PlaybackTest

September 2, 2017

1 Drawing Tests

1.1 Object

- Play around with drawing things.

2 Code:

```
In [1]: import GCode
        import GRBL
        import numpy as np
        from utils import picture
        cnc = GRBL.GRBL(port="/dev/cnc_3018")
```

```
In [2]: cnc.cmd("?")
        # .status does not return 'ok'/'ok' when this requested on hold.
```

```
Out[2]: ['ok',
         '<Idle|MPos:59.880,0.938,-19.000|Bf:15,127|FS:0,10|Ov:100,100,100|A:S>',
         'ok']
```

```
In [3]: cnc.reset()
```

```
In [ ]: program = GCode.GCode()
```

```
In [ ]: program.load("../spirals.gcode")
```

```
In [ ]: cnc.cmd("G91")
```

```
In [ ]: cnc.cmd("G1 F200 Z10")
```

```
In [ ]: cnc.cmd("M3 S255")
```

```
In [ ]: cnc.cmd("M3 S1")
```

```
In [ ]: program
```

```
In [ ]: cnc.run(program)
```

```
In [ ]: cnc.run("G1 F500")

In [ ]: cnc.cmd("G91")

In [ ]: cnc.cmd("M3 S1")

In [ ]: cnc.cmd("G0 Z-10")

In [5]: RAF = GCode.GCode()
        RAF.load("../RAF.gcode")

In [6]: RAF.buffer = [l.replace("S100", "S50") for l in RAF.buffer]

In [7]: RAF.buffer

Out[7]: ['M05 S0',
         '',
         'G90',
         'G21',
         'G1 F3000',
         'G1  X55.1027 Y4.3497',
         'G4 P0 ',
         'M03 S50',
         'G4 P0.10000000149011612',
         'G1 F200.000000',
         'G1  X55.4439 Y4.3497',
         'G1  X55.7851 Y4.0085',
         'G1  X55.7851 Y1.2789',
         'G1  X55.1027 Y0.9377',
         'G1  X55.4439 Y0.9377',
         'G1  X56.1262 Y0.5965',
         'G1  X56.4674 Y0.2554',
         'G4 P0 ',
         'M05 S0',
         'G1 F3000',
         'G1  X56.4674 Y4.0085',
         'G4 P0 ',
         'M03 S50',
         'G4 P0.10000000149011612',
         'G1 F200.000000',
         'G1  X57.491 Y4.3497',
         'G1  X58.1734 Y4.6909',
         'G1  X58.5146 Y5.0321',
         'G1  X58.8558 Y4.6909',
         'G1  X59.5382 Y4.3497',
         'G1  X59.8794 Y4.3497',
         'G1  X59.197 Y4.0085',
         'G1  X59.197 Y1.2789',
         'G1  X59.5382 Y0.9377',
```

