Multiplier

```
`timescale 1ns / 1ps
//////////////////////////////////////////////////////////////////////////////////
// Company:
// Engineer:
//
// Create Date: 31.03.2023 13:17:22
// Design Name:
// Module Name: serial_adder
// Project Name:
// Target Devices:
// Tool Versions:
// Description:
//
// Dependencies:
//
// Revision:
// Revision 0.01 - File Created
// Additional Comments:
//
//////////////////////////////////////////////////////////////////////////////////


module serial_multiplier(sysclk,divclk,Buttons,Start,Rst,L1,L2,A,B,C);
input sysclk;
input [3:0]Buttons;
input L1,L2,Start,Rst;
output reg [3:0] C;
output reg [3:0] A,B;
output divclk;
```

```
reg[27:0] count=0;
//wire Cout;
wire Cout;
wire [3:0] S;
always@(posedge sysclk)
  begin
   count=count+1;
  end
assign divclk=count[27];

//next
always@(posedge divclk)
   begin
      if(Rst==1)
         begin
            A=4'b0000;
            B=4'b0000;
            C=4'b0000;
//             Cin=0;
         end
      if(L1==1)
      B=Buttons;

      if(L2==1)
      C=Buttons;

      if(Start==1)
         begin
            B[3]<=S[0];
            B[2]<=B[3];
```

```
            B[1]<=B[2];
            B[0]<=B[1];

            A={Cout,S[3],S[2],S[1]};
//              Cin=Cout;
          end
    end

assign {Cout,S}=A+{C[3]&B[0],C[2]&B[0],C[1]&B[0],C[0]&B[0]};




endmodule
```

PYNQ XDC

```
## This file is RPI Logic board .xdc for the PYNQ-Z2 ########################################

## To use it in a project:

## - uncomment the lines corresponding to used pins

## - rename the used ports (in each line, after get_ports)

## - according to the top level signal names in the project

##

############################Raspberry Digital I/O################################################

## Clock signal 12 MHz  ##

#set_property -dict { PACKAGE_PIN Y9    IOSTANDARD LVCMOS33 } [get_ports { OSC_12MHz }]; #rpio_21


##Button #Active Low##

#set_property -dict { PACKAGE_PIN V7    IOSTANDARD LVCMOS33 } [get_ports { Button }]; #rpio_27


## SSD(Seven Segment Display) x 4 ##
```

```
#set_property -dict { PACKAGE_PIN Y16   IOSTANDARD LVCMOS33 } [get_ports { SSD_CA }]; #rpio_sd
#set_property -dict { PACKAGE_PIN Y17   IOSTANDARD LVCMOS33 } [get_ports { SSD_CB }]; #rpio_sc
#set_property -dict { PACKAGE_PIN W18   IOSTANDARD LVCMOS33 } [get_ports { SSD_CC }]; #rpio_02
#set_property -dict { PACKAGE_PIN W19   IOSTANDARD LVCMOS33 } [get_ports { SSD_CD }]; #rpio_03
#set_property -dict { PACKAGE_PIN Y18   IOSTANDARD LVCMOS33 } [get_ports { SSD_CE }]; #rpio_04
#set_property -dict { PACKAGE_PIN Y19   IOSTANDARD LVCMOS33 } [get_ports { SSD_CF }]; #rpio_05
#set_property -dict { PACKAGE_PIN U18   IOSTANDARD LVCMOS33 } [get_ports { SSD_CG }]; #rpio_06
#set_property -dict { PACKAGE_PIN U19   IOSTANDARD LVCMOS33 } [get_ports { SSD_CP }]; #rpio_07

#set_property -dict { PACKAGE_PIN F19   IOSTANDARD LVCMOS33 } [get_ports { SSD_A4 }]; #rpio_08
#set_property -dict { PACKAGE_PIN V10   IOSTANDARD LVCMOS33 } [get_ports { SSD_A3 }]; #rpio_09
#set_property -dict { PACKAGE_PIN V8    IOSTANDARD LVCMOS33 } [get_ports { SSD_A2 }]; #rpio_10
#set_property -dict { PACKAGE_PIN W10   IOSTANDARD LVCMOS33 } [get_ports { SSD_A1 }]; #rpio_11

##LED(GREEN)##
set_property -dict { PACKAGE_PIN B20   IOSTANDARD LVCMOS33 } [get_ports { B[0] }]; #rpio_12
set_property -dict { PACKAGE_PIN W8    IOSTANDARD LVCMOS33 } [get_ports { B[1] }]; #rpio_13
set_property -dict { PACKAGE_PIN U8    IOSTANDARD LVCMOS33 } [get_ports { B[2] }]; #rpio_22
set_property -dict { PACKAGE_PIN W6    IOSTANDARD LVCMOS33 } [get_ports { B[3] }]; #rpio_23
set_property -dict { PACKAGE_PIN Y7    IOSTANDARD LVCMOS33 } [get_ports { A[0] }]; #rpio_24
set_property -dict { PACKAGE_PIN F20   IOSTANDARD LVCMOS33 } [get_ports { A[1] }]; #rpio_25

##Switches##
set_property -dict { PACKAGE_PIN V6    IOSTANDARD LVCMOS33 } [get_ports { L1 }]; #rpio_14
set_property -dict { PACKAGE_PIN Y6    IOSTANDARD LVCMOS33 } [get_ports { L2 }]; #rpio_15
#set_property -dict { PACKAGE_PIN B19   IOSTANDARD LVCMOS33 } [get_ports { SWC }]; #rpio_16
#set_property -dict { PACKAGE_PIN U7    IOSTANDARD LVCMOS33 } [get_ports { SWD }]; #rpio_17
#set_property -dict { PACKAGE_PIN C20   IOSTANDARD LVCMOS33 } [get_ports { SWE }]; #rpio_18
#set_property -dict { PACKAGE_PIN Y8    IOSTANDARD LVCMOS33 } [get_ports { SWF }]; #rpio_19
#set_property -dict { PACKAGE_PIN A20   IOSTANDARD LVCMOS33 } [get_ports { SWG }]; #rpio_20
#set_property -dict { PACKAGE_PIN W9    IOSTANDARD LVCMOS33 } [get_ports { SWH }]; #rpio_26
```

RPI XDC

```
## This file is a general .xdc for the PYNQ-Z2 board

## To use it in a project:

## - uncomment the lines corresponding to used pins

## - rename the used ports (in each line, after get_ports) according to the top level signal names in the project


## Clock signal 125 MHz


set_property -dict { PACKAGE_PIN H16   IOSTANDARD LVCMOS33 } [get_ports { sysclk }]; #IO_L13P_T2_MRCC_35 Sch=sysclk

#create_clock -add -name sys_clk_pin -period 8.00 -waveform {0 4} [get_ports { sysclk }];


##Switches


set_property -dict { PACKAGE_PIN M20   IOSTANDARD LVCMOS33 } [get_ports { Start }]; #IO_L7N_T1_AD2N_35 Sch=sw[0]

set_property -dict { PACKAGE_PIN M19   IOSTANDARD LVCMOS33 } [get_ports { Rst }]; #IO_L7P_T1_AD2P_35 Sch=sw[1]


##RGB LEDs


set_property -dict { PACKAGE_PIN L15   IOSTANDARD LVCMOS33 } [get_ports { A[2] }]; #IO_L22N_T3_AD7N_35 Sch=led4_b

#set_property -dict { PACKAGE_PIN G17   IOSTANDARD LVCMOS33 } [get_ports { led4_g }]; #IO_L16P_T2_35 Sch=led4_g

#set_property -dict { PACKAGE_PIN N15   IOSTANDARD LVCMOS33 } [get_ports { led4_r }]; #IO_L21P_T3_DQS_AD14P_35 Sch=led4_r

set_property -dict { PACKAGE_PIN G14   IOSTANDARD LVCMOS33 } [get_ports { A[3]}]; #IO_0_35 Sch=led5_b

#set_property -dict { PACKAGE_PIN L14   IOSTANDARD LVCMOS33 } [get_ports { c1 }]; #IO_L22P_T3_AD7P_35 Sch=led5_g

#set_property -dict { PACKAGE_PIN M15   IOSTANDARD LVCMOS33 } [get_ports { led5_r }]; #IO_L23N_T3_35 Sch=led5_r
```

