Test Descriptions

Test 1 – sample_host_commands1.txt

Behavioral output:

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# ++++++++++++++++++++++++++++++++**+*+***+**+++**+++++++++++++++
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# ** Note: Commands from: sample_host_commands1.txt, VDP PASSED.
```

Statement:

This is the default test given with the project notes. This tests drawing inverted lines, and draws lines in all octants. Additionally, it also tests clearscreen invert.

Description

db.vhd: Tests the octant combinatorial block and register, transitions to states, the registers for holding old and new XY values. Tests draw_any_octant & input/output multiplexer, most of CMD block.

rcb.vhd: Tests writing in all directions, clearscreen. Tests delay/start link between two parts.

Test 2 – sample_host_commands2.txt

Behavioral output:

```
# +*************++**************++**************++**************+
# ++************+**+*+**+*******+**+***********+**+*************
# +*+**********+****+*++*******++***+**********+****+***********
# +**+***++***+******+++*******+**+***+***+****+******+********
# +***+****+++********++*****+***+****+**+***+********+******+****
# +****+****+++*******+*++***+**********++***+**********+****+*****
# +*****+**+***+++***+**+**+************+**********+**+******
# +******+++*****+*++++****++***********+++**********+++*******
# +******++*****+**++++**++******+****+***********++*******
# +*****+**+*+++*+++++++++++++*++***+**++*+++++++++++++**+******
# +****+**********++****+*++++*****+**+**+****+********+++**+*****
# +***+*****++********+*****++*****+********+*******+*+****+****
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# +*********+*+**+********+**++**++*********+******+*******+
# +*********+*+**++++++*++++++++**+*++*++++++**+*****+********+
# ++********++**+*+++++++**+++++++*++**+++*++++++**+*+****+****+*
# +*+********+**+**+**++++*++++*+++**+++*+++++**++**+**+*****+**
# +**+*******+*+****+*+*+++*++*++***+*++++++*******+****+***
# +***+*****+++****++*+*+*+++**+++++********+*+*++*++**+*+****+****
# +****+***+*******++*++*+***+*+*++++++****+**++++**++*+**+*****
# +*****+*+++*****++*++++**+*+++*++*+++++******+++**+VDP PASSED*+******
# +******++*+******++*+++++**+++++*++++++++****++***+******+++*******
# +*****+++*+*******+++*++++***++++++**++++**+**+*++++*******+++*******
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# +****+********++++++*+*****+*+*+++++*+++++++*+++++***+*+++**+*****
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# +******++*+*****++**+*host+***+++**+++++***+*+++***+++*******
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# +*****+**+++*****+++++++++*+*+***+++++++++*+*+*+++++++*****+**+*******
# +****+*********++++++*+*+++*+++++++++*+****+++++*****+++**+*****
# +***+*****++****+++++*+*++++*+++++++++*++++++*********+++*+*++*****
# +**+*******+*****+++*+*+*+*++*+++++++*++++*++++*****+*+++*+***+***
# +*+*+********+**+*+**+++*+*++*+*+++++*++++*++++++*++++++****+**+*+*****++*
# ++*********++*+**+*++*++**+++++*++++++++*+++*++*+*+***+******+*
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# +***+*******+*****+*********+*******+********++++**++***+******+++*
# +*+********+***+*********+****+**********+*+**+*******+*+++*
# ++*+*********+*+*************++*+************+**+********+*+++*
# +*************+***************++**************+++*************+
```

** Note: Commands from: sample_host_commands2.txt, VDP PASSED.

Statement:

This second test is more robust, covering all commands and writing to all pixels in RAM.

Description:

This tests is used to check if every command in the spec can be used. It also checks if writing to every pixel is possible.

Test 3 – sample_host_commands3.txt

Behavioral output:
```
# ++++++++++++++++++++++++++++++++++++++++++++********************++++++
# ++++++++++++++++++++++++++++++++++++++++++++********************++++++
# ++++++++++++++++++++++++++++++++++++++++++++*********+*********+*+++++
# +++++++++*****************************++++*++++++*++++++**+**+++++
# +++++++++*****************************++++*++++++*++***+**++++++++
# +++++++++*****************************++++*++++++*+*+**++++++++++
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# ++*++++****************++++++++*****++*+++*++**++++*******++*****+
# ++*++++****************+++++++*****++*+++***+++++*******++*****+
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# ++*++++****************+++++++*****+++**+++++++++*******++*****+
# ++*++++****************+++++++*****+++**+++++++++*******++*****+
# ++*+++++++++++*++++++++++++*******++++++***++*********+++++++++*++++
# ++*****+++++++*++++++++++++*******++++++***++*********+++++++++*++++
# ++++++++++++*++++++++++++*******++++++***++*********+++++++++*++++
# ++++++++++++*++++++++++++*******++++++***++*********+++++++++*++++
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# +++++++++++++*++++++++++**++++++++*****+++**++++++***++++++++*++++
# ++**********+***********++++**********++++**++++++***++++++++*++++
# ++**********+***********++++**********++++**++++++***++++++++*++++
# ++**********+***********++++**********++++**++++++***++++++++*++++
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# ** Note: Commands from: sample_host_commands3.txt, VDP PASSED.
```

Statement:

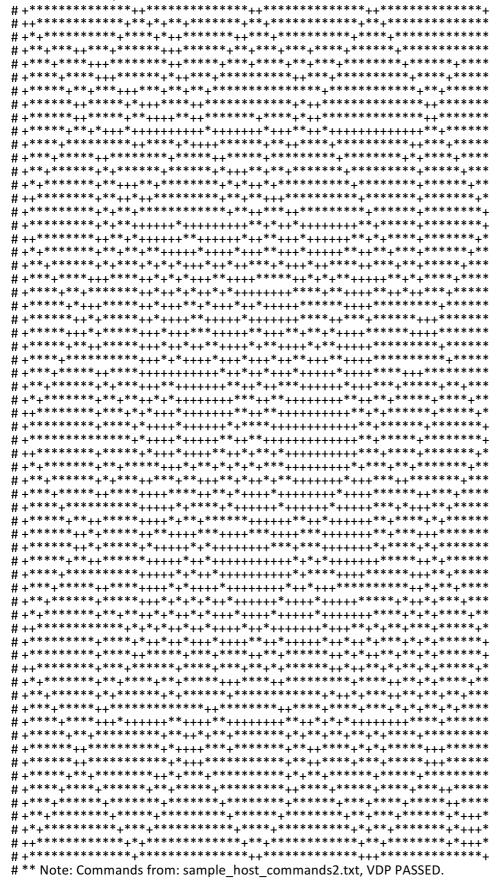This test repeated occurrences of commands. Checks if drawing consecutive lines is possible. Also manages to see if vdp.vhd can handle many repeated commands and quantity as well. Additionally, it does clearscreen in more than one diagonal.

Description:

Most hardware has been tested by now, but while the spec asks for clearscreen from bottom left to top right, rcb.vhd can handle it in all 4 diagonals. This is tested here. Additionally, the coordinates were obtained randomly, to see if any anomalies could be detected.

Test 4 – sample_host_commands4.txt

Behavioral output:

