

*****Draft*****

QEMU RPi3 & Pico

05/14/22

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. Ultibo_Projects/picoultibo.sh

cd rp2040-freertos-project/build/

devel@pi4-27:~/rp2040-freertos-project/build \$ openocd -f
interface/raspberrypi-swd.cfg -f target/rp2040.cfg -c "program test-read/test-
read.elf verify reset exit"

Open On-Chip Debugger 0.11.0-g610f137-dirty (2022-05-03-08:59)

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For bug reports, read

<http://openocd.org/doc/doxygen/bugs.html>

adapter speed: 1000 kHz

Info : Hardware thread awareness created

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Info : RP2040 Flash Bank Command

Info : BCM2835 GPIO JTAG/SWD bitbang driver

Info : clock speed 1001 kHz

Info : SWD DPIDR 0x0bc12477

Info : SWD DLPIDR 0x00000001

Info : SWD DPIDR 0x0bc12477

Info : SWD DLPIDR 0x10000001

Info : rp2040.core0: hardware has 4 breakpoints, 2 watchpoints

Info : rp2040.core1: hardware has 4 breakpoints, 2 watchpoints

Info : starting gdb server for rp2040.core0 on 3333

Info : Listening on port 3333 for gdb connections

target halted due to debug-request, current mode: Thread

xPSR: 0xf1000000 pc: 0x000000ee msp: 0x20041f00

target halted due to debug-request, current mode: Thread

