

**TI DSP, MCU 및 Xilinx Zynq
FPGA
프로그래밍 전문가 과정**

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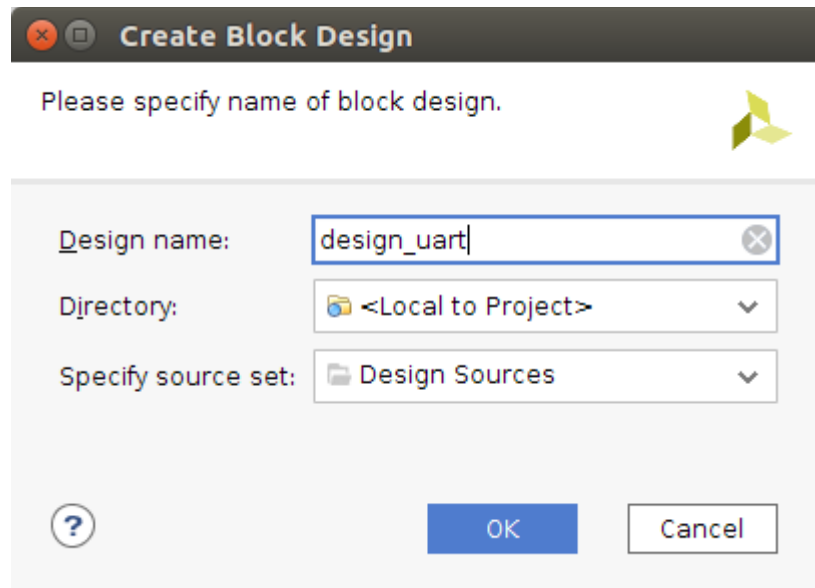
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학생 – 문한나

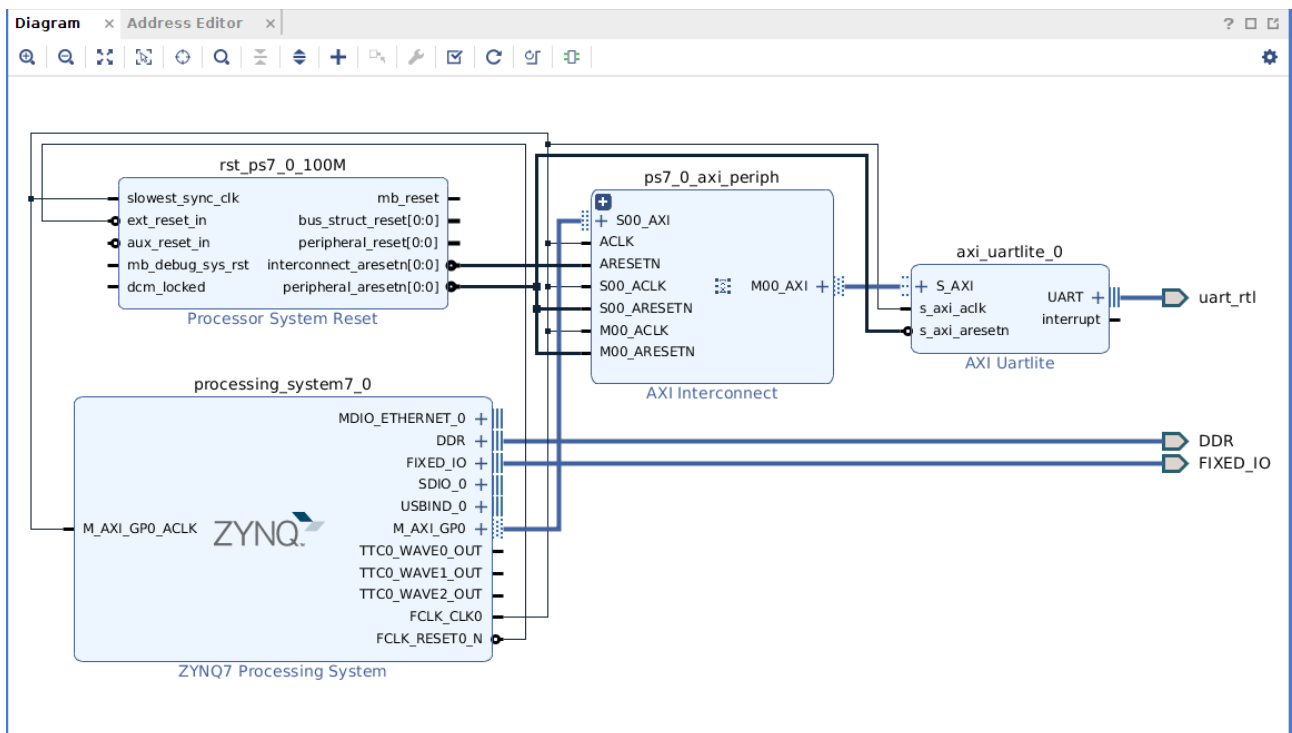
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FPGA_UART 통신

