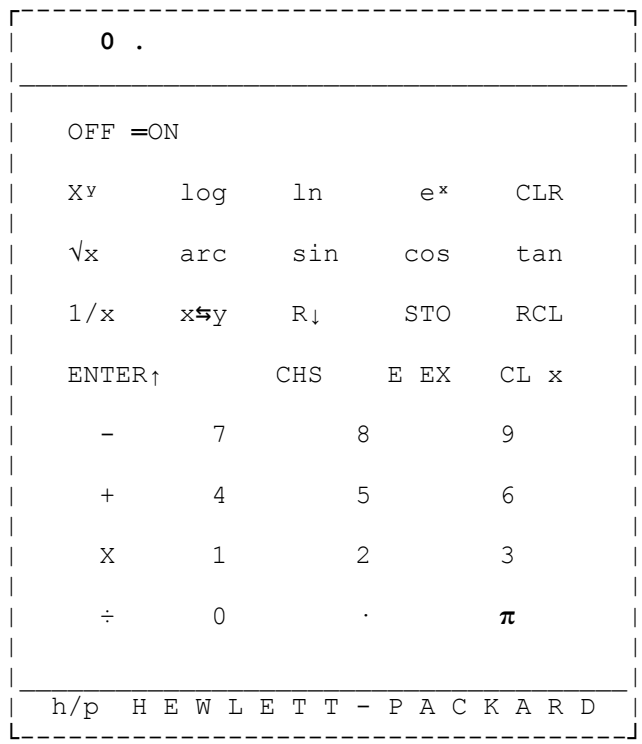
This program emulates the classic HP-35 Scientific calculator released by Hewlett-Packard in 1972. This calculator uses RPN (Reverse Polish Notation.)

The emulator requires Python 3.7 or higher. It has some limitations in that the user has to hit <cr> after most commands, unlike the original calculator, where pressing another key indicates that action was required. The calculator is displayed in a terminal window and will run under Linux, Mac OS or Windows-10/11 (if Windows is equipped with one of the free Linux apps, such as Ubuntu 22.04 LTS .)

Help is available:

```
hp35 -h
usage: hp35 [-h] [-v] [-q] [-d {W,G,Y,R,B,M,C}]

optional arguments:
  -h, --help            show this help message and exit
  -v, --version         show program's version number and exit
  -q, --quiet           display stack (X,Y,Z,T registers) and mem, Default is to
display them
  -d {W,G,Y,R,B,M,C}, --display {W,G,Y,R,B,M,C}
                        LED display colour,default is white.

LED display colour codes: G=green,Y=yellow,R=red,B=blue,M=magenta,C=cyan.
Use 'off' to turn off calculator and exit program.
Read 'HP-35.doc' for more details about this program
```

The calculator is displayed as such:



Unless you select the -q or --quiet option, the register stack and memory register are displayed:

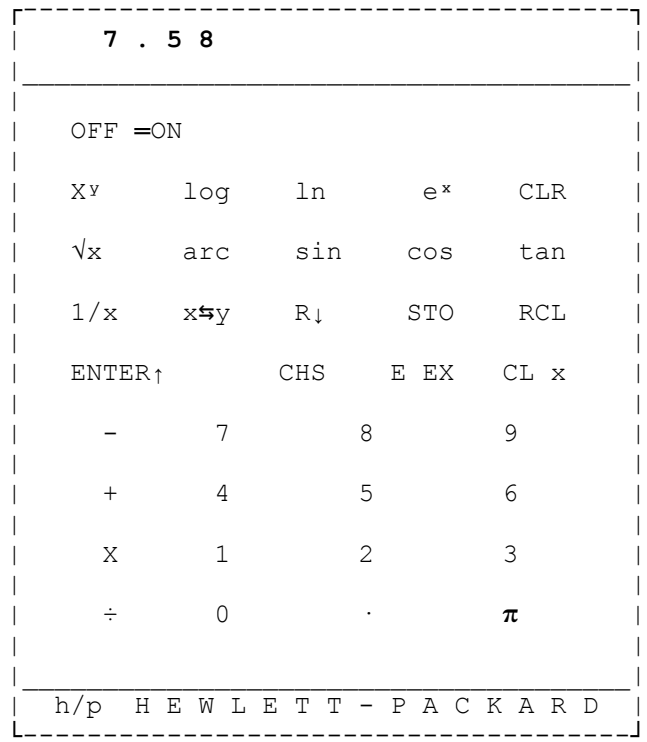
```
M : 0.0

T : 0.0
Z : 0.0
Y : 0.0
X : 0.0
```