##LEDs

set_property -dict { PACKAGE_PIN R14   IOSTANDARD LVCMOS33 } [get_ports { C[0] }];
#IO_L6N_T0_VREF_34 Sch=led[0]

set_property -dict { PACKAGE_PIN P14   IOSTANDARD LVCMOS33 } [get_ports { C[1] }];
#IO_L6P_T0_34 Sch=led[1]

set_property -dict { PACKAGE_PIN N16   IOSTANDARD LVCMOS33 } [get_ports { C[2] }];
#IO_L21N_T3_DQS_AD14N_35 Sch=led[2]

set_property -dict { PACKAGE_PIN M14   IOSTANDARD LVCMOS33 } [get_ports { C[3] }];
#IO_L23P_T3_35 Sch=led[3]

##Buttons

set_property -dict { PACKAGE_PIN D19   IOSTANDARD LVCMOS33 } [get_ports { Buttons[0] }];
#IO_L4P_T0_35 Sch=btn[0]

set_property -dict { PACKAGE_PIN D20   IOSTANDARD LVCMOS33 } [get_ports { Buttons[1] }];
#IO_L4N_T0_35 Sch=btn[1]

set_property -dict { PACKAGE_PIN L20   IOSTANDARD LVCMOS33 } [get_ports { Buttons[2] }];
#IO_L9N_T1_DQS_AD3N_35 Sch=btn[2]

set_property -dict { PACKAGE_PIN L19   IOSTANDARD LVCMOS33 } [get_ports { Buttons[3] }];
#IO_L9P_T1_DQS_AD3P_35 Sch=btn[3]

##PmodA

set_property -dict { PACKAGE_PIN Y18   IOSTANDARD LVCMOS33 } [get_ports { divclk }];
#IO_L17P_T2_34 Sch=ja_p[1]

#set_property -dict { PACKAGE_PIN Y19   IOSTANDARD LVCMOS33 } [get_ports { b[1] }];
#IO_L17N_T2_34 Sch=ja_n[1]

#set_property -dict { PACKAGE_PIN Y16   IOSTANDARD LVCMOS33 } [get_ports { b[2] }];
#IO_L7P_T1_34 Sch=ja_p[2]

#set_property -dict { PACKAGE_PIN Y17   IOSTANDARD LVCMOS33 } [get_ports { b[3] }];
#IO_L7N_T1_34 Sch=ja_n[2]

#set_property -dict { PACKAGE_PIN U18   IOSTANDARD LVCMOS33 } [get_ports { ja[4] }];
#IO_L12P_T1_MRCC_34 Sch=ja_p[3]

#set_property -dict { PACKAGE_PIN U19   IOSTANDARD LVCMOS33 } [get_ports { ja[5] }];
#IO_L12N_T1_MRCC_34 Sch=ja_n[3]

```
#set_property -dict { PACKAGE_PIN W18   IOSTANDARD LVCMOS33 } [get_ports { ja[6] }];
#IO_L22P_T3_34 Sch=ja_p[4]

#set_property -dict { PACKAGE_PIN W19   IOSTANDARD LVCMOS33 } [get_ports { ja[7] }];
#IO_L22N_T3_34 Sch=ja_n[4]


##PmodB


#set_property -dict { PACKAGE_PIN W14   IOSTANDARD LVCMOS33 } [get_ports { jb[0] }];
#IO_L8P_T1_34 Sch=jb_p[1]

#set_property -dict { PACKAGE_PIN Y14   IOSTANDARD LVCMOS33 } [get_ports { jb[1] }];
#IO_L8N_T1_34 Sch=jb_n[1]

#set_property -dict { PACKAGE_PIN T11   IOSTANDARD LVCMOS33 } [get_ports { jb[2] }];
#IO_L1P_T0_34 Sch=jb_p[2]

#set_property -dict { PACKAGE_PIN T10   IOSTANDARD LVCMOS33 } [get_ports { jb[3] }];
#IO_L1N_T0_34 Sch=jb_n[2]

#set_property -dict { PACKAGE_PIN V16   IOSTANDARD LVCMOS33 } [get_ports { jb[4] }];
#IO_L18P_T2_34 Sch=jb_p[3]

#set_property -dict { PACKAGE_PIN W16   IOSTANDARD LVCMOS33 } [get_ports { jb[5] }];
#IO_L18N_T2_34 Sch=jb_n[3]

#set_property -dict { PACKAGE_PIN V12   IOSTANDARD LVCMOS33 } [get_ports { jb[6] }];
#IO_L4P_T0_34 Sch=jb_p[4]

#set_property -dict { PACKAGE_PIN W13   IOSTANDARD LVCMOS33 } [get_ports { jb[7] }];
#IO_L4N_T0_34 Sch=jb_n[4]


##Audio


#set_property -dict { PACKAGE_PIN M17   IOSTANDARD LVCMOS33 } [get_ports { adr0 }];
#IO_L8P_T1_AD10P_35 Sch=adr0

#set_property -dict { PACKAGE_PIN M18   IOSTANDARD LVCMOS33 } [get_ports { adr1 }];
#IO_L8N_T1_AD10N_35 Sch=adr1


#set_property -dict { PACKAGE_PIN U5    IOSTANDARD LVCMOS33 } [get_ports { au_mclk_r }];
#IO_L19N_T3_VREF_13 Sch=au_mclk_r

#set_property -dict { PACKAGE_PIN T9    IOSTANDARD LVCMOS33 } [get_ports { au_sda_r  }];
#IO_L12P_T1_MRCC_13 Sch=au_sda_r
```

#set_property -dict { PACKAGE_PIN U9   IOSTANDARD LVCMOS33 } [get_ports { au_scl_r }];
#IO_L17P_T2_13 Sch= au_scl_r

#set_property -dict { PACKAGE_PIN F17   IOSTANDARD LVCMOS33 } [get_ports { au_dout_r }];
#IO_L6N_T0_VREF_35 Sch=au_dout_r

#set_property -dict { PACKAGE_PIN G18   IOSTANDARD LVCMOS33 } [get_ports { au_din_r }];
#IO_L16N_T2_35 Sch=au_din_r

#set_property -dict { PACKAGE_PIN T17   IOSTANDARD LVCMOS33 } [get_ports { au_wclk_r }];
#IO_L20P_T3_34 Sch=au_wclk_r

#set_property -dict { PACKAGE_PIN R18   IOSTANDARD LVCMOS33 } [get_ports { au_bclk_r }];
#IO_L20N_T3_34 Sch=au_bclk_r

Single Ended Analog Inputs

##NOTE: The ar_an_p pins can be used as single ended analog inputs with voltages from 0-3.3V (Arduino Analog pins a[0]-a[5]).

These signals should only be connected to the XADC core. When using these pins as digital I/O, use pins a[0]-a[5].

#set_property -dict { PACKAGE_PIN E17   IOSTANDARD LVCMOS33 } [get_ports { ar_an0_p }];
#IO_L3P_T0_DQS_AD1P_35 Sch=ar_an0_p

#set_property -dict { PACKAGE_PIN D18   IOSTANDARD LVCMOS33 } [get_ports { ar_an0_n }];
#IO_L3P_T0_DQS_AD1P_35 Sch=ar_an0_n

#set_property -dict { PACKAGE_PIN E18   IOSTANDARD LVCMOS33 } [get_ports { ar_an1_p }];
#IO_L5N_T0_AD9P_35 Sch=ar_an1_p

#set_property -dict { PACKAGE_PIN E19   IOSTANDARD LVCMOS33 } [get_ports { ar_an1_n }];
#IO_L5N_T0_AD9N_35 Sch=ar_an1_n

#set_property -dict { PACKAGE_PIN K14   IOSTANDARD LVCMOS33 } [get_ports { ar_an2_p }];
#IO_L20P_T3_AD6P_35 Sch=ar_an2_p

#set_property -dict { PACKAGE_PIN J14   IOSTANDARD LVCMOS33 } [get_ports { ar_an2_n }];
#IO_L20P_T3_AD6N_35 Sch=ar_an2_n

#set_property -dict { PACKAGE_PIN K16   IOSTANDARD LVCMOS33 } [get_ports { ar_an3_p }];
#IO_L24P_T3_AD15P_35 Sch=ar_an3_p

#set_property -dict { PACKAGE_PIN J16   IOSTANDARD LVCMOS33 } [get_ports { ar_an3_n }];
#IO_L24P_T3_AD15N_35 Sch=ar_an3_n

