

find and follow pen 1-5-62

ulm=5000

tpg,                   init tp1, buf                   /main pen-follow program

tp2,                   jsp npt  
                      jsp fpn

tp1,                   dio .                   /buf  
                      idx tp1  
                      sad (dio ulm  
                      jmp tp3  
                      szs i 10  
                      jmp tp2

*sw 1 → stop tracking, display by now.*

tp3,                   init tp4, buf

tp5,                   10 lio i tp4  
                      5 rcr 9s  
                      5 ril 9s  
                      dpy-i  
                      as index tp4, tp1, tp5

*} display all points in buf.*

tp6,                   szs 10  
                      jmp tp3  
                      szs 20  
                      jmp tp2  
                      jmp tpg

tp4,                   dio .                   /buf

/pen find subroutine

fpx,                   clf 3  
                      dap fpx  
                      dpx

fol,                   10 swap  
                      5 rar 1s  
                      10 xor {355670  
                      10 add {355670  
                      60µs ~~ioh~~  
                      5 szf 3  
                      5 jmp fo2 }  
                      5 dpx  
                      10 dio  $\bar{E}$   
                      5 jmp fol

*} generate a random number.*

fo2,                   lac  $\bar{E}$   
                      rar 9s  
                      rcr 9s

fpx,                   jmp .

```

npt,      dap npx
          dap npy
          idx npy
          dio  $\overline{xy}$ 
          rcr 9s
          ril 9s
          dac  $\overline{x}$ 
          dio  $\overline{y}$ 

```

/follow and find new point

10 contain x and y. Save x+y

Save x  
Save y

```

np1,      lac x
          clf 4
          dpn

```

display current point.

```

npa,      clf 3
          add (400
          ioh
          szf i 3
          jmp npb
          dpn
          stf 4
          jmp npa

```

dpy=dpy-4000

} loop till point leaves per. on  
right →

```

npb,      dac  $\overline{max}$ 
          lac x
          dpn

```

```

npc,      clf 3
          sub (400
          ioh
          szf i 3
          jmp npd
          dpn
          stf 4
          jmp npc

```

} move point till leaves on  
left ←

```

npd,      add max
          rar 1s
          dpn

```

} find center, display new point.

```

npf,      clf 3
          swap
          add (400
          swap
          ioh
          szf i 3
          jmp npe
          dpn
          stf 4
          jmp npf

```

} move up 4

```

npe,      dio max
          lio y
          dpn

```

```
npg,      clf 3
          swap
          sub (400
          swap
          ioh
          szf 1 3
          jmp np3
          dpn
          stf 4
          jmp npg
```

} move down

```
nph,      swap
          add max
          ral 8s
          rcl 9s
          sas xy
          jmp np3
          szf 1 4
```

} has pair moved?

```
np3,      jmp .
          lio y
          jmp np1
```

1,4

no, try again      return to 1,4  
if no pair

```
np3,      swap
np4,      jmp .
```

2,4

yes, return

```
vari     cons            buf,            start tpg
```