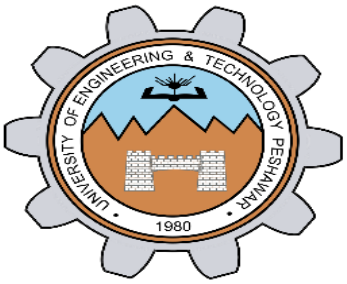
Lab report no 11



Fall 2022

CSE-308L Digital Systems Design Lab

Submitted By

Names	**Registration No**
Muhammad Ali	**19pwcse1801**

Section: **A**

Date:18,8,22

Submitted To: MAM. Madiha Sher

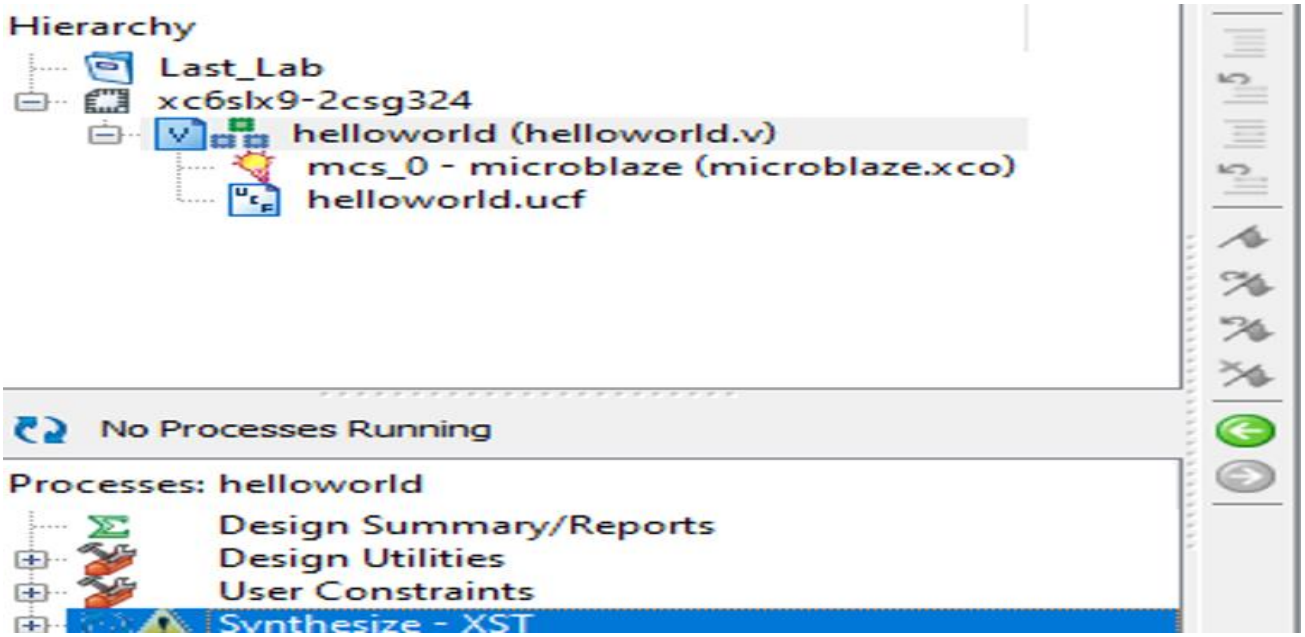
Department of Computer Systems Engineering

University of Engineering and Technology, Peshawar

Steps to follow:

1. Import the MicroBlaze IP core in the project design

   Nam



2. **Write Verilog code and instantiate the MicroBlaze processor and synthesize the design**

VERILOG MODULE:

```
module helloworld(
        input Clk,
        input reset,
        input UART_Rx,
        output UART_Tx
);

microblaze mcs_0 (
```

```
    .Clk(Clk), // input Clk
    .Reset(Reset), // input Reset
    .UART_Rx(UART_Rx), // input UART_Rx
    .UART_Tx(UART_Tx) // output UART_Tx
);
endmodule
```

3. **Create New application using Xilinx SDK and generate .elf (executable and linkable file)**

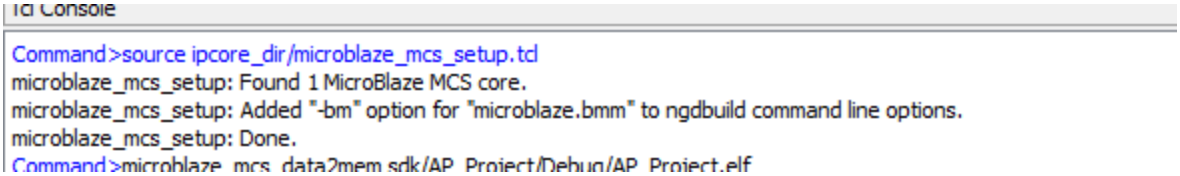
   SDK:

   Helloworld.c → auto build project with saving the code.

```
#include <stdio.h>
#include "platform.h"

void print(char *str);

int main()
{
    init_platform();
    int i;
    while(1){

    xil_printf("Hello World\n\r");
    for(i=0;i<20000;i++);
    }
    return 0;
```

4. **After Synthesis export the BMM file using the following command:**

   source ipcore_dir/microblaze_mcs_setup.tcl

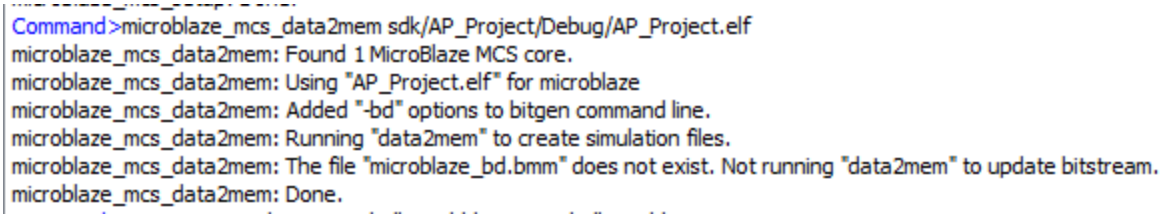


5. **Implement the design and generate bit stream**

6. **Merge the .elf file with bit file using the following command:**

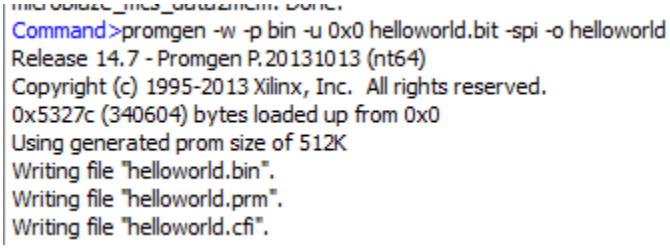
   microblaze_mcs_data2mem sdk/HelloWorld/Debug/HelloWorld.elf

   in my case: microblaze_mcs_data2mem sdk/AP_Project/Debug/AP_Project.elf



7. **Create bin file from bit using the following command:**

   promgen -w -p bin -u 0x0 helloworld.bit -spi -o helloworld



```
1
2
3  NET "Clk"           LOC = V10 | IOSTANDARD = LVCMOS33 | DRIVE = 8 | PERIOD = 100MHz;
4  NET "UART_Tx"         LOC = B8  | IOSTANDARD = LVCMOS33 | DRIVE = 8 | SLEW = FAST;
5  NET "UART_Rx"         LOC = A8  | IOSTANDARD = LVCMOS33 | DRIVE = 8 | SLEW = FAST;
6
7
```

Output: -