#set_property -dict { PACKAGE_PIN J20   IOSTANDARD LVCMOS33 } [get_ports { ar_an4_p }];
#IO_L17P_T2_AD5P_35 Sch=ar_an4_p

#set_property -dict { PACKAGE_PIN H20   IOSTANDARD LVCMOS33 } [get_ports { ar_an4_n }];
#IO_L17P_T2_AD5P_35 Sch=ar_an4_n

#set_property -dict { PACKAGE_PIN G19   IOSTANDARD LVCMOS33 } [get_ports { ar_an5_p }];
#IO_L18P_T2_AD13P_35 Sch=ar_an5_p

#set_property -dict { PACKAGE_PIN G20   IOSTANDARD LVCMOS33 } [get_ports { ar_an5_n }];
#IO_L18P_T2_AD13P_35 Sch=ar_an5_n

##Arduino Digital I/O

#set_property -dict { PACKAGE_PIN T14   IOSTANDARD LVCMOS33 } [get_ports { ar[0] }];
#IO_L5P_T0_34 Sch=ar[0]

#set_property -dict { PACKAGE_PIN U12   IOSTANDARD LVCMOS33 } [get_ports { ar[1] }];
#IO_L2N_T0_34 Sch=ar[1]

#set_property -dict { PACKAGE_PIN U13   IOSTANDARD LVCMOS33 } [get_ports { ar[2] }];
#IO_L3P_T0_DQS_PUDC_B_34 Sch=ar[2]

#set_property -dict { PACKAGE_PIN V13   IOSTANDARD LVCMOS33 } [get_ports { ar[3] }];
#IO_L3N_T0_DQS_34 Sch=ar[3]

#set_property -dict { PACKAGE_PIN V15   IOSTANDARD LVCMOS33 } [get_ports { ar[4] }];
#IO_L10P_T1_34 Sch=ar[4]

#set_property -dict { PACKAGE_PIN T15   IOSTANDARD LVCMOS33 } [get_ports { ar[5] }];
#IO_L5N_T0_34 Sch=ar[5]

#set_property -dict { PACKAGE_PIN R16   IOSTANDARD LVCMOS33 } [get_ports { ar[6] }];
#IO_L19P_T3_34 Sch=ar[6]

#set_property -dict { PACKAGE_PIN U17   IOSTANDARD LVCMOS33 } [get_ports { ar[7] }];
#IO_L9N_T1_DQS_34 Sch=ar[7]

#set_property -dict { PACKAGE_PIN V17   IOSTANDARD LVCMOS33 } [get_ports { ar[8] }];
#IO_L21P_T3_DQS_34 Sch=ar[8]

#set_property -dict { PACKAGE_PIN V18   IOSTANDARD LVCMOS33 } [get_ports { ar[9] }];
#IO_L21N_T3_DQS_34 Sch=ar[9]

#set_property -dict { PACKAGE_PIN T16   IOSTANDARD LVCMOS33 } [get_ports { ar[10] }];
#IO_L9P_T1_DQS_34 Sch=ar[10]

#set_property -dict { PACKAGE_PIN R17   IOSTANDARD LVCMOS33 } [get_ports { ar[11] }];
#IO_L19N_T3_VREF_34 Sch=ar[11]

#set_property -dict { PACKAGE_PIN P18   IOSTANDARD LVCMOS33 } [get_ports { ar[12] }];
#IO_L23N_T3_34 Sch=ar[12]

#set_property -dict { PACKAGE_PIN N17   IOSTANDARD LVCMOS33 } [get_ports { ar[13] }];
#IO_L23P_T3_34 Sch=ar[13]

#set_property -dict { PACKAGE_PIN Y13   IOSTANDARD LVCMOS33 } [get_ports { a }];
#IO_L20N_T3_13 Sch=a

##Arduino Digital I/O On Outer Analog Header

##NOTE: These pins should be used when using the analog header signals A0-A5 as digital I/O

#set_property -dict { PACKAGE_PIN Y11   IOSTANDARD LVCMOS33 } [get_ports { a[0] }];
#IO_L18N_T2_13 Sch=a[0]

#set_property -dict { PACKAGE_PIN Y12   IOSTANDARD LVCMOS33 } [get_ports { a[1] }];
#IO_L20P_T3_13 Sch=a[1]

#set_property -dict { PACKAGE_PIN W11   IOSTANDARD LVCMOS33 } [get_ports { a[2] }];
#IO_L18P_T2_13 Sch=a[2]

#set_property -dict { PACKAGE_PIN V11   IOSTANDARD LVCMOS33 } [get_ports { a[3] }];
#IO_L21P_T3_DQS_13 Sch=a[3]

#set_property -dict { PACKAGE_PIN T5   IOSTANDARD LVCMOS33 } [get_ports { a[4] }];
#IO_L19P_T3_13 Sch=a[4]

#set_property -dict { PACKAGE_PIN U10   IOSTANDARD LVCMOS33 } [get_ports { a[5] }];
#IO_L12N_T1_MRCC_13 Sch=a[5]

Arduino SPI

#set_property -dict { PACKAGE_PIN W15   IOSTANDARD LVCMOS33 } [get_ports { ck_miso }];
#IO_L10N_T1_34 Sch=miso

#set_property -dict { PACKAGE_PIN T12   IOSTANDARD LVCMOS33 } [get_ports { ck_mosi }];
#IO_L2P_T0_34 Sch=ar_mosi_r

#set_property -dict { PACKAGE_PIN H15   IOSTANDARD LVCMOS33 } [get_ports { ck_sck }];
#IO_L19P_T3_35 Sch=sck

#set_property -dict { PACKAGE_PIN F16   IOSTANDARD LVCMOS33 } [get_ports { ck_ss }];
#IO_L6P_T0_35 Sch=ss

Arduino I2C

#set_property -dict { PACKAGE_PIN P16   IOSTANDARD LVCMOS33 } [get_ports { ar_scl }];
#IO_L24N_T3_34 Sch=ar_scl

#set_property -dict { PACKAGE_PIN P15   IOSTANDARD LVCMOS33 } [get_ports { ar_sda }];
#IO_L24P_T3_34 Sch=ar_sda

##Raspberry Digital I/O

#set_property -dict { PACKAGE_PIN W18   IOSTANDARD LVCMOS33 } [get_ports { rpio_02_r }];
#IO_L22P_T3_34 Sch=rpio_02_r

#set_property -dict { PACKAGE_PIN W19   IOSTANDARD LVCMOS33 } [get_ports { rpio_03_r }];
#IO_L22N_T3_34 Sch=rpio_03_r

#set_property -dict { PACKAGE_PIN Y18   IOSTANDARD LVCMOS33 } [get_ports { rpio_04_r }];
#IO_L17P_T2_34 Sch=rpio_04_r

#set_property -dict { PACKAGE_PIN Y19   IOSTANDARD LVCMOS33 } [get_ports { rpio_05_r }];
#IO_L17N_T2_34 Sch=rpio_05_r

#set_property -dict { PACKAGE_PIN U18   IOSTANDARD LVCMOS33 } [get_ports { rpio_06_r }];
#IO_L22P_T3_13 Sch=rpio_06_r

#set_property -dict { PACKAGE_PIN U19   IOSTANDARD LVCMOS33 } [get_ports { rpio_07_r }];
#IO_L12P_T1_MRCC_34 Sch=rpio_07_r

#set_property -dict { PACKAGE_PIN F19   IOSTANDARD LVCMOS33 } [get_ports { rpio_08_r }];
#IO_L12N_T1_MRCC_34 Sch=rpio_08_r

#set_property -dict { PACKAGE_PIN V10   IOSTANDARD LVCMOS33 } [get_ports { rpio_09_r }];
#IO_L21N_T3_DQS_13 Sch=rpio_09_r

#set_property -dict { PACKAGE_PIN V8   IOSTANDARD LVCMOS33 } [get_ports { rpio_10_r }];
#IO_L15P_T2_DQS_13 Sch=rpio_10_r

#set_property -dict { PACKAGE_PIN W10   IOSTANDARD LVCMOS33 } [get_ports { rpio_11_r }];
#IO_L16P_T2_13 Sch=rpio_11_r

#set_property -dict { PACKAGE_PIN B20   IOSTANDARD LVCMOS33 } [get_ports { rpio_12_r }];
#IO_L1N_T0_AD0N_35 Sch=rpio_12_r