xPSR: 0xf1000000 pc: 0x000000ee msp: 0x20041f00

** Programming Started **

Info : RP2040 B0 Flash Probe: 2097152 bytes @10000000, in 512 sectors

target halted due to debug-request, current mode: Thread

xPSR: 0x01000000 pc: 0x0000012a msp: 0x20041f00

target halted due to debug-request, current mode: Thread

xPSR: 0x01000000 pc: 0x0000012a msp: 0x20041f00

target halted due to debug-request, current mode: Thread

xPSR: 0x01000000 pc: 0x0000012a msp: 0x20041f00


```

uses
  RaspberryPi3,
+ USBCDCEthernet,
  GlobalConfig, //Add the global config unit
  GlobalConst,
  GlobalTypes,
@@ -240,9 +241,9 @@ begin
  end;
  stOpen :
  begin
-   sleep(1000);
+   sleep(10000);
    res := SerialDeviceOpen (SerialDevice, 115200, SERIAL_DATA_8BIT,
SERIAL_STOP_1BIT, SERIAL_PARITY_NONE,
SERIAL_FLOW_DSR_DTR, 0, 0);
-   if res = ERROR_SUCCESS then state := stProcess0
+   if res = ERROR_SUCCESS then state := stProcess2
    else if res = ERROR_INVALID_PARAMETER then state := stFind;
    end;

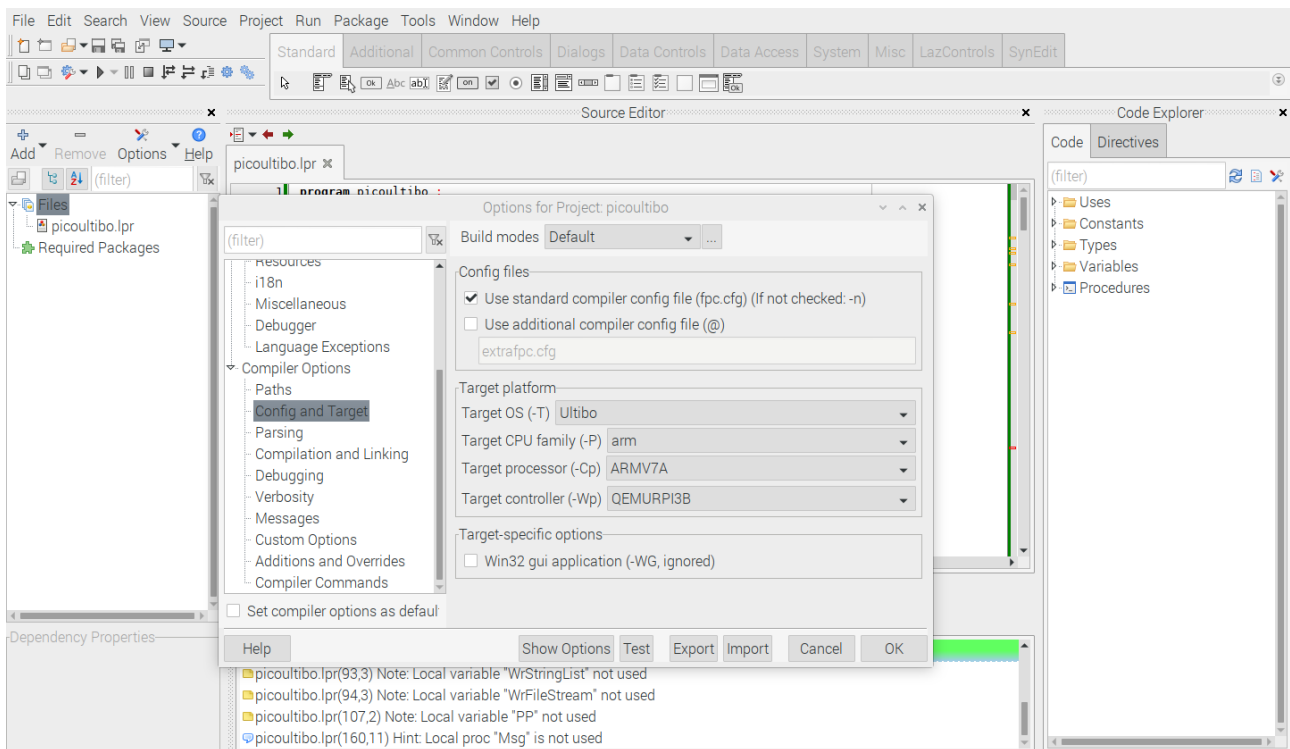
@@ -392,8 +393,8 @@ begin
  end;
  //SerialDeviceFlush(SerialDevice,SERIAL_WRITE_NONE);

-
-   state:= stProcess3;
+   sleep(1000);
+   state:= stProcess4;

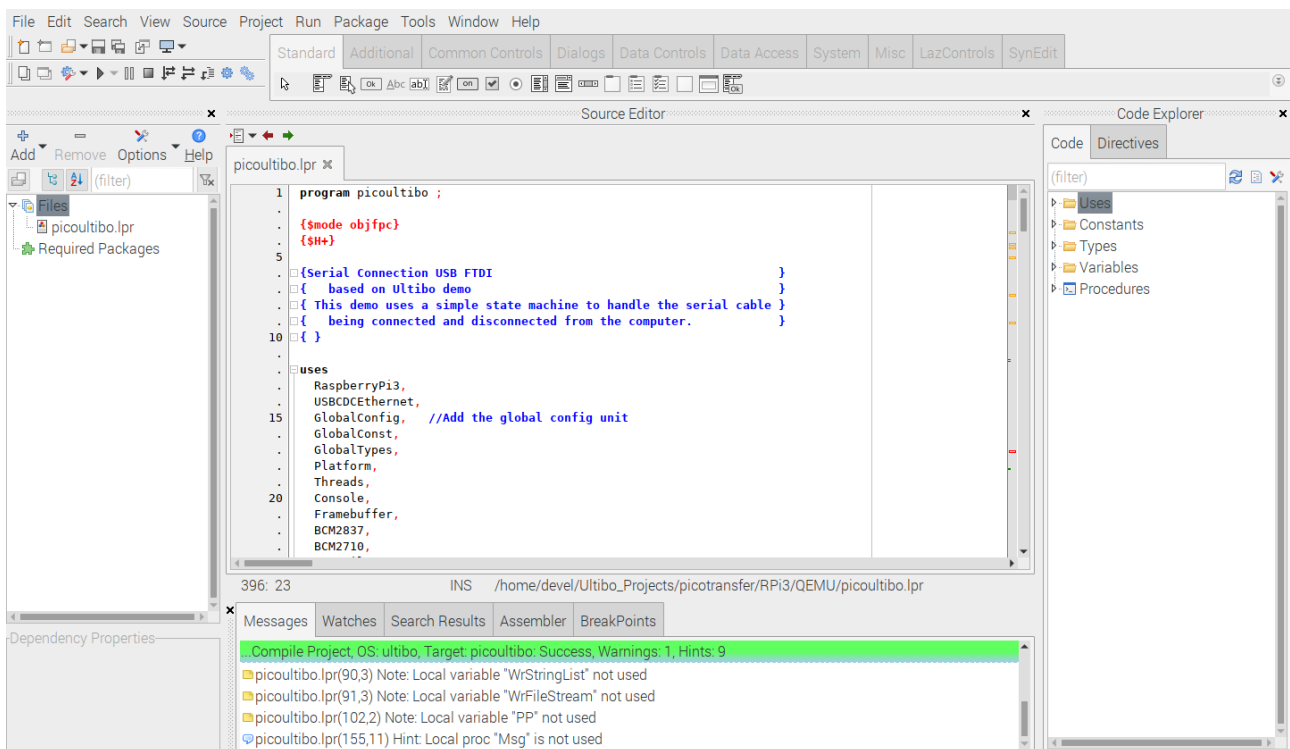
end;