Under the registers, the user command abbreviations are displayed, followed by the prompt '>':

```
off  on
xy     log     ln   ex   clr
rx  a<s,c,t>   sin  cos  tan
1x      rv     rd   sto  rcl
e(nter)        chs  eex  clx
-        7       8       9
+        4       5       6
x        1       2       3
/        0       .      pi

>
```

These commands match the layout of the calculator keypad and need to be followed by a carriage return. The usage is intuitive. For example, to calculate the diameter of a circle with a radius of 7.58, enter the following:

> 7.58 <cr>

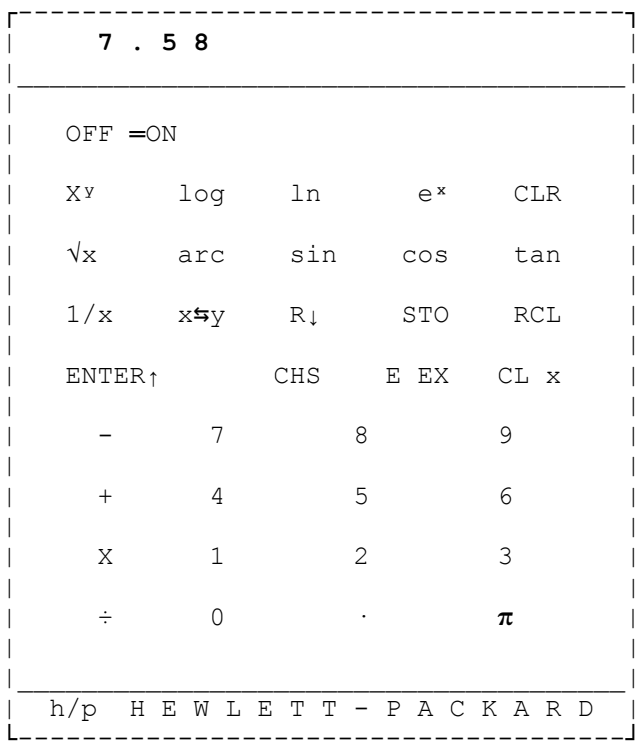


M : 0.0

T : 0.0
Z : 0.0
Y : 0.0
X : 7.58

```
off  on
xy     log     ln   ex   clr
rx  a<s,c,t>   sin  cos  tan
1x      rv     rd   sto  rcl
e(nter)        chs  eex  clx
-        7       8       9
+        4       5       6
x        1       2       3
/        0       .      pi
```

