\$Po P,P\$##,,@88P,
+,8:o88~@#\$\$\$\$8o P@8,PP@PP
~o88,@,\$\$\$\$\$88
o8@,,\$PP8888@
,PP

8\$@ @\$\$\$\$\$PPP @\$\$\$\$@#@#@#@# oo
 @@@###@###@#@#@#@# #@@@@@@@@@ @@@@ +
 P@###@#@#@#@#@#@# ##,,,,,,,,,:@ @###PP#
 \$ ## ##### #~~~,, , #####\$#8
 ~@##### # ###@#@#####\$#@#
 o#####:~::~::~:~# #####o \$
 @## ##### #~:~::~::~:@#####
 @\$+@# ##### ::::: #####@##
 :###@#@##### #:~::~::~:@@ # ##
 ##### @\$\$\$\$@#@#@#@# #~~::~::~:~@ ####P #
 #P#@##### @#\$oo@888888 ,,,,,,~@#####
 ##o#### +# \$\$\$8PPPP #####\$ \$
 @8 ##### P @ 8####\$#
 #P## @:~::~:~ ,~ # \$ ##
 o@# +:::~## #~~~~~~~P,@@ , ,~ ###\$# ##
 :::::~# PP~~~~~ \$++++#@@~~~~~~~~P#@#\$P, ##8
 :+++ ##P#:~P:~:::~P:~:oooo~P~~ \$++++#@#@#~:####
 ++++o: +++++:::~8:oooooooPPP:~:::~PP:~:oo:P: ##P@P
 ##+ooo#@\$o+++++++\$\$++ oo888+++ oooooo:oo##:~,##
 #oPPP#Poooooo8ooooooo+++++++8+oo++o +8#### #
 P\$\$\$#~~PPPPPPPPPo oooooo oooooo\$OPoooPPPo~#: ##P@#
 o\$\$\$\$@\$\$\$\$\$@\$\$\$PooPPPoooPPPPPPPPPoP@Pooooo +\$@o####P@
 :\$+PP8\$\$\$\$\$@\$\$\$\$\$P\$ PP8888\$88 88\$\$\$\$,##### P#@8
 #####~ooo\$\$\$\$\$\$\$\$\$,8@@@@@@@@@@@@@PPPPP@eo##@##PP @#
 ### ,~~oo88+,@@@@@@@@@#@8o####P8##@#PP# @#
 ##### ~~ooo8@8@@@@@8####P @#@@PP ###
 ### ,:P88\$\$\$\$\$:@ ###P # #
 ### ##\$ \$\$
 ##### ##\$
 ### ##
 ##### #####
 ### ##
 ### ##\$
 # \$
 # #
 # \$
 ##

more

+:::~P~::~
 ,++8888~8888,oo#
 ,,,,++88888888\$P@8## @
 ,,,, \$@o##888888\$, ,+#~#@@
 ,,,, @#####8\$\$\$, ,ooo@e#
 ~~, , @#####@e\$::: #ooo
 ~~8####e#####:::
 ~~88888####e#####::: #o
 ~8888888P#####::: #+~
 88888PPPPPP@:oo::, ~#####, ##~,
 :PPPPPP@888@e888#####~~, #P~+
 :##8@e@, PP#####@P88oPP+
 88\$\$:\$8~::~#####@ooooPPPP8
 \$ o8\$ \$ \$88:##ooo88@e#####@oooo\$\$\$\$\$oo
 :o~ooo 888~ @e#####@PPPP\$\$\$\$\$
 #e\$8+++88+~#####e#####@PPPP#\$
 \$ #P, @ooo\$\$~\$\$\$::: @~#####e\$e#####@e#8e#o,
 PP\$#, :8\$\$\$e\$\$\$\$\$PPP@e@e\$8+88e\$\$\$\$\$#####e@e @o:
 : 8888\$PPPPPP++ooooo@e#####e @e8
 8PPP88888\$\$\$\$\$##### ##
 ~~, , , , , , , , , , , , :\$#####o~8#####
 \$\$\$\$\$##o####P888####
 # \$#####\$\$\$\$o####PPP888
 #P @e@::PP\$\$\$\$\$~::: #:e\$e\$
 @e@:+P~\$88888e~\$ e\$e\$e\$
 @e::\$\$88888 e@e@e@e\$e\$
 \$\$\$\$8888 , , \$e\$
 ~~~~\$888  
 8

more

#And of course it comes with source code!  
#[www.dctsystems.co.uk](http://www.dctsystems.co.uk)

quit