#set_property -dict { PACKAGE_PIN W8   IOSTANDARD LVCMOS33 } [get_ports { rpio_13_r }];
#IO_L15N_T2_DQS_13 Sch=rpio_13_r

#set_property -dict { PACKAGE_PIN V6   IOSTANDARD LVCMOS33 } [get_ports { rpio_14_r }];
#IO_L22P_T3_13 Sch=rpio_14_r

#set_property -dict { PACKAGE_PIN Y6   IOSTANDARD LVCMOS33 } [get_ports { rpio_15_r }];
#IO_L13N_T2_MRCC_13 Sch=rpio_15_r

#set_property -dict { PACKAGE_PIN B19   IOSTANDARD LVCMOS33 } [get_ports { rpio_16_r }];
#IO_L2P_T0_AD8P_35 Sch=rpio_16_r

#set_property -dict { PACKAGE_PIN U7   IOSTANDARD LVCMOS33 } [get_ports { rpio_17_r }];
#IO_L11P_T1_SRCC_13 Sch=rpio_17_r

#set_property -dict { PACKAGE_PIN C20   IOSTANDARD LVCMOS33 } [get_ports { rpio_18_r }];
#IO_L1P_T0_AD0P_35 Sch=rpio_18_r

#set_property -dict { PACKAGE_PIN Y8   IOSTANDARD LVCMOS33 } [get_ports { rpio_19_r }];
#IO_L14N_T2_SRCC_13 Sch=rpio_19_r

#set_property -dict { PACKAGE_PIN A20   IOSTANDARD LVCMOS33 } [get_ports { rpio_20_r }];
#IO_L2N_T0_AD8N_35 Sch=rpio_20_r

#set_property -dict { PACKAGE_PIN Y9   IOSTANDARD LVCMOS33 } [get_ports { rpio_21_r }];
#IO_L14P_T2_SRCC_13 Sch=rpio_21_r

#set_property -dict { PACKAGE_PIN U8   IOSTANDARD LVCMOS33 } [get_ports { rpio_22_r }];
#IO_L17N_T2_13 Sch=rpio_22_r

#set_property -dict { PACKAGE_PIN W6   IOSTANDARD LVCMOS33 } [get_ports { rpio_23_r }];
#IO_IO_L22N_T3_13 Sch=rpio_23_r

#set_property -dict { PACKAGE_PIN Y7   IOSTANDARD LVCMOS33 } [get_ports { rpio_24_r }];
#IO_L13P_T2_MRCC_13 Sch=rpio_24_r

#set_property -dict { PACKAGE_PIN F20   IOSTANDARD LVCMOS33 } [get_ports { rpio_25_r }];
#IO_L15N_T2_DQS_AD12N_35 Sch=rpio_25_r

#set_property -dict { PACKAGE_PIN W9   IOSTANDARD LVCMOS33 } [get_ports { rpio_26_r }];
#IO_L16N_T2_13 Sch=rpio_26_r

#set_property -dict { PACKAGE_PIN Y16   IOSTANDARD LVCMOS33 } [get_ports { rpio_sd_r }];
#IO_L7P_T1_34 Sch=rpio_sd_r

#set_property -dict { PACKAGE_PIN Y17   IOSTANDARD LVCMOS33 } [get_ports { rpio_sc_r }];
#IO_L7N_T1_34 Sch=rpio_sc_r

##HDMI Rx

#set_property -dict { PACKAGE_PIN H17   IOSTANDARD LVCMOS33 } [get_ports { hdmi_rx_cec }];
#IO_L13N_T2_MRCC_35 Sch=hdmi_rx_cec

#set_property -dict { PACKAGE_PIN P19   IOSTANDARD TMDS_33 } [get_ports { hdmi_rx_clk_n }];
#IO_L13N_T2_MRCC_34 Sch=hdmi_rx_clk_n

#set_property -dict { PACKAGE_PIN N18   IOSTANDARD TMDS_33 } [get_ports { hdmi_rx_clk_p }];
#IO_L13P_T2_MRCC_34 Sch=hdmi_rx_clk_p

#set_property -dict { PACKAGE_PIN W20   IOSTANDARD TMDS_33 } [get_ports { hdmi_rx_d_n[0] }];
#IO_L16N_T2_34 Sch=hdmi_rx_d_n[0]

#set_property -dict { PACKAGE_PIN V20   IOSTANDARD TMDS_33 } [get_ports { hdmi_rx_d_p[0] }];
#IO_L16P_T2_34 Sch=hdmi_rx_d_p[0]

#set_property -dict { PACKAGE_PIN U20   IOSTANDARD TMDS_33 } [get_ports { hdmi_rx_d_n[1] }];
#IO_L15N_T2_DQS_34 Sch=hdmi_rx_d_n[1]

#set_property -dict { PACKAGE_PIN T20   IOSTANDARD TMDS_33 } [get_ports { hdmi_rx_d_p[1] }];
#IO_L15P_T2_DQS_34 Sch=hdmi_rx_d_p[1]

#set_property -dict { PACKAGE_PIN P20   IOSTANDARD TMDS_33 } [get_ports { hdmi_rx_d_n[2] }];
#IO_L14N_T2_SRCC_34 Sch=hdmi_rx_d_n[2]

#set_property -dict { PACKAGE_PIN N20   IOSTANDARD TMDS_33 } [get_ports { hdmi_rx_d_p[2] }];
#IO_L14P_T2_SRCC_34 Sch=hdmi_rx_d_p[2]

#set_property -dict { PACKAGE_PIN T19   IOSTANDARD LVCMOS33 } [get_ports { hdmi_rx_hpd }];
#IO_25_34 Sch=hdmi_rx_hpd

#set_property -dict { PACKAGE_PIN U14   IOSTANDARD LVCMOS33 } [get_ports { hdmi_rx_scl }];
#IO_L11P_T1_SRCC_34 Sch=hdmi_rx_scl

#set_property -dict { PACKAGE_PIN U15   IOSTANDARD LVCMOS33 } [get_ports { hdmi_rx_sda }];
#IO_L11N_T1_SRCC_34 Sch=hdmi_rx_sda

##HDMI Tx

#set_property -dict { PACKAGE_PIN G15   IOSTANDARD LVCMOS33 } [get_ports { hdmi_tx_cec }];
#IO_L19N_T3_VREF_35 Sch=hdmi_tx_cec

#set_property -dict { PACKAGE_PIN L17   IOSTANDARD TMDS_33 } [get_ports { hdmi_tx_clk_n }];
#IO_L11N_T1_SRCC_35 Sch=hdmi_tx_clk_n

#set_property -dict { PACKAGE_PIN L16   IOSTANDARD TMDS_33 } [get_ports { hdmi_tx_clk_p }];
#IO_L11P_T1_SRCC_35 Sch=hdmi_tx_clk_p

#set_property -dict { PACKAGE_PIN K18   IOSTANDARD TMDS_33 } [get_ports { hdmi_tx_d_n[0] }];
#IO_L12N_T1_MRCC_35 Sch=hdmi_tx_d_n[0]

#set_property -dict { PACKAGE_PIN K17   IOSTANDARD TMDS_33 } [get_ports { hdmi_tx_d_p[0] }];
#IO_L12P_T1_MRCC_35 Sch=hdmi_tx_d_p[0]

#set_property -dict { PACKAGE_PIN J19   IOSTANDARD TMDS_33 } [get_ports { hdmi_tx_d_n[1] }];
#IO_L10N_T1_AD11N_35 Sch=hdmi_tx_d_n[1]

#set_property -dict { PACKAGE_PIN K19   IOSTANDARD TMDS_33 } [get_ports { hdmi_tx_d_p[1] }];
#IO_L10P_T1_AD11P_35 Sch=hdmi_tx_d_p[1]

#set_property -dict { PACKAGE_PIN H18   IOSTANDARD TMDS_33 } [get_ports { hdmi_tx_d_n[2] }];
#IO_L14N_T2_AD4N_SRCC_35 Sch=hdmi_tx_d_n[2]

#set_property -dict { PACKAGE_PIN J18   IOSTANDARD TMDS_33 } [get_ports { hdmi_tx_d_p[2] }];
#IO_L14P_T2_AD4P_SRCC_35 Sch=hdmi_tx_d_p[2]

#set_property -dict { PACKAGE_PIN R19   IOSTANDARD LVCMOS33 } [get_ports { hdmi_tx_hpdn }];
#IO_0_34 Sch=hdmi_tx_hpdn