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'G1   X59.8794 Y0.9377',
'G4 P0 ',
'M05 S0',
'G1 F3000',
'G1   X58.1734 Y4.6909',
'G4 P0 ',
'M03 S50',
'G4 P0.10000000149011612',
'G1 F200.000000',
'G1   X58.8558 Y4.3497',
'G1   X58.8558 Y0.9377',
'G1   X59.197 Y0.5965',
'G4 P0 ',
'M05 S0',
'G1 F3000',
'G1   X57.491 Y4.3497',
'G4 P0 ',
'M03 S50',
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'G1   X58.5146 Y4.0085',
'G1   X58.5146 Y0.9377',
'G1   X59.197 Y0.2554',
'G1   X59.8794 Y0.9377',
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'G1 F3000',
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'G1   X56.1262 Y0.9377',
'G1   X56.8086 Y0.5965',
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'G1 F3000',
'G1   X55.1027 Y4.3497',
'G4 P0 ',
'M03 S50',
'G4 P0.10000000149011612',
'G1 F200.000000',
'G1   X55.7851 Y5.0321',
'G1   X56.4674 Y4.3497',
'G1   X56.4674 Y1.2789',
'G1   X57.1498 Y0.9377',
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'M05 S0',
'G1 F3000',
'G1  X52.7143 Y4.0085',
'G4 P0 ',
'M03 S50',
'G4 P0.10000000149011612',
'G1 F200.000000',
'G1  X53.0555 Y4.3497',
'G1  X52.7143 Y4.6909',
'G1  X52.3731 Y4.3497',
'G1  X52.7143 Y4.0085',
'G1  X52.7143 Y0.9377',
'G1  X53.0555 Y0.5965',
'G4 P0 ',
'M05 S0',
'G1 F3000',
'G1  X49.3024 Y1.9613',
'G4 P0 ',
'M03 S50',
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'G1 F200.000000',
'G1  X49.6436 Y0.5965',
'G4 P0 ',
'M05 S0',
'G1 F3000',
'G1  X48.62 Y2.9849',
'G4 P0 ',
'M03 S50',
'G4 P0.10000000149011612',
'G1 F200.000000',
'G1  X48.9612 Y2.6437',
'G1  X49.3024 Y0.5965',
'G1  X49.6436 Y0.2554',
'G1  X49.9848 Y0.2554',
'G1  X50.326 Y0.5965',
'G4 P0 ',
'M05 S0',
'G1 F3000',
'G1  X48.62 Y2.9849',
'G4 P0 ',
'M03 S50',
'G4 P0.10000000149011612',
'G1 F200.000000',
'G1  X49.3024 Y2.6437',
'G1  X49.6436 Y1.2789',
'G1  X49.9848 Y0.5965',
```

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'G1  X48.62 Y2.9849',
'G1  X47.9376 Y2.3025',
'G4 P0 ',
'M05 S0',
'G1 F3000',
'G1  X47.9376 Y4.3497',
'G4 P0 ',
'M03 S50',
'G4 P0.10000000149011612',
'G1 F200.000000',
'G1  X47.9376 Y0.9377',
'G4 P0 ',
'M05 S0',
'G1 F3000',
'G1  X44.8669 Y0.5965',
'G4 P0 ',
'M03 S50',
'G4 P0.10000000149011612',
'G1 F200.000000',
'G1  X45.5493 Y0.9377',
'G1  X46.914 Y0.9377',
'G1  X47.5964 Y0.5965',
'G4 P0 ',
'M05 S0',
'G1 F3000',
'G1  X44.1845 Y0.2554',
'G4 P0 ',
'M03 S50',
'G4 P0.10000000149011612',
'G1 F200.000000',
'G1  X45.5493 Y0.5965',
'G1  X46.5728 Y0.5965',
'G1  X47.2552 Y0.2554',
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'G1 F3000',
'G1  X47.9376 Y4.3497',
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'G1  X49.9848 Y4.6909',
'G4 P0 ',
'M05 S0',
'G1 F3000',
'G1  X48.62 Y5.0321',
'G4 P0 ',
'M03 S50',
'G4 P0.10000000149011612',
'G1 F200.000000',
'G1  X49.3024 Y4.6909',
'G1  X49.9848 Y4.6909',
'G4 P0 ',
'M05 S0',
'G1 F3000',
'G1  X48.62 Y7.0792',
'G4 P0 ',
'M03 S50',
'G4 P0.10000000149011612',
'G1 F200.000000',
'G1  X48.9612 Y7.0792',
'G1  X49.3024 Y6.738',
'G4 P0 ',
'M05 S0',
'G1 F3000',
'G1  X47.5964 Y7.0792',
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'M03 S50',
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'G1 F200.000000',
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'G1  X48.9612 Y6.3968',
'G1  X49.6436 Y7.0792',
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'G1 F3000',
'G1  X46.914 Y6.3968',
'G4 P0 ',
'M03 S50',
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'G1  X48.2788 Y7.4204',
```

```
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'G1 F3000',
'G1  X46.914 Y6.3968',
'G4 P0 ',
'M03 S50',
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'G1 F200.000000',
'G1  X46.914 Y3.3261',
'G1  X46.5728 Y2.6437',
'G1  X46.2317 Y2.3025',
'G4 P0 ',
'M05 S0',
'G1 F3000',
'G1  X44.1845 Y0.2554',
'G4 P0 ',
'M03 S50',
'G4 P0.10000000149011612',
'G1 F200.000000',
'G1  X45.2081 Y0.9377',
'G1  X46.2317 Y1.2789',
'G1  X47.2552 Y1.2789',
'G1  X47.9376 Y0.9377',
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'G1 F3000',
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'G4 P0 ',
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'M05 S0',
'G1 F3000',
'G1  X45.2081 Y5.7144',
'G4 P0 ',
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'G1 F3000',
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'G4 P0 ',
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'G1  X44.5257 Y4.6909',
'G1  X44.5257 Y4.3497',
'G1  X43.8433 Y4.3497',
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'G1  X43.5021 Y3.3261',
'G1  X43.8433 Y3.6673',
'G1  X44.5257 Y3.6673',
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'G1  X44.8669 Y6.738',
'G1  X45.8905 Y6.738',
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'M05 S0',
'G1 F3000',
'G1  X46.914 Y6.3968',
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'G1 F3000',
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'G1  X45.5493 Y7.0792',
'G4 P0 ',
'M05 S0',
'G1 F3000',
'G1  X43.5021 Y6.738',
'G4 P0 ',
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'G1 F200.000000',
'G1  X44.1845 Y7.4204',
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'G1  X45.8905 Y7.0792',
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'G4 P0.10000000149011612',
'G1 F200.000000',
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'G1  X52.7143 Y6.3968',
'G1  X53.3967 Y6.738',
'G1  X52.7143 Y7.4204',
'G4 P0 ',
'M05 S0',
'G1 F3000',
'G1  X52.7143 Y7.0792',
'G4 P0 ',
'M03 S50',
'G4 P0.10000000149011612',
'G1 F200.000000',
```