```
# ++++++++++++++*++++++++*+++++++++++++++++++++++++++++++++++++++
# ++++++++++++++*+++****+*********+++++++++++++********++++++++++
# ++++++++++++++*++****+*********+++++++++++++++**++++++++++
# +++++++++**********+*+++*+*********+++++++++++++++++**++++++++++
# +++++++++++**++++++++++*++++++++++*********++******++*++++++++
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# +++++++++++++++++++++**********+****+******+++***++++**
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# +++++*******+++++++++++**+*********+++**+++++*++*++++++++*++*
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# +++++****************+++++++*+++++++++++++++++++++++++++
# +++++++++++++++++++++++++++++++++++++++++++++++++++++++
# ** Note: Commands from: sample_host_commands4.txt, VDP PASSED.
```

Statement:

This test tries out every possible pair of commands to ensure that any possible sequence can be dealt with.

Description:

On a hardware level, this checks for all possible transitions for state machines.

Output of concatenated tests – sample_host_commands.txt

Behavioral output:

```
# +*************++*******+++++++++++++++++++++++**++++++++++*****+
# ++++++++++++++*+++*****+*********++++++++++++**+*****+++++******
# +++++++++++++*++****+*********++++++++++++*++*++**++*+*****
# ++++++++********+*+++*+*********++++++++++++*+**+*+*+*+++*****
# +++++++++++**+++++++++*+++++++++++++*********++*******++****+****
# +++++++++++++***************+++++*++++++++++**+++**++***+*****
# *********+++*+******************+++++*******++++++++**
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# +++++********************+*+++*********+++***+++*+****+*+++*
# ++++++++++*****+***************++*************+++*****+********+
# ** Note: Commands from: sample_host_commands.txt, VDP PASSED.
```