

In following test Hello, World! is sent from the FPGA to the minicom terminal.
sudo ~/catboard_yosys/config_cat ~/07118catzip/rtl/uart/noflowcntl/helloworld.bin
[sudo] password for devel:

OK: GPIO 25 exported
OK: GPIO 17 exported
OK: GPIO 22 exported

OK: SPI driver loaded

Setting GPIO directions

out

out

in

Setting output to low

0

Resetting FPGA

0

1

Checking DONE pin

0

Continuing with configuration procedure

263+1 records in

263+1 records out

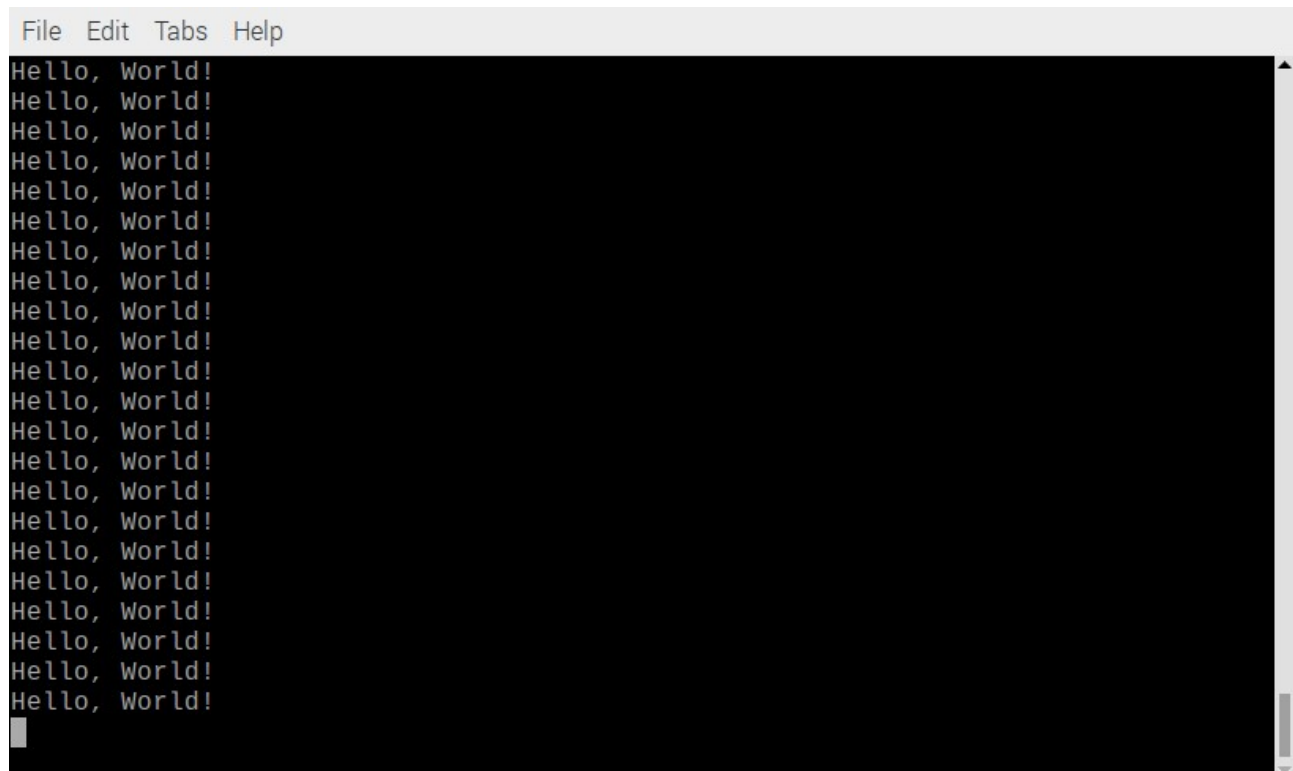
135100 bytes (135 kB, 132 KiB) copied, 0.0168507 s, 8.0 MB/s

Setting output to high

1

Checking DONE pin

1



A screenshot of a terminal window with a menu bar at the top containing 'File', 'Edit', 'Tabs', and 'Help'. The terminal background is black with white text. It displays the string 'Hello, World!' repeated 20 times, one per line. A small white cursor is visible at the bottom left of the terminal area.