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'G1   X52.7143 Y7.0792',
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'M05 S0',
'G1 F3000',
'G1   X52.7143 Y5.0321',
'G4 P0 ',
'M03 S50',
'G4 P0.10000000149011612',
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'G1   X53.0555 Y4.6909',
'G1   X53.7379 Y4.3497',
'G1   X53.0555 Y4.0085',
'G1   X53.0555 Y1.2789',
'G1   X53.3967 Y0.9377',
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'G4 P0 ',
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'G1 F3000',
'G1   X52.7143 Y5.0321',
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'G1   X52.3731 Y0.9377',
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'G1   X53.7379 Y0.9377',
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'M05 S0',
'G1 F3000',
'G1   X35.3135 Y4.6909',
'G4 P0 ',
'M03 S50',
'G4 P0.10000000149011612',
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'G4 P0 ',
'M05 S0',
'G1 F3000',
'G1   X32.9251 Y2.3025',
'G4 P0 ',
'M03 S50',
'G4 P0.10000000149011612',
'G1 F200.000000',
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'G1   X31.5604 Y4.0085',
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'G1 F3000',
'G1   X31.9015 Y4.3497',
'G4 P0 ',
'M03 S50',
'G4 P0.10000000149011612',
'G1 F200.000000',
'G1   X33.2663 Y5.7144',
'G1   X31.9015 Y7.4204',
'G1   X30.1956 Y5.3732',
'G1   X32.2427 Y3.3261',
'G1   X33.6075 Y1.2789',
'G1   X34.2899 Y0.5965',
'G1   X34.9723 Y0.2554',
'G1   X35.6547 Y0.2554',
'G1   X35.9959 Y0.5965',
'G1   X36.3371 Y1.2789',
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'G1 F3000',
'G1   X34.9723 Y4.0085',
'G4 P0 ',
'M03 S50',
'G4 P0.10000000149011612',
'G1 F200.000000',
'G1   X35.3135 Y3.6673',
'G1   X35.6547 Y3.6673',
'G1   X35.9959 Y4.0085',
'G1   X36.3371 Y4.6909',
'G4 P0 ',
'M05 S0',
'G1 F3000',
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'G4 P0 ',
'M03 S50',
'G4 P0.10000000149011612',
'G1 F200.000000',
'G1   X35.6547 Y4.3497',
'G1   X35.9959 Y4.3497',
'G1   X36.3371 Y4.6909',
'G4 P0 ',
'M05 S0',
'G1 F3000',
'G1   X34.9723 Y4.3497',
```