##Crypto SDA

#set_property -dict { PACKAGE_PIN J15   IOSTANDARD LVCMOS33 } [get_ports { crypto_sda }];
#IO_25_35 Sch=crypto_sda

LFSR

Code

```
`timescale 1ns / 1ps
//////////////////////////////////////////////////////////////////////////////////
// Company:
// Engineer:
//
// Create Date: 31.03.2023 13:41:37
// Design Name:
// Module Name: LFSR
// Project Name:
// Target Devices:
// Tool Versions:
// Description:
//
// Dependencies:
//
// Revision:
// Revision 0.01 - File Created
// Additional Comments:
//
//////////////////////////////////////////////////////////////////////////////////


module clock_divider(input clkin, output clkout);
```

```
    reg[27:0] counter=28'd0;
    always @(posedge clkin)
        counter <= counter + 28'd1;
        assign clkout = counter[27];
endmodule

module LFSR(out,temp,clk,clkout);
    input clk;
    output clkout;
    output reg out;
    output reg [7:0] temp = 8'b01101010;

    wire new = temp[7]^temp[5]^temp[4]^temp[3]^temp[0];

    clock_divider cl(clk,clkout);
    always@(posedge clkout)
        begin
            temp[7] <= new;
            temp[6] <= temp[7];
            temp[5] <= temp[6];
            temp[4] <= temp[5];
            temp[3] <= temp[4];
            temp[2] <= temp[3];
            temp[1] <= temp[2];
            temp[0] <= temp[1];
            out <= temp[0];
        end

endmodule
```

PYNQ XDC

```
## This file is a general .xdc for the PYNQ-Z2 board

## To use it in a project:

## - uncomment the lines corresponding to used pins

## - rename the used ports (in each line, after get_ports) according to the top level signal names in the project


## Clock signal 125 MHz


set_property -dict { PACKAGE_PIN H16   IOSTANDARD LVCMOS33 } [get_ports { clk }];
#IO_L13P_T2_MRCC_35 Sch=sysclk

#create_clock -add -name sys_clk_pin -period 8.00 -waveform {0 4} [get_ports { sysclk }];


##Switches


#set_property -dict { PACKAGE_PIN M20   IOSTANDARD LVCMOS33 } [get_ports { sw[0] }];
#IO_L7N_T1_AD2N_35 Sch=sw[0]

#set_property -dict { PACKAGE_PIN M19   IOSTANDARD LVCMOS33 } [get_ports { sw[1] }];
#IO_L7P_T1_AD2P_35 Sch=sw[1]


##RGB LEDs


#set_property -dict { PACKAGE_PIN L15   IOSTANDARD LVCMOS33 } [get_ports { led4_b }];
#IO_L22N_T3_AD7N_35 Sch=led4_b

#set_property -dict { PACKAGE_PIN G17   IOSTANDARD LVCMOS33 } [get_ports { led4_g }];
#IO_L16P_T2_35 Sch=led4_g

#set_property -dict { PACKAGE_PIN N15   IOSTANDARD LVCMOS33 } [get_ports { led4_r }];
#IO_L21P_T3_DQS_AD14P_35 Sch=led4_r

#set_property -dict { PACKAGE_PIN G14   IOSTANDARD LVCMOS33 } [get_ports { led5_b }]; #IO_0_35
Sch=led5_b

#set_property -dict { PACKAGE_PIN L14   IOSTANDARD LVCMOS33 } [get_ports { led5_g }];
#IO_L22P_T3_AD7P_35 Sch=led5_g

#set_property -dict { PACKAGE_PIN M15   IOSTANDARD LVCMOS33 } [get_ports { led5_r }];
#IO_L23N_T3_35 Sch=led5_r
```

##LEDs

set_property -dict { PACKAGE_PIN R14   IOSTANDARD LVCMOS33 } [get_ports { temp[6] }];
#IO_L6N_T0_VREF_34 Sch=led[0]

set_property -dict { PACKAGE_PIN P14   IOSTANDARD LVCMOS33 } [get_ports { temp[7] }];
#IO_L6P_T0_34 Sch=led[1]

#set_property -dict { PACKAGE_PIN N16   IOSTANDARD LVCMOS33 } [get_ports { led[2] }];
#IO_L21N_T3_DQS_AD14N_35 Sch=led[2]

set_property -dict { PACKAGE_PIN M14   IOSTANDARD LVCMOS33 } [get_ports { out }];
#IO_L23P_T3_35 Sch=led[3]

##Buttons

#set_property -dict { PACKAGE_PIN D19   IOSTANDARD LVCMOS33 } [get_ports { btn[0] }];
#IO_L4P_T0_35 Sch=btn[0]

#set_property -dict { PACKAGE_PIN D20   IOSTANDARD LVCMOS33 } [get_ports { btn[1] }];
#IO_L4N_T0_35 Sch=btn[1]

#set_property -dict { PACKAGE_PIN L20   IOSTANDARD LVCMOS33 } [get_ports { btn[2] }];
#IO_L9N_T1_DQS_AD3N_35 Sch=btn[2]

#set_property -dict { PACKAGE_PIN L19   IOSTANDARD LVCMOS33 } [get_ports { btn[3] }];
#IO_L9P_T1_DQS_AD3P_35 Sch=btn[3]

##PmodA

set_property -dict { PACKAGE_PIN Y18   IOSTANDARD LVCMOS33 } [get_ports { clkout }];
#IO_L17P_T2_34 Sch=ja_p[1]

#set_property -dict { PACKAGE_PIN Y19   IOSTANDARD LVCMOS33 } [get_ports { ja[1] }];
#IO_L17N_T2_34 Sch=ja_n[1]

#set_property -dict { PACKAGE_PIN Y16   IOSTANDARD LVCMOS33 } [get_ports { ja[2] }];
#IO_L7P_T1_34 Sch=ja_p[2]

#set_property -dict { PACKAGE_PIN Y17   IOSTANDARD LVCMOS33 } [get_ports { ja[3] }];
#IO_L7N_T1_34 Sch=ja_n[2]

#set_property -dict { PACKAGE_PIN U18   IOSTANDARD LVCMOS33 } [get_ports { ja[4] }];
#IO_L12P_T1_MRCC_34 Sch=ja_p[3]

#set_property -dict { PACKAGE_PIN U19   IOSTANDARD LVCMOS33 } [get_ports { ja[5] }];
#IO_L12N_T1_MRCC_34 Sch=ja_n[3]

#set_property -dict { PACKAGE_PIN W18   IOSTANDARD LVCMOS33 } [get_ports { ja[6] }];
#IO_L22P_T3_34 Sch=ja_p[4]

#set_property -dict { PACKAGE_PIN W19   IOSTANDARD LVCMOS33 } [get_ports { ja[7] }];
#IO_L22N_T3_34 Sch=ja_n[4]

##PmodB

#set_property -dict { PACKAGE_PIN W14   IOSTANDARD LVCMOS33 } [get_ports { jb[0] }];
#IO_L8P_T1_34 Sch=jb_p[1]

#set_property -dict { PACKAGE_PIN Y14   IOSTANDARD LVCMOS33 } [get_ports { jb[1] }];
#IO_L8N_T1_34 Sch=jb_n[1]

#set_property -dict { PACKAGE_PIN T11   IOSTANDARD LVCMOS33 } [get_ports { jb[2] }];
#IO_L1P_T0_34 Sch=jb_p[2]

#set_property -dict { PACKAGE_PIN T10   IOSTANDARD LVCMOS33 } [get_ports { jb[3] }];
#IO_L1N_T0_34 Sch=jb_n[2]

#set_property -dict { PACKAGE_PIN V16   IOSTANDARD LVCMOS33 } [get_ports { jb[4] }];
#IO_L18P_T2_34 Sch=jb_p[3]

#set_property -dict { PACKAGE_PIN W16   IOSTANDARD LVCMOS33 } [get_ports { jb[5] }];
#IO_L18N_T2_34 Sch=jb_n[3]

#set_property -dict { PACKAGE_PIN V12   IOSTANDARD LVCMOS33 } [get_ports { jb[6] }];
#IO_L4P_T0_34 Sch=jb_p[4]

#set_property -dict { PACKAGE_PIN W13   IOSTANDARD LVCMOS33 } [get_ports { jb[7] }];
#IO_L4N_T0_34 Sch=jb_n[4]