```

Project Options



Compile



When the green bar appears after depressing Run/Compile the kernel7.qimg is created

Note: These commands need to be run as root.

sudo su

```
Contents of /home/devel/Ultibo_Projects/picoultibo.sh  
export ULTIBO1=/home/devel/ultibo/core  
export ULTIBO2=/home/devel/qemu-6.2.0-rpios/bin  
export PICO=/home/devel/local/openocd/bin  
export PATH=$ULTIBO1:$ULTIBO2:$PICO:$PATH  
echo $PATH
```

./home/devel/Ultibo_Projects/picoultibo.sh This sets the PATH to find
qemu-system-arm

```
cd Ultibo_Projects/picotransfer/RPi3/QEMU/
```

Contents of startqemu.sh

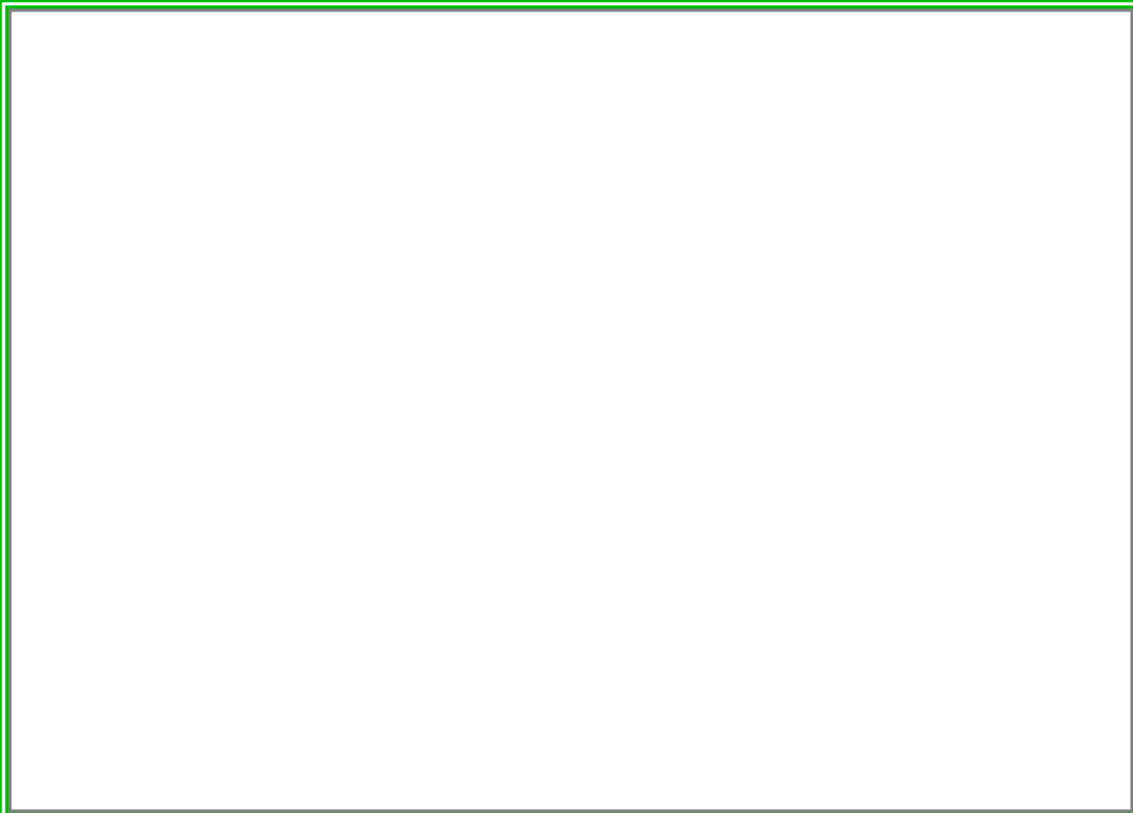
```
#!/bin/bash  
qemu-system-arm -machine raspi2b -cpu cortex-a8 -kernel kernel7.qimg \  
-netdev  
user,id=net0,hostfwd=tcp::5080-:80,hostfwd=tcp::5023-:23,hostfwd=tcp::8050-:5  
050,hostfwd=udp::5069-:69,hostfwd=tcp::6050-:5050 -device usb-  
net,netdev=net0 \  
-drive file=disk.img,if=sd,format=raw --device usb-  
host,vendorid=0x2e8a,productid=0x000a
```

```
root@pi4-27:/home/devel/Ultibo_Projects/picotransfer/RPi3/QEMU#  
./startqemu.sh  
usbnet: failed control transaction: request 0x143 value 0xc index 0x0 length 0x0
```