```
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'G1  X35.9959 Y4.0085',
'G4 P0 ',
'M05 S0',
'G1 F3000',
'G1  X32.9251 Y5.3732',
'G4 P0 ',
'M03 S50',
'G4 P0.10000000149011612',
'G1 F200.000000',
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'G4 P0 ',
'M05 S0',
'G1 F3000',
'G1  X30.5368 Y5.7144',
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'M03 S50',
'G4 P0.10000000149011612',
'G1 F200.000000',
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'G1  X33.9487 Y1.6201',
'G1  X34.2899 Y1.2789',
'G1  X34.9723 Y0.9377',
'G1  X35.9959 Y0.9377',
'G1  X36.3371 Y1.2789',
'G4 P0 ',
'M05 S0',
'G1 F3000',
'G1  X31.2192 Y0.5965',
'G4 P0 ',
'M03 S50',
'G4 P0.10000000149011612',
'G1 F200.000000',
'G1  X29.8544 Y2.3025',
'G4 P0 ',
'M05 S0',
'G1 F3000',
'G1  X30.878 Y0.5965',
'G4 P0 ',
'M03 S50',
'G4 P0.10000000149011612',
'G1 F200.000000',
'G1  X29.8544 Y1.9613',
'G4 P0 ',
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'M05 S0',
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'G4 P0 ',
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'G1  X34.2899 Y0.9377',
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'G1 F200.000000',
'G1  X31.9015 Y7.0792',
'G4 P0 ',
'M05 S0',
'G1 F3000',
'G1  X21.3246 Y6.3968',
'G4 P0 ',
'M03 S50',
'G4 P0.10000000149011612',
'G1 F200.000000',
'G1  X21.3246 Y1.6201',
'G4 P0 ',
'M05 S0',
'G1 F3000',
'G1  X21.3246 Y3.6673',
'G4 P0 ',
'M03 S50',
'G4 P0.10000000149011612',
'G1 F200.000000',
'G1  X20.301 Y3.6673',
'G1  X20.301 Y1.6201',
'G1  X19.9598 Y0.9377',
'G1  X18.595 Y0.2554',
'G1  X17.9126 Y0.2554',
'G1  X17.2302 Y0.5965',
'G1  X16.5479 Y0.5965',
'G1  X15.5243 Y0.2554',
'G4 P0 ',
'M05 S0',
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```
'G1 F3000',
'G1  X18.595 Y0.5965',
'G4 P0 ',
'M03 S50',
'G4 P0.10000000149011612',
'G1 F200.000000',
'G1  X18.2538 Y0.5965',
'G1  X17.5714 Y0.9377',
'G1  X16.5479 Y0.9377',
'G4 P0 ',
'M05 S0',
'G1 F3000',
'G1  X17.2302 Y4.0085',
'G4 P0 ',
'M03 S50',
'G4 P0.10000000149011612',
'G1 F200.000000',
'G1  X18.2538 Y4.0085',
'G4 P0 ',
'M05 S0',
'G1 F3000',
'G1  X18.2538 Y5.0321',
'G4 P0 ',
'M03 S50',
'G4 P0.10000000149011612',
'G1 F200.000000',
'G1  X18.2538 Y2.6437',
'G4 P0 ',
'M05 S0',
'G1 F3000',
'G1  X19.9598 Y4.0085',
'G4 P0 ',
'M03 S50',
'G4 P0.10000000149011612',
'G1 F200.000000',
'G1  X21.3246 Y4.0085',
'G4 P0 ',
'M05 S0',
'G1 F3000',
'G1  X19.9598 Y6.0556',
'G4 P0 ',
'M03 S50',
'G4 P0.10000000149011612',
'G1 F200.000000',
'G1  X19.9598 Y1.2789',
'G4 P0 ',
'M05 S0',
'G1 F3000',
```

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'M03 S50',
'G4 P0.10000000149011612',
'G1 F200.000000',
'G1   X18.595 Y2.9849',
'G1   X18.2538 Y2.3025',
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'G1 F3000',
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'G1 F3000',
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        'G1  X4.6061 Y7.0792',
        ...]

In [8]: cnc.run(RAF)

Out[8]: 353.3660535812378

In [13]: RAF = GCode.GCode()
         RAF.load("../RAF.gcode")
         RAF.buffer = [l for l in RAF.buffer if not l.startswith("G4")]
         RAF.buffer = [l.replace("S100", "S35") for l in RAF.buffer]

In [14]: RAF

Out[14]: <GCode>[cmds=803]

In [23]: cnc.run(RAF)

Out[23]: 324.4100811481476

In [19]: cnc.status

Out[19]: '<Idle|MPos:59.684,4.350,-19.000|Bf:15,127|FS:0,0|Ov:100,100,100>'

In [22]: cnc.cmd("M3S1G1F100")

Out[22]: ['ok', 'ok']

In [18]: cnc.reset()

In [ ]: bbbm 8ghhhhhhhhhhh8ghhhhhhhhhhhhhhhhhhhhhhhhhhhhhhhhhhh
```