Working Baudrate

```
File Edit Tabs Help
Hello, World!
Hello, World!
Hello, World!
Hell+-----+
Hell| A - Serial Device      : /dev/ttyUSB0
Hell| B - Lockfile Location  : /var/lock
Hell| C - Callin Program     :
Hell| D - Callout Program    :
Hell| E - Bps/Par/Bits       : 1000000 8N1
Hell| F - Hardware Flow Control : No
Hell| G - Software Flow Control : No
Hell|
Hell| Change which setting? █
Hell+-----+
Hello, World| Screen and keyboard |
Hello, World| Save setup as dfl   |
Hello, World| Save setup as..    |
Hello, World| Exit                |
Hello, World+-----+
Hello, World!
Hello, World!
Hello, World!
Hello, World!
CTRL-A Z for help | 1000000 8N1 | NOR | Minicom 2.7.1 | VT102 | Offline | yUSB0
```

In following test data received from the minicom terminal is sent back to the minicom terminal.

```
sudo ~/catboard_yosys/config_cat ~/07118catzip/rtl/uart/noflowcntl/echotest.bin
```

OK: GPIO 25 exported

OK: GPIO 17 exported

OK: GPIO 22 exported

OK: SPI driver loaded

Setting GPIO directions

out

out

in

Setting output to low

0

Reseting FPGA

0

1

Checking DONE pin

0

Continuing with configuration procedure

263+1 records in

263+1 records out

135100 bytes (135 kB, 132 KiB) copied, 0.0193156 s, 7.0 MB/s

Setting output to high

1

Checking DONE pin

1

```
File Edit Tabs Help
if ((WriteEnable && (!sig_wrBuffer_full))) begin
```

```
sudo ~/catboard_yosys/config_cat ~/07118catzip/rtl/uart/noflowcntl/speechfifo.bin
[sudo] password for devel:
```

```
OK: GPIO 25 exported
OK: GPIO 17 exported
OK: GPIO 22 exported
```

```
OK: SPI driver loaded
```

```
Setting GPIO directions
```

```
out
```

```
out
```

```
in
```

```
Setting output to low
```

```
0
```

```
Resetting FPGA
```

```
0
```

```
1
```

```
Checking DONE pin
```

```
0
```

```
Continuing with configuration procedure
```

```
263+1 records in
```

```
263+1 records out
```

```
135100 bytes (135 kB, 132 KiB) copied, 0.016955 s, 8.0 MB/s
```

```
Setting output to high
```

```
1
```

```
Checking DONE pin
```

```
1
```

```

File Edit Tabs Help
| place for those who hereofawe their lives that that natioo might | come tn|^
| lhve. It is altogethdr fitting and propep that we should do this. |
|
| \ But, in a larger sense, we can not dedicate-we can not consecratd-}
| wg can not hallow-this ground. The brave men, living and dead, |
| who s4ruggled (erel (ave cgnsecrated it, far above oup"pmor power |
| to add or detract. The world will little note, no~ long reeeer | M
|
| is for us the livang, rather,(to`"e`dedicated here to(the | < what wt|
| uffanis`ed work whhch they w`o)foughd here havu d`us far so nobly |
| advanced. I| as rather for us`to be here dedicated to`the great |
| task remaining before`usmtat frgm these honored dead we take |
| increased devotion to that cause for which thdy gave the last |
| ftll(lease of devotion-txad weahere highly resolve thad the3e |
| deae rhall not hawe dhee in vahn,thau thic`nation,`under Fod, |
| \ shall h`ve alnev bhrth og frdeom-and that government of the |
| puople, cy the pdopld, &ow thd peoqlm s(all`nnu pdrhsh`from 4hea | M
|
| |`earthn |
|
| =====

```

Global signals and constants

```

Clk_f=100e6 #100 Mhz
BAUDRATE=230400
clk = Signal(bool(0))
iRst = Signal(bool(0))
iRX = Signal(bool(0))
oTX = Signal(bool(0))
iData=Signal(intbv(0)[8:])
WriteEnable=Signal(bool(0))
oWrBuffer_full=Signal(bool(0))
oData=Signal(intbv(0)[8:])
read_addr=Signal(intbv(0,min=0,max=8))
RX_BUFF_LEN=8
rx_addr=Signal(intbv(0,min=0,max=RX_BUFF_LEN))

```

Simulation using rs232loopback_1 = rs232loopback(oTX, iRX)
in place of the

```

"""
@always_comb
def rs232loopback():
    iRX.next=oTX
"""

```

python RS232_Norbo.py

Running Test Array: [85, 170, 255, 0, 1, 128, 239, 254]

#####

RXData: 55	TXData: 85	Buffer Address: 0
RXData: aa	TXData: 170	Buffer Address: 1
RXData: ff	TXData: 255	Buffer Address: 2
RXData: 00	TXData: 0	Buffer Address: 3
RXData: 01	TXData: 1	Buffer Address: 4
RXData: 80	TXData: 128	Buffer Address: 5
RXData: ef	TXData: 239	Buffer Address: 6
RXData: fe	TXData: 254	Buffer Address: 7

Running Test Array: [8, 4, 5, 2, 1, 0]

#####

RXData: 08	TXData: 8	Buffer Address: 0
RXData: 04	TXData: 4	Buffer Address: 1
RXData: 05	TXData: 5	Buffer Address: 2
RXData: 02	TXData: 2	Buffer Address: 3
RXData: 01	TXData: 1	Buffer Address: 4
RXData: 00	TXData: 0	Buffer Address: 5

Running Test Array: [255, 254, 253, 251]