##Audio

#set_property -dict { PACKAGE_PIN M17   IOSTANDARD LVCMOS33 } [get_ports { adr0 }];
#IO_L8P_T1_AD10P_35 Sch=adr0

#set_property -dict { PACKAGE_PIN M18   IOSTANDARD LVCMOS33 } [get_ports { adr1 }];
#IO_L8N_T1_AD10N_35 Sch=adr1

#set_property -dict { PACKAGE_PIN U5   IOSTANDARD LVCMOS33 } [get_ports { au_mclk_r }];
#IO_L19N_T3_VREF_13 Sch=au_mclk_r

#set_property -dict { PACKAGE_PIN T9   IOSTANDARD LVCMOS33 } [get_ports { au_sda_r }];
#IO_L12P_T1_MRCC_13 Sch=au_sda_r

#set_property -dict { PACKAGE_PIN U9   IOSTANDARD LVCMOS33 } [get_ports { au_scl_r }];
#IO_L17P_T2_13 Sch= au_scl_r

#set_property -dict { PACKAGE_PIN F17   IOSTANDARD LVCMOS33 } [get_ports { au_dout_r }];
#IO_L6N_T0_VREF_35 Sch=au_dout_r

#set_property -dict { PACKAGE_PIN G18   IOSTANDARD LVCMOS33 } [get_ports { au_din_r }];
#IO_L16N_T2_35 Sch=au_din_r

#set_property -dict { PACKAGE_PIN T17   IOSTANDARD LVCMOS33 } [get_ports { au_wclk_r }];
#IO_L20P_T3_34 Sch=au_wclk_r

#set_property -dict { PACKAGE_PIN R18   IOSTANDARD LVCMOS33 } [get_ports { au_bclk_r }];
#IO_L20N_T3_34 Sch=au_bclk_r

Single Ended Analog Inputs

##NOTE: The ar_an_p pins can be used as single ended analog inputs with voltages from 0-3.3V (Arduino Analog pins a[0]-a[5]).

These signals should only be connected to the XADC core. When using these pins as digital I/O, use pins a[0]-a[5].

#set_property -dict { PACKAGE_PIN E17   IOSTANDARD LVCMOS33 } [get_ports { ar_an0_p }];
#IO_L3P_T0_DQS_AD1P_35 Sch=ar_an0_p

#set_property -dict { PACKAGE_PIN D18   IOSTANDARD LVCMOS33 } [get_ports { ar_an0_n }];
#IO_L3P_T0_DQS_AD1P_35 Sch=ar_an0_n

#set_property -dict { PACKAGE_PIN E18   IOSTANDARD LVCMOS33 } [get_ports { ar_an1_p }];
#IO_L5N_T0_AD9P_35 Sch=ar_an1_p

#set_property -dict { PACKAGE_PIN E19   IOSTANDARD LVCMOS33 } [get_ports { ar_an1_n }];
#IO_L5N_T0_AD9N_35 Sch=ar_an1_n

#set_property -dict { PACKAGE_PIN K14   IOSTANDARD LVCMOS33 } [get_ports { ar_an2_p }];
#IO_L20P_T3_AD6P_35 Sch=ar_an2_p

#set_property -dict { PACKAGE_PIN J14   IOSTANDARD LVCMOS33 } [get_ports { ar_an2_n }];
#IO_L20P_T3_AD6N_35 Sch=ar_an2_n

#set_property -dict { PACKAGE_PIN K16   IOSTANDARD LVCMOS33 } [get_ports { ar_an3_p }];
#IO_L24P_T3_AD15P_35 Sch=ar_an3_p

#set_property -dict { PACKAGE_PIN J16   IOSTANDARD LVCMOS33 } [get_ports { ar_an3_n }];
#IO_L24P_T3_AD15N_35 Sch=ar_an3_n

#set_property -dict { PACKAGE_PIN J20   IOSTANDARD LVCMOS33 } [get_ports { ar_an4_p }];
#IO_L17P_T2_AD5P_35 Sch=ar_an4_p

#set_property -dict { PACKAGE_PIN H20   IOSTANDARD LVCMOS33 } [get_ports { ar_an4_n }];
#IO_L17P_T2_AD5P_35 Sch=ar_an4_n

#set_property -dict { PACKAGE_PIN G19   IOSTANDARD LVCMOS33 } [get_ports { ar_an5_p }];
#IO_L18P_T2_AD13P_35 Sch=ar_an5_p

#set_property -dict { PACKAGE_PIN G20   IOSTANDARD LVCMOS33 } [get_ports { ar_an5_n }];
#IO_L18P_T2_AD13P_35 Sch=ar_an5_n

##Arduino Digital I/O

#set_property -dict { PACKAGE_PIN T14   IOSTANDARD LVCMOS33 } [get_ports { ar[0] }];
#IO_L5P_T0_34 Sch=ar[0]

#set_property -dict { PACKAGE_PIN U12   IOSTANDARD LVCMOS33 } [get_ports { ar[1] }];
#IO_L2N_T0_34 Sch=ar[1]

#set_property -dict { PACKAGE_PIN U13   IOSTANDARD LVCMOS33 } [get_ports { ar[2] }];
#IO_L3P_T0_DQS_PUDC_B_34 Sch=ar[2]

#set_property -dict { PACKAGE_PIN V13   IOSTANDARD LVCMOS33 } [get_ports { ar[3] }];
#IO_L3N_T0_DQS_34 Sch=ar[3]

#set_property -dict { PACKAGE_PIN V15   IOSTANDARD LVCMOS33 } [get_ports { ar[4] }];
#IO_L10P_T1_34 Sch=ar[4]

#set_property -dict { PACKAGE_PIN T15   IOSTANDARD LVCMOS33 } [get_ports { ar[5] }];
#IO_L5N_T0_34 Sch=ar[5]

#set_property -dict { PACKAGE_PIN R16   IOSTANDARD LVCMOS33 } [get_ports { ar[6] }];
#IO_L19P_T3_34 Sch=ar[6]

#set_property -dict { PACKAGE_PIN U17   IOSTANDARD LVCMOS33 } [get_ports { ar[7] }];
#IO_L9N_T1_DQS_34 Sch=ar[7]

#set_property -dict { PACKAGE_PIN V17   IOSTANDARD LVCMOS33 } [get_ports { ar[8] }];
#IO_L21P_T3_DQS_34 Sch=ar[8]

#set_property -dict { PACKAGE_PIN V18   IOSTANDARD LVCMOS33 } [get_ports { ar[9] }];
#IO_L21N_T3_DQS_34 Sch=ar[9]

#set_property -dict { PACKAGE_PIN T16   IOSTANDARD LVCMOS33 } [get_ports { ar[10] }];
#IO_L9P_T1_DQS_34 Sch=ar[10]

#set_property -dict { PACKAGE_PIN R17   IOSTANDARD LVCMOS33 } [get_ports { ar[11] }];
#IO_L19N_T3_VREF_34 Sch=ar[11]

#set_property -dict { PACKAGE_PIN P18   IOSTANDARD LVCMOS33 } [get_ports { ar[12] }];
#IO_L23N_T3_34 Sch=ar[12]

#set_property -dict { PACKAGE_PIN N17   IOSTANDARD LVCMOS33 } [get_ports { ar[13] }];
#IO_L23P_T3_34 Sch=ar[13]

#set_property -dict { PACKAGE_PIN Y13   IOSTANDARD LVCMOS33 } [get_ports { a }];
#IO_L20N_T3_13 Sch=a

##Arduino Digital I/O On Outer Analog Header

##NOTE: These pins should be used when using the analog header signals A0-A5 as digital I/O

#set_property -dict { PACKAGE_PIN Y11   IOSTANDARD LVCMOS33 } [get_ports { a[0] }];
#IO_L18N_T2_13 Sch=a[0]

#set_property -dict { PACKAGE_PIN Y12   IOSTANDARD LVCMOS33 } [get_ports { a[1] }];
#IO_L20P_T3_13 Sch=a[1]

#set_property -dict { PACKAGE_PIN W11   IOSTANDARD LVCMOS33 } [get_ports { a[2] }];
#IO_L18P_T2_13 Sch=a[2]

#set_property -dict { PACKAGE_PIN V11   IOSTANDARD LVCMOS33 } [get_ports { a[3] }];
#IO_L21P_T3_DQS_13 Sch=a[3]

#set_property -dict { PACKAGE_PIN T5   IOSTANDARD LVCMOS33 } [get_ports { a[4] }];
#IO_L19P_T3_13 Sch=a[4]