The QEMU window appears

Machine View

Ultibo Core (Release: Beetroot Version: 2.5.001 Date: 15 April 2022)



Ultibo starting trying to find the pico.

Machine View

Ultibo Core (Release: Beetroot Version: 2.5.001 Date: 15 April 2022)

Welcome to Pico Test Program.
Serial Port State Finding

The Ultibo reads the file bb.bin and sends to the pico.

Machine View

Ultibo Core (Release: Beetroot Version: 2.5.001 Date: 15 April 2022)

```
Welcome to Pico Test Program.  
Serial Port State Finding  
trying to find USB CDC ACM Serial  
Serial Port State Opening
```

The 4160 characters are sent to the pico.


```

      Ultilbo Core (Release: Beetroot Version: 2.5.001 Date: 15 April 2022)

```

2275 NZIADw{~|~@NA @+<~>v\$^f@u 9ekúèèæçffIDIBB99S=' ?4?773.''' ?Q?DEF
2340 LLOA @@@@-GNB :µ@'¶@?@?l@ EeL\ûéëI@UJB>' :3KV?) 'KPMB4)# /68CBA
2405 J~OCU@@@@}~@D@ @@p@q'@'d.ZZ WRSúéóC0OGA<9572T9' 2=FDE<2-#4??>KK
2470 EIPCDi@xpe@@@@K9 ,@rzpokCC_bUVVP5UÚâ:lOMFD?6.H^N4# &@?0./:8+@85;jE
2535 C^SDI@nff@#@* 4C@f@@@@@axUVF.4TÚé@P@JGB>62TYG/ 2?:6-#z##9E>47Vç
2600 A_UEEjpf'tiUNR"-@@@@uwgYIQ6/39UÚâIRPIDA:38Y@# ?19A@# :?3.0'yé
2665 =^WEHFDGDCHITbbO.^Xucc'^S=5427lcã¿OUPGA:3;GQOL6'' 8A@,2& ^B<4>3t@
2730 :c[UTB<DQX_iecl<mpjg\k==ESl@@@@áã@QSKC>73IKF3#)?;/,&('A@1--3,@é
2795 7c_isIPalssmlc_M<<@@@_*o^±^-±¿ôaTOHA:8LKA? !>634*,\$ 5>12+-3-Ãê
2860 5e\ctscR>K'@zb TÀùÏÉÁñ¿.-«"@QNLD:9MOC9*)455-11.\$.@93')/@@é
2925 :fJfChdal@@@@b^V¿òÙIEÇ¿¿.*-@@@@@QPHB=LQD:1%*:),)\$ ",72.+#+/-@éé
2990 Gja=FU^lckl@M'[W^×YÌÇ¿¿:@@?ÉVÔ_KHBANME<4+ &F:<@**'/1*2>-,@éé
3055 ZsfH2?Reot@foDXy@±-°*^fôáéééé¿KQMHIQIC?9/'*67+22',\$1.-,*&!+(.àà
3120 cykE.,/Mhd@kh=XX¿ééééééééééééRRQRJC@>/%!B=-,\$)01-\$'?!!&)~d@f.
3185 lxrI6<16CW@m>[W~ééééééééééééôfNYRF?Tp44Pq@@@@@3\$.76>q^cgd^K4,[@
3250 xqvY@+=IY@?caT±ééééééééééééà@RMAE@?t@t^Sc@?gcfnl@@@@@@@@@uy'
3315 @c{JJ>GKVBca@@@@bN éééééééééééé@MM@96x<@.%(+) &.<¿N@?@@@@@@@@@)@
3380 @G}q'JCGFYZSl@c'~éééééééééééé^eRI@=Zzonh @Ü_L¿¿^@±-/@@@@@@
3445 @.qtñJKGHT'mle',céééééééééééé^fOEKx@@@@dI @a@0¿9tdi;t@@@@-±t.
3510 i+Jxpkb[IcksqdK @ééééééé^ZYLv@pkw@@@@ + >L@ÑÂ>cCGCFIgGo@wk@Uc
3575 °-(Zwmjjknppup'l' @ééééééé@@@@@@@@@xjaQ+ - 96)>ÉAmHtf@-'@p>@fWD@
3640 ~/(@Spnlmopauz @ééÉúôÝÊ\Fokdb_IL:(% <?slÜYygP'iXnnYxxJVl+d
3705 Á4(%%3R'gd\NCRL pééf@@@@N744:A<4.,)? ;9'>p@KRRULERaY@w@w}>
3770 É9(QyaUUbEapeMJ.héâ@@@@zhW@S4'(*,% 79Q^f¿dFgYBINMfp@a~/X
3835 Y@I_UH:WBSUZPR^âÑ^CSRTZTQ?*!' #33=@¿ô@EnhXqg_lm@_MIP
3900 ÜG)EpLjdseZUwa'+@fYl@@@@HAGJ5*# ''! &00Bmu*¥62KI@ED@js.jl
3965 úQ)5ihr^lmece='Jx)'*''@jWK@1/&'**)# *.~7K_E¿QdMEi:A@h@Qyo@
4030 à~*(=CCL???<U3(CEQ@;ÁÍDÉ^@zcM')''&# /+.5;@_ÁibYYly_zEOIBA'
4095 á@W@-+@PTOK:4-HA.B@¿éééééý@?K=R]_CE \$!)?04:=d@Á@BNPg:P@?9bBNl

The pico sends the result of KLT & DWT lifting back to Ultibo which written to the file kltdwt.txt

