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

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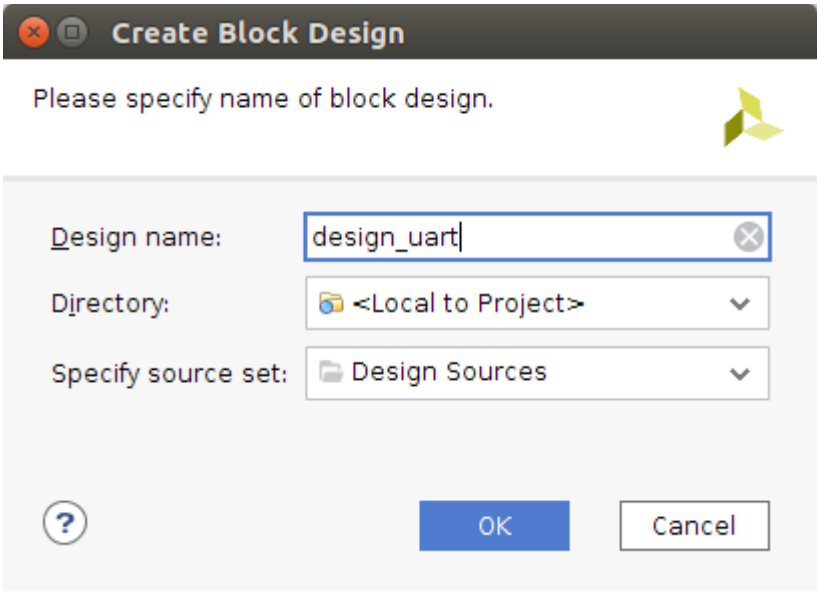
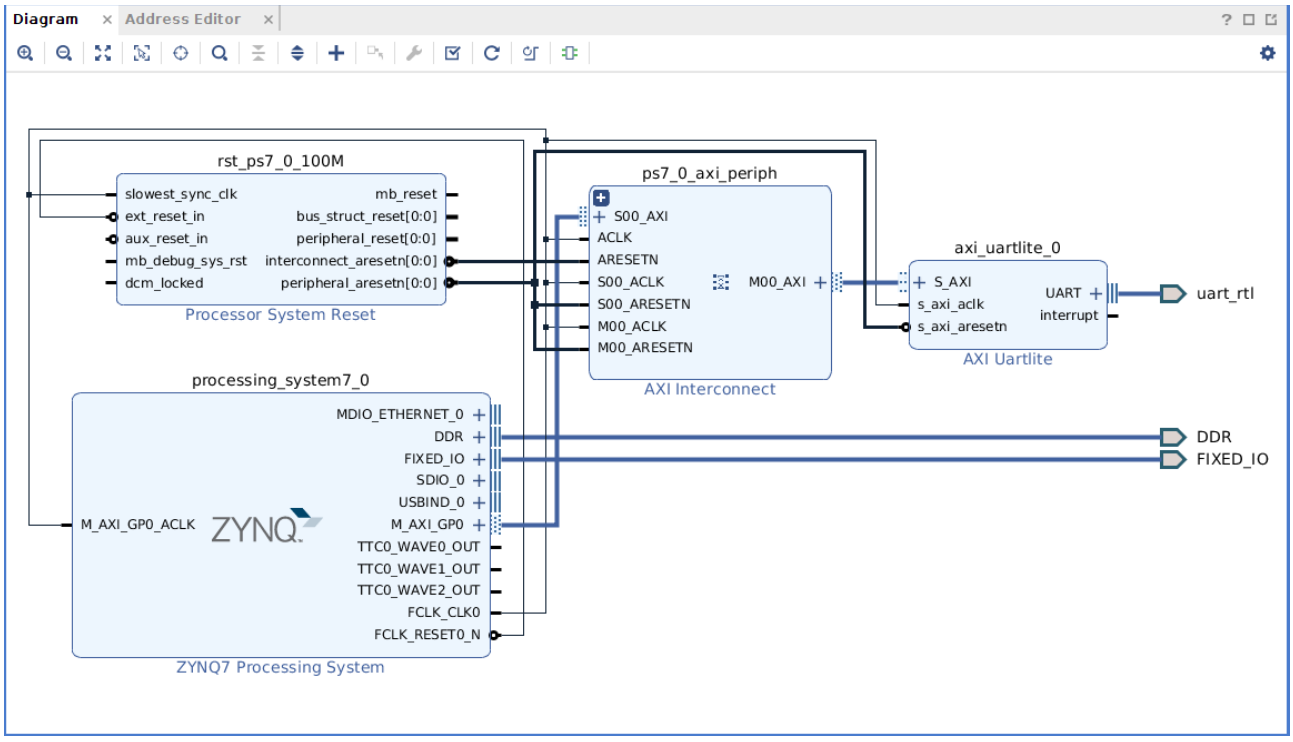
# FPGA_UART 통신