> e <cr>

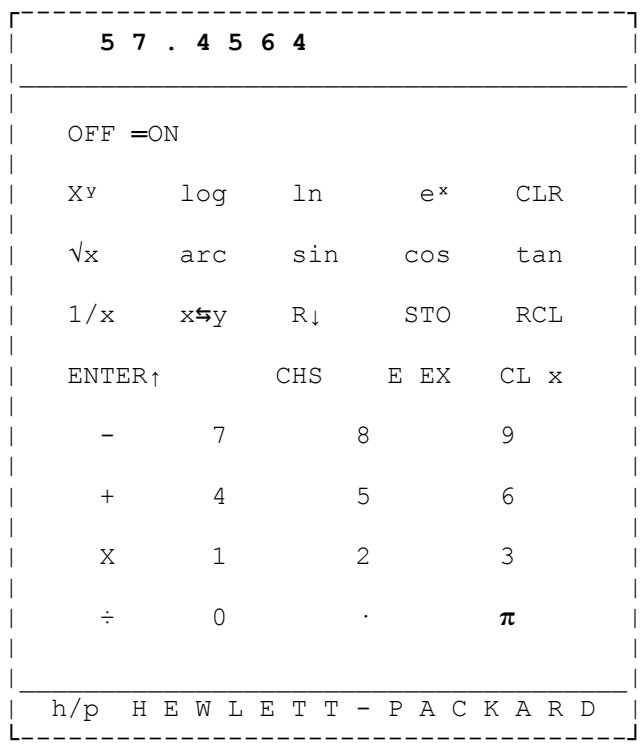


M : 0.0

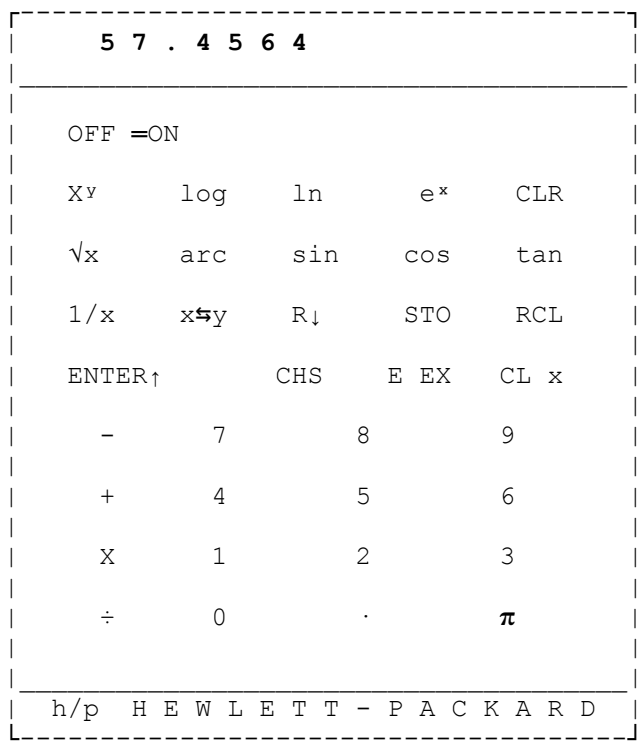
T : 0.0
Z : 0.0
Y : 7.58
X : 7.58

off on
xy log ln ex clr
rx a<s,c,t> sin cos tan
1x rv rd sto rcl
e(nter) chs eex clx
- 7 8 9
+ 4 5 6
x 1 2 3
/ 0 . pi

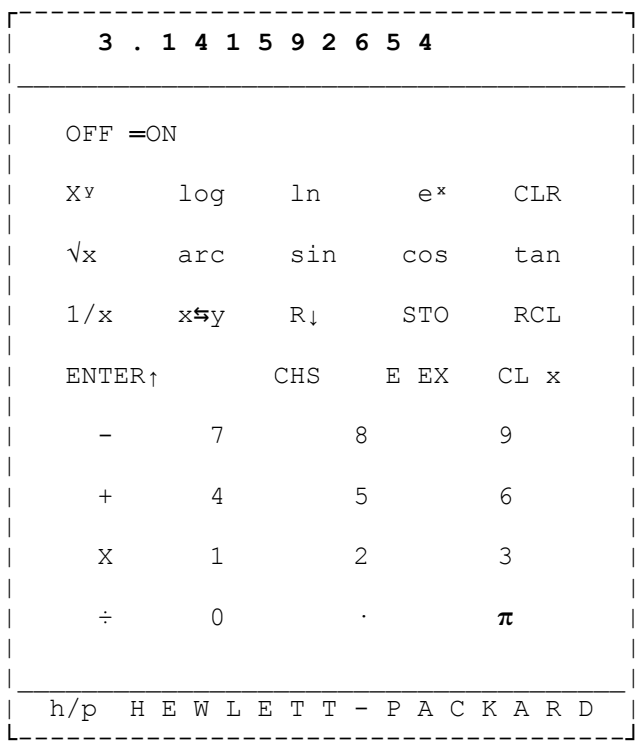
> x <cr>




```
M : 0.0

T : 0.0
Z : 0.0
Y : 7.58
X : 57.4564

off  on
xy     log     ln   ex   clr
rx  a<s,c,t>   sin  cos  tan
1x      rv     rd   sto  rcl
e(nter)        chs  eex  clx
-        7       8       9
+        4       5       6
x        1       2       3
/        0       .      pi

> e <cr>
```




```
M : 0.0

T : 0.0
Z : 7.58
Y : 57.4564
X : 57.4564

off  on
xy     log     ln   ex   clr
rx  a<s,c,t>   sin  cos  tan
1x      rv     rd   sto  rcl
e(nter)        chs  eex  clx
-        7       8       9
+        4       5       6
x        1       2       3
/        0       .      pi

> pi <cr>
```

