CSE 151A HW 01

Karlo Godfrey Escalona Gregorio PID: A16536865

Contents

| 1 | Preface | 1 |
|----|-----------------------|---|
| 2 | ISA Design | 1 |
| 3 | Assembler | 1 |
| 4 | Instruction Memory | 1 |
| 5 | Program Counter | 1 |
| 6 | Program Counter Adder | 1 |
| 7 | Register File | 1 |
| 8 | Data Memory | 1 |
| 9 | ALU | 1 |
| 10 | ALU Control | 1 |
| 11 | FPU | 1 |
| 12 | FPU Control | 1 |

1 Preface

This project explores a subset of the ARM instruction set. A custom instruction set inspired by the ARM architecture was designed with a custom assembler. The architecture was implemented in hardware as an RTL model, whose functionality was verified.

The assembler was implemented in Python, and the RTL model was implemented using SystemVerilog.

- 2 ISA Design
- 3 Assembler
- 4 Instruction Memory
- 5 Program Counter
- 6 Program Counter Adder
- 7 Register File
- 8 Data Memory
- 9 ALU
- 10 ALU Control
- 11 FPU
- 12 FPU Control