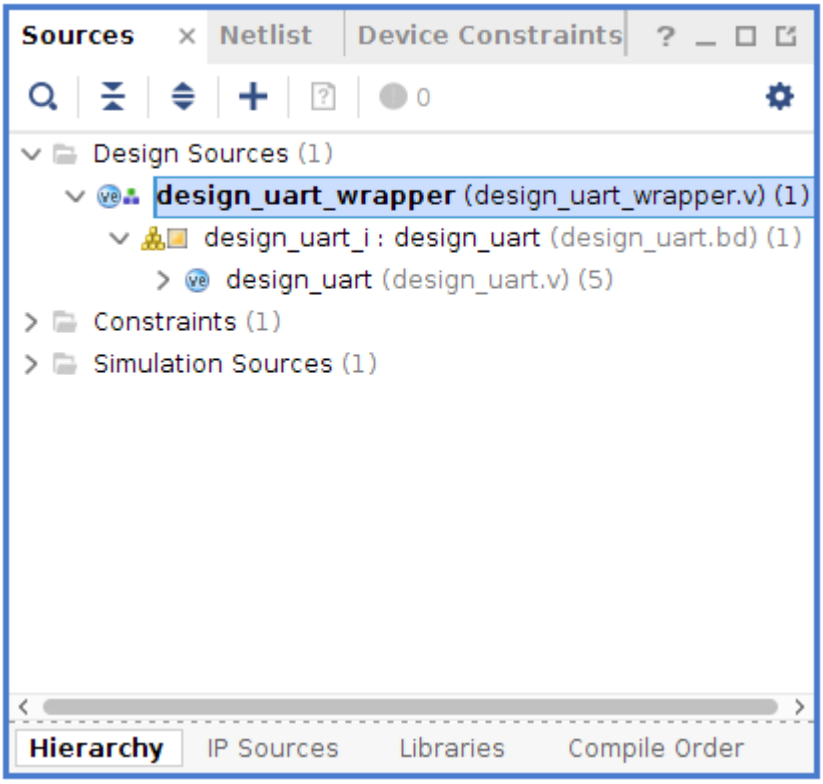
프로젝트 생성 후  블록 디자인을 만든다



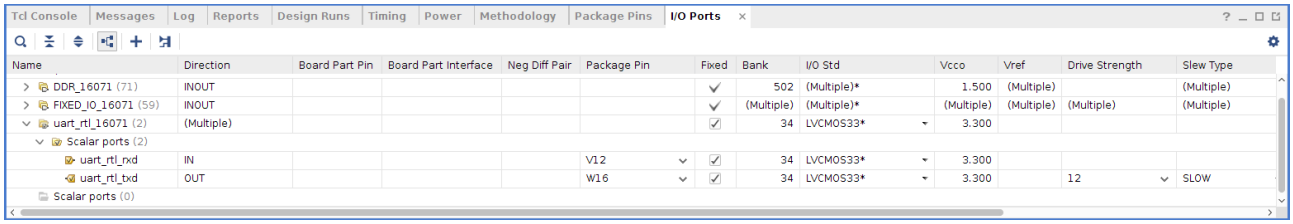

zynq 와 uart 를 추가하여 블록 디자인을 구성한다



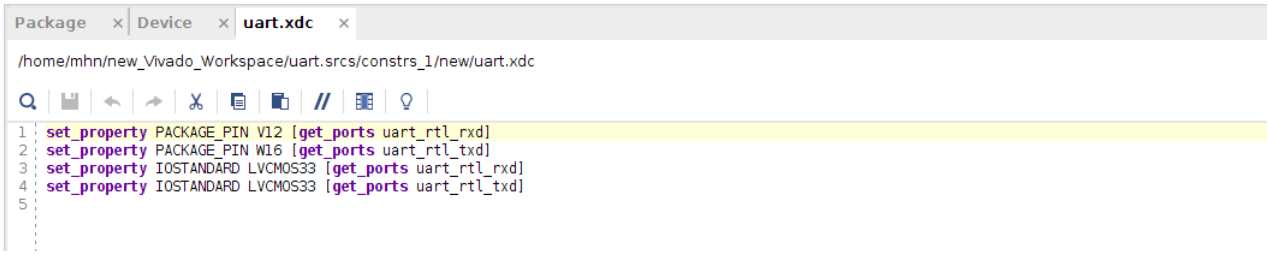
만들어진 블록 디자인을 래핑한다




Run Implementation 후 Implemented Design Open
pin 설정 후 저장




xdc 파일 확인



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(10000000);

	}

	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);
```

```
	while (SentCount < (sizeof(HelloWorld) - 1)) {
		/* Transmit the data */
		SentCount += XUartPs_Send(&Uart_Ps,
					&HelloWorld[SentCount], 1);
	}

	return SentCount;
}

void delay(int num){

	int i;

	for(i=0; i< num; i++);

	return 0;

}
```

UART_DEVICE_ID 는 "xparameters.h"에서 확인하였다