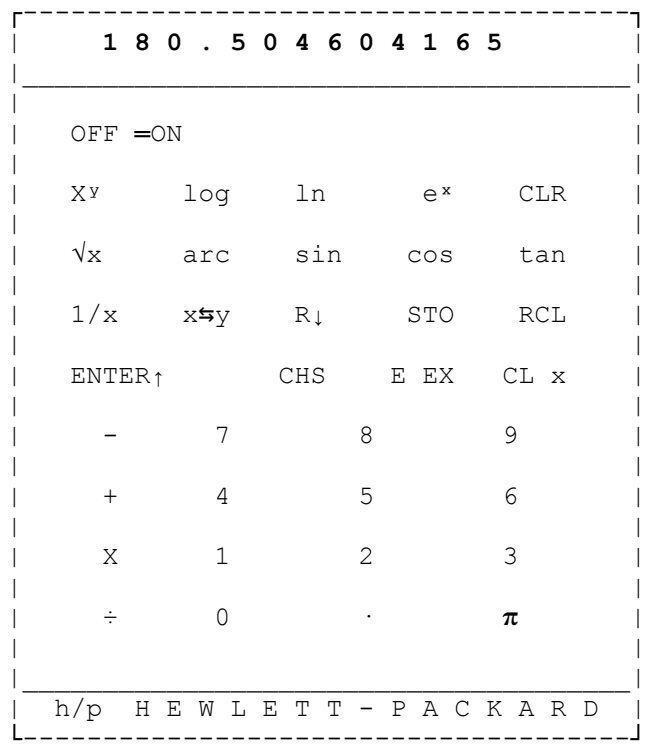


M : 0.0

T : 0.0
Z : 7.58
Y : 57.4564
X : 3.141592654

off on
xy log ln ex clr
rx a<s,c,t> sin cos tan
1x rv rd sto rcl
e(nter) chs eex clx
- 7 8 9
+ 4 5 6
x 1 2 3
/ 0 . pi

> x <cr>

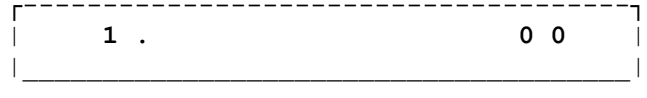



```
M : 0.0

T : 0.0
Z : 7.58
Y : 57.4564
X : 180.504604165

off  on
xy     log     ln   ex   clr
rx  a<s,c,t>   sin  cos  tan
1x      rv     rd   sto  rcl
e(nter)        chs  eex  clx
-        7       8       9
+        4       5       6
x        1       2       3
/        0       .      pi

>
```

The circumference is: 180.50

E EX is implemented slightly differently. The entire calculator is not displayed, just the display and the exponent is not echoed after the prompt, as are numbers. The minus sign is uses to toggle its sign, not chs. E EX mode is exited by <cr>

```
> eex
```



>
2 (not echoed, but display is redrawn)

>

```
┌--------------------------------------┐
|     1 .                        0 2   |
|______________________________________|
```

>
2 (not echoed)

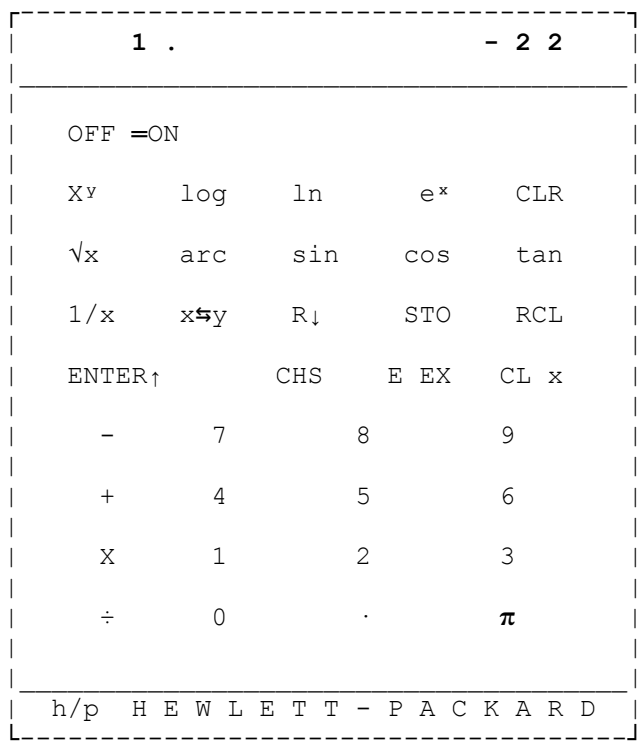
```
┌--------------------------------------┐
|     1 .                        2 2   |
|______________________________________|
```

>
– (not echoed)

