Microprocessor-Based Systems

COEN 317

Lab Experiment #1

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Section FN-X

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"I certify that this submission is my original work and meets the Faculty's Expectations of Originality."

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1) Objectives

The objective of the first lab of the microprocessor-based system course is to be introduced to the Xilinx ZC702 development board as well as the Xilinx software tools. These tools consist of PlanAhead, Xilinx Platform Studio (XPS) as well as using Software Development Kit (SDK). The familiarisation process shall be achieved by initialisation, creation, compilation and execution of a simple "Hello World" program using the mentioned tools above.

2) Theory

PlanAhead: Tool used to specify a project such to add a design source to the hardware. This can be accomplished in many form (using VHDL program to program an FGPA, using a custom Intellectual Property, using a Xilinx user Constraint File, etc.)

Xilinx Platform Studio (XPS): Tool used to build a processing system consisting of a programmable logic and a processor hardware in which is exported to a Software Development Kit (SDK).

Software Development Kit (SDK): Tool used to program the processor by using its environment to write, compile, download and execute on the ZC702 development board. It also allows interactions with the running program through the setup between the host computer and the ZC702 board (terminal console).

3) Conclusions

In conclusion, from setting up a Linux environment, to launching and creating a project in PlanAhead, to designing a system in XPS, to exporting the hardware to SDK and using said SDK to create a “Hello World” application project, I was able to familiarise myself with these tools as well the Xilinx ZC702 development board. Overall, the objective was met and the foundation and skillset learned in this lab will provide great assistance in upcoming labs.

4) Appendix

```
#include <iostream>

using namespace std;

int main() {

        cout << “Hello World from Zynq PS” << endl;

        return 0;

}
```