Ultibo Core (Release: Beetroot Version: 2.5.001 Date: 15 April 2022)

```
Received a line: ""
Received a line: "-31,-17,-17,2,-26,28,1,1,-1,0,0,0,6,-13,14,41,32,-60,-52,28,-7,30,-1
,-3,2,31,-36,51,-10,3,12,-9,3,2,-26,4,14,5,21,-17,32,2,-106,8,32,0,-24,-13,1,30,13,5,-
8,-27,-10,-8,88,64,-58,-10,13,7,-8,50,"
Received a line: ""
Received a line: "-9,-2,2,1,3,-2,0,-9,65,1,0,0,0,2,-2,16,-5,9,13,8,-3,-10,-1,-3,2,20,-
19,15,12,-34,29,76,4,-1,-23,11,-21,64,-70,29,42,-47,8,17,-14,8,1,16,-2,13,-9,4,-38,-29
,29,7,-46,-16,-5,5,3,23,-4,-20,"
Received a line: ""
Received a line: "-8,-6,0,1,0,1,0,-5,68,-3,1,2,1,2,8,-14,50,7,5,-1,-2,-1,-4,-6,7,5,-10
,-12,0,-32,44,113,4,-8,0,20,-51,26,-7,-23,7,8,-20,5,24,15,33,26,-4,-39,-54,20,-87,-48,
-91,18,-1,-8,14,-7,3,-6,7,-44,"
Received a line: ""
Received a line: "-8,-6,0,0,0,1,1,-1,57,-1,-1,1,2,-1,-2,2,-29,1,-8,9,-1,-8,49,-15,-12,
-5,3,-1,4,5,38,72,2,10,-25,-13,6,6,-3,-55,-2,-13,-4,39,-1,10,-5,-12,-8,21,3,4,49,28,-5
2,-24,-11,18,-2,6,-10,10,-1,36,"
Received a line: ""
Received a line: "-7,-6,1,0,0,1,1,0,27,0,0,-2,1,-1,0,-4,5,-29,23,17,-3,-2,39,-2,-7,4,-
12,8,14,-18,2,-11,2,5,-37,-57,10,4,0,76,55,-7,-21,98,25,1,15,-1,3,-34,9,-22,36,29,25,1
8,-19,20,113,-43,-38,-2,-14,-76,"
Received a line: ""
Received a line: "-7,-8,0,0,0,1,0,1,29,-3,2,1,2,1,3,-8,10,10,-4,-29,16,-2,6,28,-5,-6,5
,-4,8,8,-1,0,-31,11,-14,-41,-14,2,104,-39,32,-20,-15,22,-26,-3,4,-6,17,-14,-22,12,-4,2
4,-85,13,26,-29,-2,-2,-6,3,18,62,"
Received a line: ""
Received a line: "-63,2,0,6,-1,6,4,7,-4,3,-5,-12,-7,21,4,-1,10,-12,-1,-33,20,-5,43,-48
,11,9,-10,-2,8,2,-3,3,6,-65,10,-33,-17,-36,8,2,-1,1,-5,-1,-9,-15,-17,-5,-20,-16,-4,-6,
2,-13,-62,-20,-26,0,-3,13,-5,-5,-2,45,"
Received a line: ""
```

x

1Command (1 = Send or 0 = Wait):