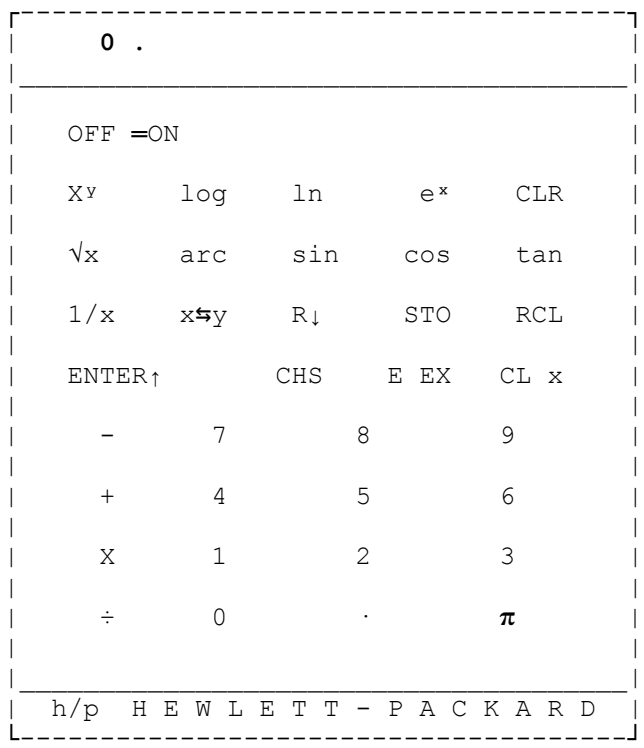
>

```
┌--------------------------------------┐
|     1 .                       - 2 2  |
|______________________________________|
```

>
<cr>




```
M : 0.0

T : 0.0
Z : 0.0
Y : 0.0
X : 1e-22

off  on
xy     log     ln   ex   clr
rx  a<s,c,t>   sin  cos  tan
1x      rv     rd   sto  rcl
e(nter)        chs  eex  clx
-        7       8       9
+        4       5       6
x        1       2       3
/        0       .      pi

> clx <cr>
```

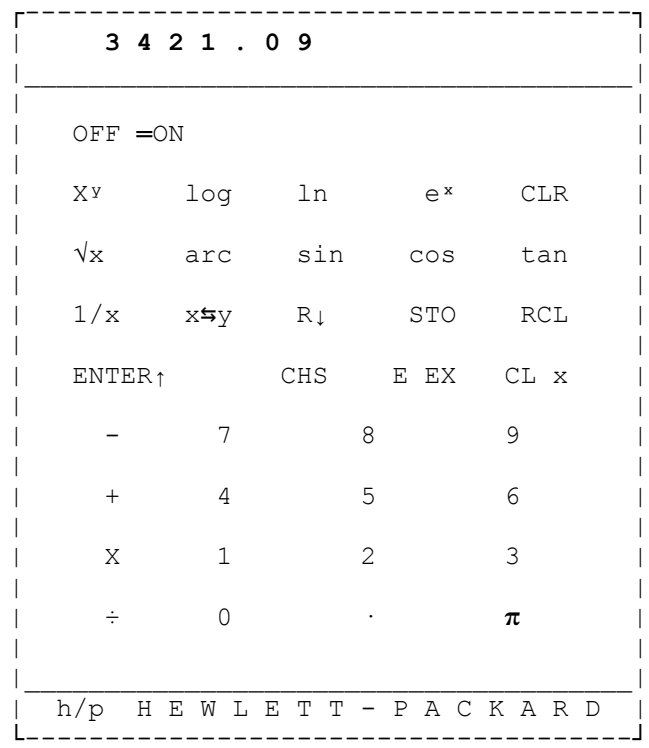


M : 0.0

T : 0.0
Z : 0.0
Y : 0.0
X : 0.0

off on
xy log ln ex clr
rx a<s,c,t> sin cos tan
1x rv rd sto rcl
e(nter) chs eex clx
- 7 8 9
+ 4 5 6
x 1 2 3
/ 0 . pi

> 3421.09 <cr>

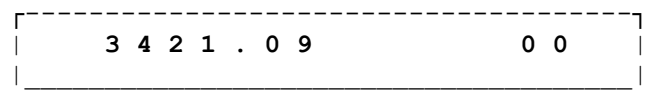


M : 0.0

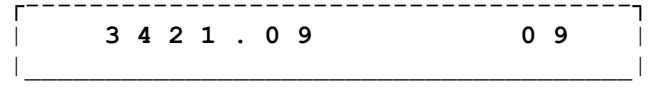
T : 0.0
Z : 0.0
Y : 0.0
X : 3421.09

off on
xy log ln ex clr
rx a<s,c,t> sin cos tan
1x rv rd sto rcl
e(nter) chs eex clx
- 7 8 9
+ 4 5 6
x 1 2 3
/ 0 . pi