#set_property -dict { PACKAGE_PIN U10   IOSTANDARD LVCMOS33 } [get_ports { a[5] }];
#IO_L12N_T1_MRCC_13 Sch=a[5]

Arduino SPI

#set_property -dict { PACKAGE_PIN W15   IOSTANDARD LVCMOS33 } [get_ports { ck_miso }];
#IO_L10N_T1_34 Sch=miso

#set_property -dict { PACKAGE_PIN T12   IOSTANDARD LVCMOS33 } [get_ports { ck_mosi }];
#IO_L2P_T0_34 Sch=ar_mosi_r

#set_property -dict { PACKAGE_PIN H15   IOSTANDARD LVCMOS33 } [get_ports { ck_sck }];
#IO_L19P_T3_35 Sch=sck

#set_property -dict { PACKAGE_PIN F16   IOSTANDARD LVCMOS33 } [get_ports { ck_ss }];
#IO_L6P_T0_35 Sch=ss

Arduino I2C

#set_property -dict { PACKAGE_PIN P16   IOSTANDARD LVCMOS33 } [get_ports { ar_scl }];
#IO_L24N_T3_34 Sch=ar_scl

#set_property -dict { PACKAGE_PIN P15   IOSTANDARD LVCMOS33 } [get_ports { ar_sda }];
#IO_L24P_T3_34 Sch=ar_sda

##Raspberry Digital I/O

#set_property -dict { PACKAGE_PIN W18   IOSTANDARD LVCMOS33 } [get_ports { rpio_02_r }];
#IO_L22P_T3_34 Sch=rpio_02_r

#set_property -dict { PACKAGE_PIN W19   IOSTANDARD LVCMOS33 } [get_ports { rpio_03_r }];
#IO_L22N_T3_34 Sch=rpio_03_r

#set_property -dict { PACKAGE_PIN Y18   IOSTANDARD LVCMOS33 } [get_ports { rpio_04_r }];
#IO_L17P_T2_34 Sch=rpio_04_r

#set_property -dict { PACKAGE_PIN Y19   IOSTANDARD LVCMOS33 } [get_ports { rpio_05_r }];
#IO_L17N_T2_34 Sch=rpio_05_r

#set_property -dict { PACKAGE_PIN U18   IOSTANDARD LVCMOS33 } [get_ports { rpio_06_r }];
#IO_L22P_T3_13 Sch=rpio_06_r

#set_property -dict { PACKAGE_PIN U19   IOSTANDARD LVCMOS33 } [get_ports { rpio_07_r }];
#IO_L12P_T1_MRCC_34 Sch=rpio_07_r

#set_property -dict { PACKAGE_PIN F19   IOSTANDARD LVCMOS33 } [get_ports { rpio_08_r }];
#IO_L12N_T1_MRCC_34 Sch=rpio_08_r

#set_property -dict { PACKAGE_PIN V10   IOSTANDARD LVCMOS33 } [get_ports { rpio_09_r }];
#IO_L21N_T3_DQS_13 Sch=rpio_09_r

#set_property -dict { PACKAGE_PIN V8   IOSTANDARD LVCMOS33 } [get_ports { rpio_10_r }];
#IO_L15P_T2_DQS_13 Sch=rpio_10_r

#set_property -dict { PACKAGE_PIN W10   IOSTANDARD LVCMOS33 } [get_ports { rpio_11_r }];
#IO_L16P_T2_13 Sch=rpio_11_r

#set_property -dict { PACKAGE_PIN B20   IOSTANDARD LVCMOS33 } [get_ports { rpio_12_r }];
#IO_L1N_T0_AD0N_35 Sch=rpio_12_r

#set_property -dict { PACKAGE_PIN W8   IOSTANDARD LVCMOS33 } [get_ports { rpio_13_r }];
#IO_L15N_T2_DQS_13 Sch=rpio_13_r

#set_property -dict { PACKAGE_PIN V6   IOSTANDARD LVCMOS33 } [get_ports { rpio_14_r }];
#IO_L22P_T3_13 Sch=rpio_14_r

#set_property -dict { PACKAGE_PIN Y6   IOSTANDARD LVCMOS33 } [get_ports { rpio_15_r }];
#IO_L13N_T2_MRCC_13 Sch=rpio_15_r

#set_property -dict { PACKAGE_PIN B19   IOSTANDARD LVCMOS33 } [get_ports { rpio_16_r }];
#IO_L2P_T0_AD8P_35 Sch=rpio_16_r

#set_property -dict { PACKAGE_PIN U7   IOSTANDARD LVCMOS33 } [get_ports { rpio_17_r }];
#IO_L11P_T1_SRCC_13 Sch=rpio_17_r

#set_property -dict { PACKAGE_PIN C20   IOSTANDARD LVCMOS33 } [get_ports { rpio_18_r }];
#IO_L1P_T0_AD0P_35 Sch=rpio_18_r

#set_property -dict { PACKAGE_PIN Y8   IOSTANDARD LVCMOS33 } [get_ports { rpio_19_r }];
#IO_L14N_T2_SRCC_13 Sch=rpio_19_r

#set_property -dict { PACKAGE_PIN A20   IOSTANDARD LVCMOS33 } [get_ports { rpio_20_r }];
#IO_L2N_T0_AD8N_35 Sch=rpio_20_r

#set_property -dict { PACKAGE_PIN Y9   IOSTANDARD LVCMOS33 } [get_ports { rpio_21_r }];
#IO_L14P_T2_SRCC_13 Sch=rpio_21_r

#set_property -dict { PACKAGE_PIN U8   IOSTANDARD LVCMOS33 } [get_ports { rpio_22_r }];
#IO_L17N_T2_13 Sch=rpio_22_r

#set_property -dict { PACKAGE_PIN W6   IOSTANDARD LVCMOS33 } [get_ports { rpio_23_r }];
#IO_IO_L22N_T3_13 Sch=rpio_23_r

#set_property -dict { PACKAGE_PIN Y7   IOSTANDARD LVCMOS33 } [get_ports { rpio_24_r }];
#IO_L13P_T2_MRCC_13 Sch=rpio_24_r

#set_property -dict { PACKAGE_PIN F20   IOSTANDARD LVCMOS33 } [get_ports { rpio_25_r }];
#IO_L15N_T2_DQS_AD12N_35 Sch=rpio_25_r

#set_property -dict { PACKAGE_PIN W9   IOSTANDARD LVCMOS33 } [get_ports { rpio_26_r }];
#IO_L16N_T2_13 Sch=rpio_26_r

#set_property -dict { PACKAGE_PIN Y16   IOSTANDARD LVCMOS33 } [get_ports { rpio_sd_r }];
#IO_L7P_T1_34 Sch=rpio_sd_r

#set_property -dict { PACKAGE_PIN Y17   IOSTANDARD LVCMOS33 } [get_ports { rpio_sc_r }];
#IO_L7N_T1_34 Sch=rpio_sc_r

##HDMI Rx

#set_property -dict { PACKAGE_PIN H17   IOSTANDARD LVCMOS33 } [get_ports { hdmi_rx_cec }];
#IO_L13N_T2_MRCC_35 Sch=hdmi_rx_cec

#set_property -dict { PACKAGE_PIN P19   IOSTANDARD TMDS_33 } [get_ports { hdmi_rx_clk_n }];
#IO_L13N_T2_MRCC_34 Sch=hdmi_rx_clk_n

#set_property -dict { PACKAGE_PIN N18   IOSTANDARD TMDS_33 } [get_ports { hdmi_rx_clk_p }];
#IO_L13P_T2_MRCC_34 Sch=hdmi_rx_clk_p

#set_property -dict { PACKAGE_PIN W20   IOSTANDARD TMDS_33 } [get_ports { hdmi_rx_d_n[0] }];
#IO_L16N_T2_34 Sch=hdmi_rx_d_n[0]

#set_property -dict { PACKAGE_PIN V20   IOSTANDARD TMDS_33 } [get_ports { hdmi_rx_d_p[0] }];
#IO_L16P_T2_34 Sch=hdmi_rx_d_p[0]

#set_property -dict { PACKAGE_PIN U20   IOSTANDARD TMDS_33 } [get_ports { hdmi_rx_d_n[1] }];
#IO_L15N_T2_DQS_34 Sch=hdmi_rx_d_n[1]