need to copy the data received from host to img1

img1 = 0x20005f90 img2 = 0x20006f90

0 img1 95 ptrs.buf 95

1 img1 100 ptrs.buf 100

2 img1 103 ptrs.buf 103

3 img1 106 ptrs.buf 106

4 img1 108 ptrs.buf 108

4091 img1 63 ptrs.buf 63

4092 img1 57 ptrs.buf 57

4093 img1 98 ptrs.buf 98

4094 img1 66 ptrs.buf 66

4095 img1 78 ptrs.buf 78

need to copy the data from img1 to img2

0 img2 95 img1 95

1 img2 100 img1 100

2 img2 103 img1 103

3 img2 106 img1 106

4 img2 108 img1 108

4091 img2 63 img1 63

4092 img2 57 img1 57

4093 img2 98 img1 98

4094 img2 66 img1 66

4095 img2 78 img1 78

Feature #0: (38.000000,29.000000) with value of 19844

Feature #1: (29.000000,39.000000) with value of 9270

Feature #2: (24.000000,29.000000) with value of 5185

Feature #3: (39.000000,39.000000) with value of 465

Feature #4: (-1.000000,-1.000000) with value of -1

Feature #5: (-1.000000,-1.000000) with value of -1

Feature #6: (-1.000000,-1.000000) with value of -1

Feature #7: (-1.000000,-1.000000) with value of -1

Feature #8: (-1.000000,-1.000000) with value of -1

Feature #9: (-1.000000,-1.000000) with value of -1

Feature #10: (-1.000000,-1.000000) with value of -1

Feature #11: (-1.000000,-1.000000) with value of -1

Feature #12: (-1.000000,-1.000000) with value of -1

Feature #13: (-1.000000,-1.000000) with value of -1

Feature #14: (-1.000000,-1.000000) with value of -1
Feature #15: (-1.000000,-1.000000) with value of -1
Feature #16: (-1.000000,-1.000000) with value of -1
Feature #17: (-1.000000,-1.000000) with value of -1
Feature #18: (-1.000000,-1.000000) with value of -1
Feature #19: (-1.000000,-1.000000) with value of -1
Feature #20: (-1.000000,-1.000000) with value of -1
Feature #21: (-1.000000,-1.000000) with value of -1
Feature #22: (-1.000000,-1.000000) with value of -1
Feature #23: (-1.000000,-1.000000) with value of -1
Feature #24: (-1.000000,-1.000000) with value of -1
Feature #25: (-1.000000,-1.000000) with value of -1
Feature #26: (-1.000000,-1.000000) with value of -1
Feature #27: (-1.000000,-1.000000) with value of -1
Feature #28: (-1.000000,-1.000000) with value of -1
Feature #29: (-1.000000,-1.000000) with value of -1
Feature #30: (-1.000000,-1.000000) with value of -1
Feature #31: (-1.000000,-1.000000) with value of -1
Feature #32: (-1.000000,-1.000000) with value of -1
Feature #33: (-1.000000,-1.000000) with value of -1
Feature #34: (-1.000000,-1.000000) with value of -1