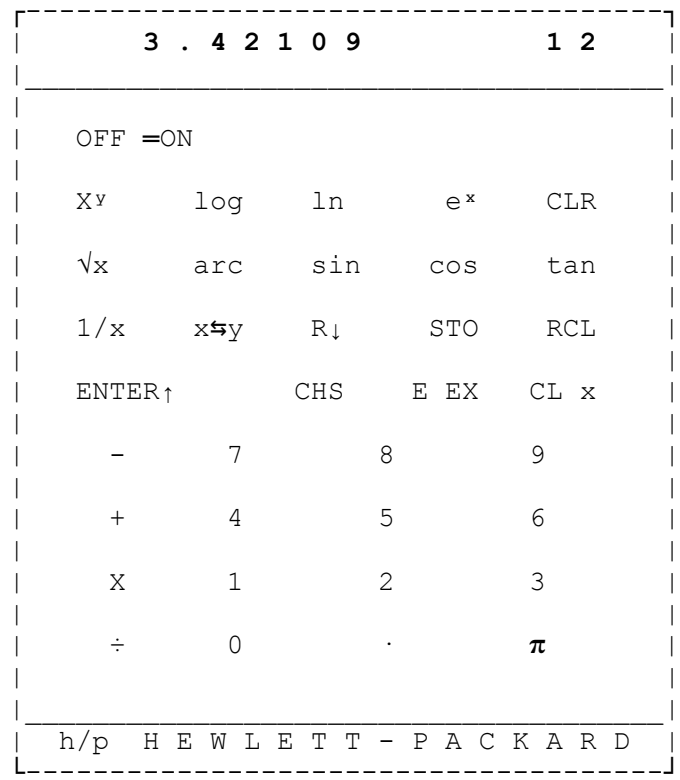
> eex



>



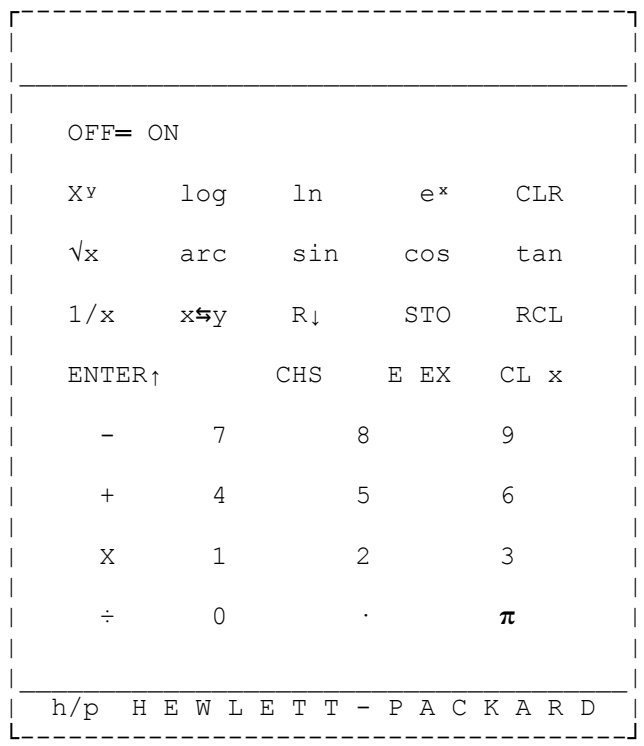
> 9
<cr>




```
M : 0.0

T : 0.0
Z : 0.0
Y : 0.0
X : 3421090000000.0

off  on
xy     log     ln   ex   clr
rx  a<s,c,t>   sin  cos  tan
1x      rv     rd   sto  rcl
e(nter)        chs  eex  clx
-        7       8       9
+        4       5       6
x        1       2       3
/        0       .      pi

>
```

Exit the program by turning the calculator off:

```
> off <cr>
```




```
HP-35 is powering down
```

Further details for using this calculator emulator are found in the accompanying PDF file of the original calculator's HP-35 Operating Manual, predictably named 'HP_35_operating_manual.pdf'