#####

RXData: ff	TXData: 255	Buffer Address: 6
RXData: fe	TXData: 254	Buffer Address: 7
RXData: fd	TXData: 253	Buffer Address: 0
RXData: fb	TXData: 251	Buffer Address: 1

Running Test Array: [85, 170, 255, 0, 1, 128, 239, 254, 8, 89, 55]

#####

Value: 8 Not written, RS232 Transmittbuffer has indicated to be already full. (by oWrBuffer_full)

Value: 89 Not written, RS232 Transmittbuffer has indicated to be already full. (by oWrBuffer_full)

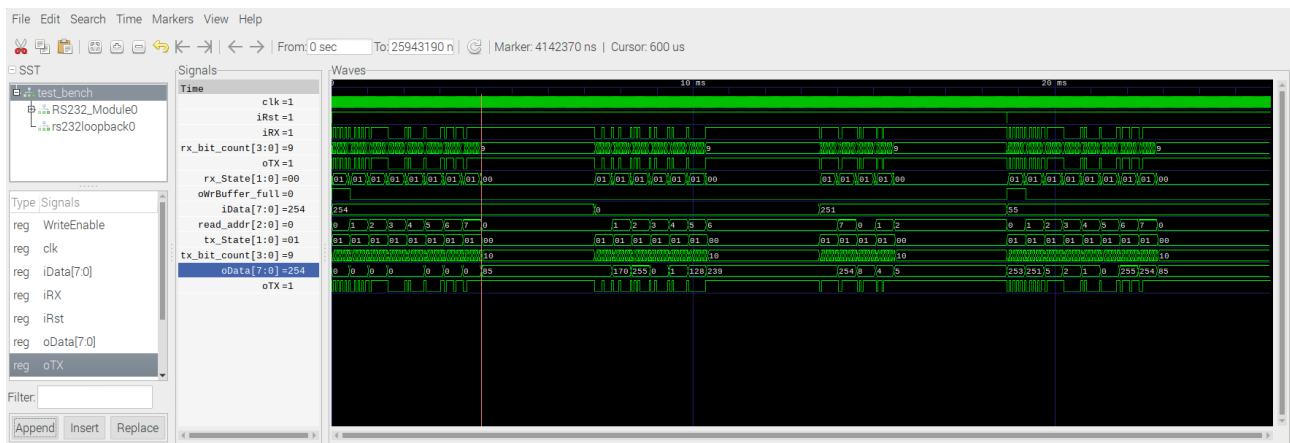
Value: 55 Not written, RS232 Transmittbuffer has indicated to be already full. (by oWrBuffer_full)

RXData: 55	TXData: 85	Buffer Address: 0
RXData: aa	TXData: 170	Buffer Address: 1
RXData: ff	TXData: 255	Buffer Address: 2
RXData: 00	TXData: 0	Buffer Address: 3
RXData: 01	TXData: 1	Buffer Address: 4
RXData: 80	TXData: 128	Buffer Address: 5
RXData: ef	TXData: 239	Buffer Address: 6
RXData: fe	TXData: 254	Buffer Address: 7

Warning: Not all values of the Array have been received (Check if Transmittbuffer was full)

Missing Data is: [8, 89, 55]

End of Simulation, simulation succesfull!



Simulation not using `rs232loopback_1 = rs232loopback(oTX, iRX)`
in place of the

```

#####
@always_comb
def rs232loopback():
    iRX.next=oTX
#####

```

```

#return clk_gen,rs232loopback_1,stimulus,rs232_instance#,Monitor_oTX
return clk_gen,stimulus,rs232_instance#,Monitor_oTX

```

python RS232_Norbo.py

Running Test Array: [85, 170, 255, 0, 1, 128, 239, 254]

#####

Warning: Not all values of the Array have been received (Check if Transmittbuffer was full)
Missing Data is: [85, 170, 255, 0, 1, 128, 239, 254]

Running Test Array: [8, 4, 5, 2, 1, 0]

#####

Value: 0 Not written, RS232 Transmittbuffer has indiciated to be allready full. (by
oWrBuffer_full)

Warning: Not all values of the Array have been received (Check if Transmittbuffer was full)
Missing Data is: [8, 4, 5, 2, 1, 0]

Running Test Array: [255, 254, 253, 251]

#####

Warning: Not all values of the Array have been received (Check if Transmittbuffer was full)
Missing Data is: [255, 254, 253, 251]

Running Test Array: [85, 170, 255, 0, 1, 128, 239, 254, 8, 89, 55]

#####

Value: 8 Not written, RS232 Transmittbuffer has indiciated to be allready full. (by
oWrBuffer_full)

Value: 89 Not written, RS232 Transmittbuffer has indiciated to be allready full. (by
oWrBuffer_full)

Value: 55 Not written, RS232 Transmittbuffer has indiciated to be allready full. (by
oWrBuffer_full)

Warning: Not all values of the Array have been received (Check if Transmittbuffer was full)
Missing Data is: [85, 170, 255, 0, 1, 128, 239, 254, 8, 89, 55]

End of Simulation, simulation succesfull!