Feature #35: (-1.000000,-1.000000) with value of -1
Feature #36: (-1.000000,-1.000000) with value of -1
Feature #37: (-1.000000,-1.000000) with value of -1
Feature #38: (-1.000000,-1.000000) with value of -1
Feature #39: (-1.000000,-1.000000) with value of -1

Feature #40: (-1.000000,-1.000000) with value of -1
Feature #41: (-1.000000,-1.000000) with value of -1
Feature #42: (-1.000000,-1.000000) with value of -1
Feature #43: (-1.000000,-1.000000) with value of -1
Feature #44: (-1.000000,-1.000000) with value of -1
Feature #45: (-1.000000,-1.000000) with value of -1
Feature #46: (-1.000000,-1.000000) with value of -1
Feature #47: (-1.000000,-1.000000) with value of -1
Feature #48: (-1.000000,-1.000000) with value of -1
Feature #49: (-1.000000,-1.000000) with value of -1
Feature #50: (-1.000000,-1.000000) with value of -1
Feature #51: (-1.000000,-1.000000) with value of -1
Feature #52: (-1.000000,-1.000000) with value of -1
Feature #53: (-1.000000,-1.000000) with value of -1
Feature #54: (-1.000000,-1.000000) with value of -1
Feature #55: (-1.000000,-1.000000) with value of -1
Feature #56: (-1.000000,-1.000000) with value of -1
Feature #57: (-1.000000,-1.000000) with value of -1
Feature #58: (-1.000000,-1.000000) with value of -1
Feature #59: (-1.000000,-1.000000) with value of -1
Feature #60: (-1.000000,-1.000000) with value of -1
Feature #61: (-1.000000,-1.000000) with value of -1
Feature #62: (-1.000000,-1.000000) with value of -1
Feature #63: (-1.000000,-1.000000) with value of -1
Feature #64: (-1.000000,-1.000000) with value of -1
Feature #65: (-1.000000,-1.000000) with value of -1

Feature #66: (-1.000000,-1.000000) with value of -1
Feature #67: (-1.000000,-1.000000) with value of -1
Feature #68: (-1.000000,-1.000000) with value of -1
Feature #69: (-1.000000,-1.000000) with value of -1
Feature #70: (-1.000000,-1.000000) with value of -1
Feature #71: (-1.000000,-1.000000) with value of -1
Feature #72: (-1.000000,-1.000000) with value of -1
Feature #73: (-1.000000,-1.000000) with value of -1
Feature #74: (-1.000000,-1.000000) with value of -1
Feature #75: (-1.000000,-1.000000) with value of -1
Feature #76: (-1.000000,-1.000000) with value of -1
Feature #77: (-1.000000,-1.000000) with value of -1
Feature #78: (-1.000000,-1.000000) with value of -1
Feature #79: (-1.000000,-1.000000) with value of -1
Feature #80: (-1.000000,-1.000000) with value of -1