#set_property -dict { PACKAGE_PIN T20   IOSTANDARD TMDS_33 } [get_ports { hdmi_rx_d_p[1] }];
#IO_L15P_T2_DQS_34 Sch=hdmi_rx_d_p[1]

#set_property -dict { PACKAGE_PIN P20   IOSTANDARD TMDS_33 } [get_ports { hdmi_rx_d_n[2] }];
#IO_L14N_T2_SRCC_34 Sch=hdmi_rx_d_n[2]

#set_property -dict { PACKAGE_PIN N20   IOSTANDARD TMDS_33 } [get_ports { hdmi_rx_d_p[2] }];
#IO_L14P_T2_SRCC_34 Sch=hdmi_rx_d_p[2]

#set_property -dict { PACKAGE_PIN T19   IOSTANDARD LVCMOS33 } [get_ports { hdmi_rx_hpd }];
#IO_25_34 Sch=hdmi_rx_hpd

#set_property -dict { PACKAGE_PIN U14   IOSTANDARD LVCMOS33 } [get_ports { hdmi_rx_scl }];
#IO_L11P_T1_SRCC_34 Sch=hdmi_rx_scl

#set_property -dict { PACKAGE_PIN U15   IOSTANDARD LVCMOS33 } [get_ports { hdmi_rx_sda }];
#IO_L11N_T1_SRCC_34 Sch=hdmi_rx_sda

##HDMI Tx

#set_property -dict { PACKAGE_PIN G15   IOSTANDARD LVCMOS33 } [get_ports { hdmi_tx_cec }];
#IO_L19N_T3_VREF_35 Sch=hdmi_tx_cec

#set_property -dict { PACKAGE_PIN L17   IOSTANDARD TMDS_33 } [get_ports { hdmi_tx_clk_n }];
#IO_L11N_T1_SRCC_35 Sch=hdmi_tx_clk_n

#set_property -dict { PACKAGE_PIN L16   IOSTANDARD TMDS_33 } [get_ports { hdmi_tx_clk_p }];
#IO_L11P_T1_SRCC_35 Sch=hdmi_tx_clk_p

#set_property -dict { PACKAGE_PIN K18   IOSTANDARD TMDS_33 } [get_ports { hdmi_tx_d_n[0] }];
#IO_L12N_T1_MRCC_35 Sch=hdmi_tx_d_n[0]

#set_property -dict { PACKAGE_PIN K17   IOSTANDARD TMDS_33 } [get_ports { hdmi_tx_d_p[0] }];
#IO_L12P_T1_MRCC_35 Sch=hdmi_tx_d_p[0]

#set_property -dict { PACKAGE_PIN J19   IOSTANDARD TMDS_33 } [get_ports { hdmi_tx_d_n[1] }];
#IO_L10N_T1_AD11N_35 Sch=hdmi_tx_d_n[1]

#set_property -dict { PACKAGE_PIN K19   IOSTANDARD TMDS_33 } [get_ports { hdmi_tx_d_p[1] }];
#IO_L10P_T1_AD11P_35 Sch=hdmi_tx_d_p[1]

#set_property -dict { PACKAGE_PIN H18   IOSTANDARD TMDS_33 } [get_ports { hdmi_tx_d_n[2] }];
#IO_L14N_T2_AD4N_SRCC_35 Sch=hdmi_tx_d_n[2]

#set_property -dict { PACKAGE_PIN J18   IOSTANDARD TMDS_33 } [get_ports { hdmi_tx_d_p[2] }];
#IO_L14P_T2_AD4P_SRCC_35 Sch=hdmi_tx_d_p[2]

#set_property -dict { PACKAGE_PIN R19   IOSTANDARD LVCMOS33 } [get_ports { hdmi_tx_hpdn }];
#IO_0_34 Sch=hdmi_tx_hpdn

##Crypto SDA

#set_property -dict { PACKAGE_PIN J15   IOSTANDARD LVCMOS33 } [get_ports { crypto_sda }]; #IO_25_35 Sch=crypto_sda

This file is RPI Logic board .xdc for the PYNQ-Z2

To use it in a project:

- uncomment the lines corresponding to used pins

- rename the used ports (in each line, after get_ports)

- according to the top level signal names in the project

##

############################Raspberry Digital I/O##

Clock signal 12 MHz

#set_property -dict { PACKAGE_PIN Y9   IOSTANDARD LVCMOS33 } [get_ports { OSC_12MHz }]; #rpio_21

##Button #Active Low##

#set_property -dict { PACKAGE_PIN V7   IOSTANDARD LVCMOS33 } [get_ports { Button }]; #rpio_27

SSD(Seven Segment Display) x 4

#set_property -dict { PACKAGE_PIN Y16   IOSTANDARD LVCMOS33 } [get_ports { SSD_CA }]; #rpio_sd

#set_property -dict { PACKAGE_PIN Y17   IOSTANDARD LVCMOS33 } [get_ports { SSD_CB }]; #rpio_sc

#set_property -dict { PACKAGE_PIN W18   IOSTANDARD LVCMOS33 } [get_ports { SSD_CC }]; #rpio_02

#set_property -dict { PACKAGE_PIN W19   IOSTANDARD LVCMOS33 } [get_ports { SSD_CD }]; #rpio_03

#set_property -dict { PACKAGE_PIN Y18   IOSTANDARD LVCMOS33 } [get_ports { SSD_CE }]; #rpio_04

#set_property -dict { PACKAGE_PIN Y19   IOSTANDARD LVCMOS33 } [get_ports { SSD_CF }]; #rpio_05

#set_property -dict { PACKAGE_PIN U18   IOSTANDARD LVCMOS33 } [get_ports { SSD_CG }]; #rpio_06

#set_property -dict { PACKAGE_PIN U19   IOSTANDARD LVCMOS33 } [get_ports { SSD_CP }]; #rpio_07

#set_property -dict { PACKAGE_PIN F19   IOSTANDARD LVCMOS33 } [get_ports { SSD_A4 }]; #rpio_08

#set_property -dict { PACKAGE_PIN V10   IOSTANDARD LVCMOS33 } [get_ports { SSD_A3 }]; #rpio_09

#set_property -dict { PACKAGE_PIN V8   IOSTANDARD LVCMOS33 } [get_ports { SSD_A2 }]; #rpio_10

#set_property -dict { PACKAGE_PIN W10   IOSTANDARD LVCMOS33 } [get_ports { SSD_A1 }]; #rpio_11

##LED(GREEN)##

set_property -dict { PACKAGE_PIN B20   IOSTANDARD LVCMOS33 } [get_ports { temp[0] }]; #rpio_12

set_property -dict { PACKAGE_PIN W8   IOSTANDARD LVCMOS33 } [get_ports { temp[1] }]; #rpio_13

set_property -dict { PACKAGE_PIN U8   IOSTANDARD LVCMOS33 } [get_ports { temp[2] }]; #rpio_22

set_property -dict { PACKAGE_PIN W6   IOSTANDARD LVCMOS33 } [get_ports { temp[3] }]; #rpio_23

set_property -dict { PACKAGE_PIN Y7   IOSTANDARD LVCMOS33 } [get_ports { temp[4] }]; #rpio_24

set_property -dict { PACKAGE_PIN F20   IOSTANDARD LVCMOS33 } [get_ports { temp[5] }]; #rpio_25

##Switches##

#set_property -dict { PACKAGE_PIN V6   IOSTANDARD LVCMOS33 } [get_ports { SWA }]; #rpio_14

#set_property -dict { PACKAGE_PIN Y6   IOSTANDARD LVCMOS33 } [get_ports { SWB }]; #rpio_15

#set_property -dict { PACKAGE_PIN B19   IOSTANDARD LVCMOS33 } [get_ports { SWC }]; #rpio_16

#set_property -dict { PACKAGE_PIN U7   IOSTANDARD LVCMOS33 } [get_ports { SWD }]; #rpio_17

#set_property -dict { PACKAGE_PIN C20   IOSTANDARD LVCMOS33 } [get_ports { SWE }]; #rpio_18

#set_property -dict { PACKAGE_PIN Y8   IOSTANDARD LVCMOS33 } [get_ports { SWF }]; #rpio_19

#set_property -dict { PACKAGE_PIN A20   IOSTANDARD LVCMOS33 } [get_ports { SWG }]; #rpio_20

#set_property -dict { PACKAGE_PIN W9   IOSTANDARD LVCMOS33 } [get_ports { SWH }]; #rpio_26