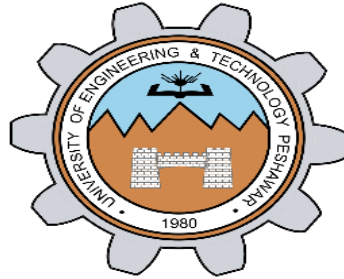


Lab report no 11



Fall 2022

CSE-308L Digital Systems Design Lab

Submitted By

Names	Registration No
Muhammad Ali	19pwcse1801

Section: A

Date:18,8,22

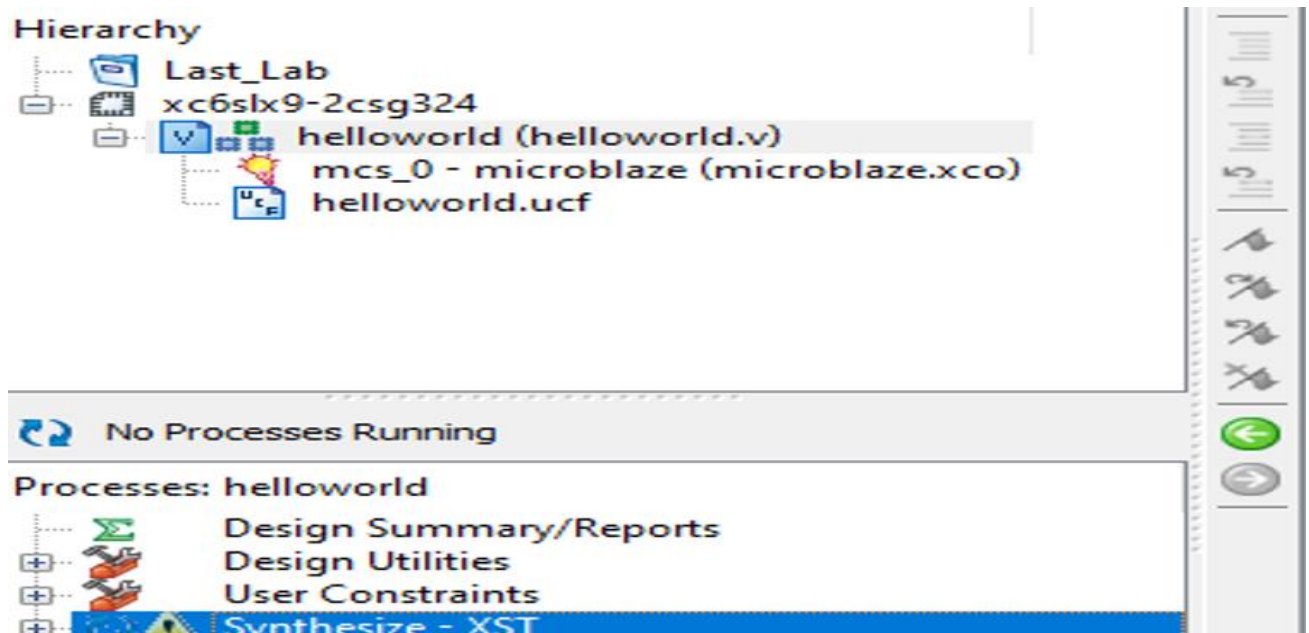
Submitted To: MAM. Madiha Sher

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
```

```
td Console
Command>source ipcore_dir/microblaze_mcs_setup.tcl
microblaze_mcs_setup: Found 1 MicroBlaze MCS core.
microblaze_mcs_setup: Added "-bm" option for "microblaze.bmm" to ngdbuild command line options.
microblaze_mcs_setup: Done.
Command>microblaze_mcs_data2mem sdk/AP_Project/Debug/AP_Project.elf
```

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

```
Command>microblaze_mcs_data2mem sdk/AP_Project/Debug/AP_Project.elf
microblaze_mcs_data2mem: Found 1 MicroBlaze MCS core.
microblaze_mcs_data2mem: Using "AP_Project.elf" for microblaze
microblaze_mcs_data2mem: Added "-bd" options to bitgen command line.
microblaze_mcs_data2mem: Running "data2mem" to create simulation files.
microblaze_mcs_data2mem: The file "microblaze_bd.bmm" does not exist. Not running "data2mem" to update bitstream.
microblaze_mcs_data2mem: Done.
```

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

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

```
microblaze_mcs_data2mem: Done.
Command>promgen -w -p bin -u 0x0 helloworld.bit -spi -o helloworld
Release 14.7 - Promgen P.20131013 (nt64)
Copyright (c) 1995-2013 Xilinx, Inc. All rights reserved.
0x5327c (340604) bytes loaded up from 0x0
Using generated prom size of 512K
Writing file "helloworld.bin".
Writing file "helloworld.prm".
Writing file "helloworld.cfi".
```

