



Term Project Submission 3 - Student Names

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Our Work

- These are the things we have done in this entire project:
 - We have created a Multi Cycle Processor with procedural statements.
 - The Specifications of the processor are :
 - * 32'b Program Counter.
 - * Word Addressable Instruction and Data Memories of size 1024.
 - * 32 Signed Registers of each 32'b size.
 - * Jump calculates it new address at ID stage.
 - * Data Forwarding from EX, MEM and WB units.
 - * Branch Target Buffer of 2 bit Prediction Scheme with Alternative State Machine .
 - This code is implemented on the Artix - 7 family **xc7a100tcsg324-1** and these are some design parameters :

	LUT%	LUTs	FF%	FFs
synth	1.637	1038	0.154	195
impl	1.536	974	0.154	195

- The programs used for verifying this processor are already given in the second report.
- The code is designed simple in just one block which makes it easy to understand and upgrade.
- We tried our best to fulfill the Future work section of our Report 2, unfortunately we couldn't add Floating Point Arithmetic and Multi Cycle DLX to our processor.

Final Conclusion

In this long journey of making this processor, we have learnt a lot of insights about current day processors. Even though **MIPS** is a more like a Starting Point and there is a lot left to do, but this first step made us feel **confident** and **ready** for big things like **Multi Core's**, **Graphics**, **Memories** and a lot more.

Code

The Code as a verilog file is uploaded along with this pdf in Moodle, a zip file containing all the Submissions, code and the results were backedup in drive.

Drive Link for Entire Project

References

- Lecture Slides from Moodle.
- NPTEL Course on HPCA from IIT Kharagpur. [Click here](#)
- Advanced Topic: An Introduction to Digital Design Using a Hardware Design Language to Describe and Model a Pipeline and More Pipelining Illustrations, [Click Here](#)
- Computer Organization and Design by David A. Patterson and John L.Hennessy. [Click Here](#)