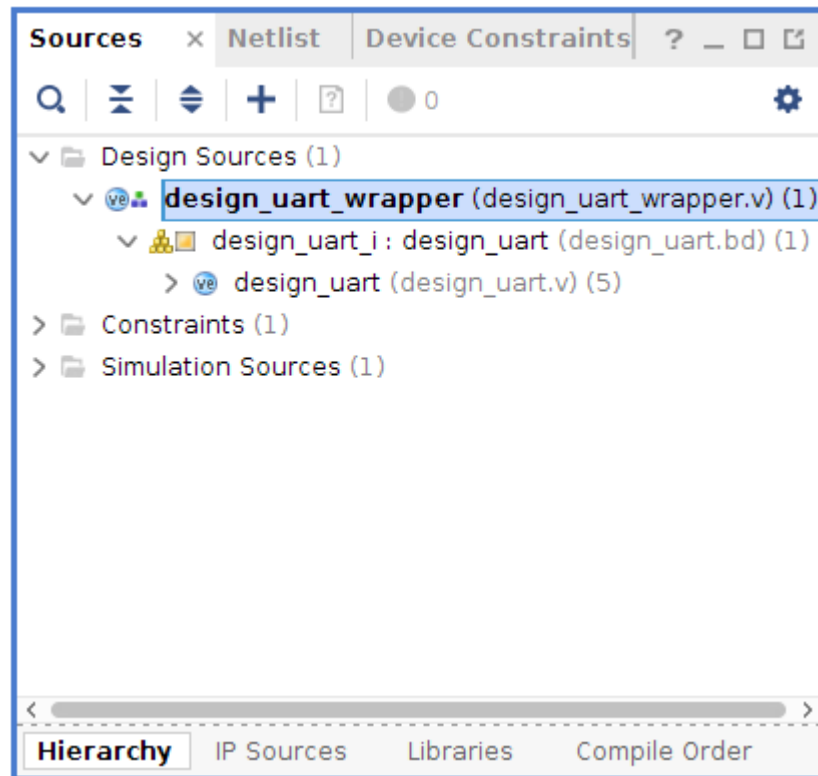
프로젝트 생성 후 블록 디자인을 만든다



zynq 와 uart 를 추가하여 블록 디자인을 구성한다



만들어진 블록 디자인을 래핑한다



Run Implementation 후 Implemented Design Open
pin 설정 후 저장

Name	Direction	Board Part Pin	Board Part Interface	Neg Diff Pair	Package Pin	Fixed	Bank	I/O Std	Vcco	Vref	Drive Strength	Slew Type
> DDR_16071 (71)	INOUT					<input checked="" type="checkbox"/>	502	(Multiple)*	1.500	(Multiple)		(Multiple)
> FIXED_IO_16071 (59)	INOUT					<input checked="" type="checkbox"/>	(Multiple)	(Multiple)*	(Multiple)	(Multiple)	(Multiple)	(Multiple)
> uart_rtl_16071 (2)	(Multiple)					<input checked="" type="checkbox"/>	34	LVCMOS33*	3.300			
> Scalar ports (2)												
> uart_rtl_rxd	IN				V12	<input checked="" type="checkbox"/>	34	LVCMOS33*	3.300			
> uart_rtl_txd	OUT				W16	<input checked="" type="checkbox"/>	34	LVCMOS33*	3.300		12	SLOW
> Scalar ports (0)												

xdc 파일 확인

```
Package x Device x uart.xdc x
/home/mhn/new_Vivado_Workspace/uart.srsrcs/constrs_1/new/uart.xdc

1 set_property PACKAGE_PIN V12 [get_ports uart_rtl_rxd]
2 set_property PACKAGE_PIN W16 [get_ports uart_rtl_txd]
3 set_property IOSTANDARD LVCMOS33 [get_ports uart_rtl_rxd]
4 set_property IOSTANDARD LVCMOS33 [get_ports uart_rtl_txd]
5
```

Generate Bitstream 후 Export Hardware
그리고 Launch SDK 로 SDK 를 킨다

프로젝트 생성 후 main 파일 생성

main.c

```
#include "xparameters.h"
#include "xuartps.h"
#include "xil_printf.h"

#define UART_DEVICE_ID      XPAR_PS7_UART_1_DEVICE_ID

int UartPsHelloWorldExample(u16 DeviceId);
void delay(int num);

XUartPs Uart_Ps;

int main(void)
{
    int Status;

    while(1){

        Status = UartPsHelloWorldExample(UART_DEVICE_ID);

        if (Status == XST_FAILURE) {
            xil_printf("Uartps hello world Example Failed\r\n");
            return XST_FAILURE;
        }

        xil_printf("Successfully ran Uartps hello world Example\r\n");

        delay(100000000);

    }

    return Status;
}

int UartPsHelloWorldExample(u16 DeviceId)
{
    u8 HelloWorld[] = "Hello World\r\n";
    int SentCount = 0;
    int Status;
    XUartPs_Config *Config;

    Config = XUartPs_LookupConfig(DeviceId);
    if (NULL == Config) {
        return XST_FAILURE;
    }

    Status = XUartPs_CfgInitialize(&Uart_Ps, Config, Config->BaseAddress);

    if (Status != XST_SUCCESS) {
        return XST_FAILURE;
    }

    XUartPs_SetBaudRate(&Uart_Ps, 115200);
```

