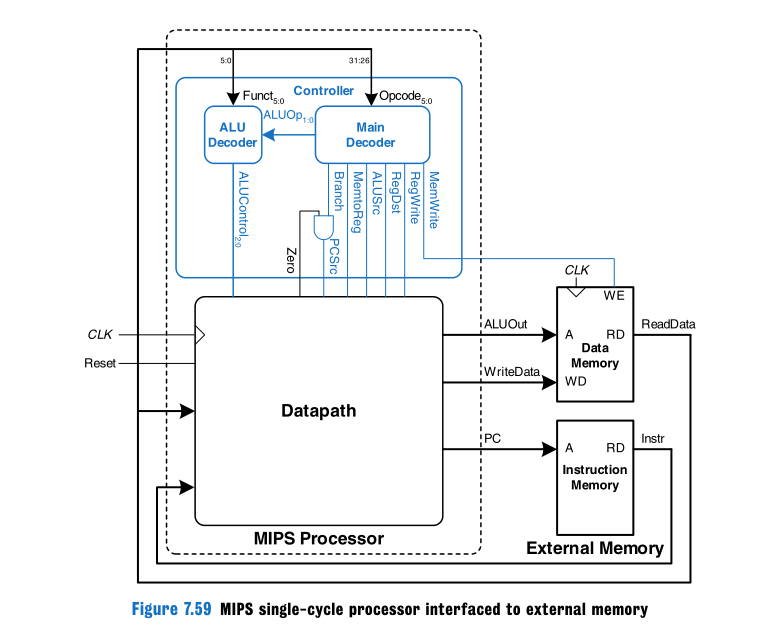
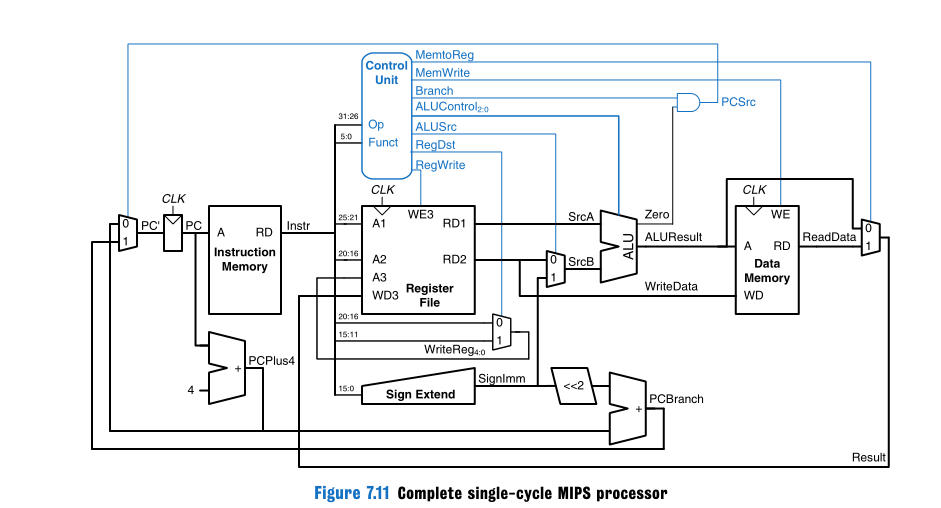
Single-cycle MIPS processor

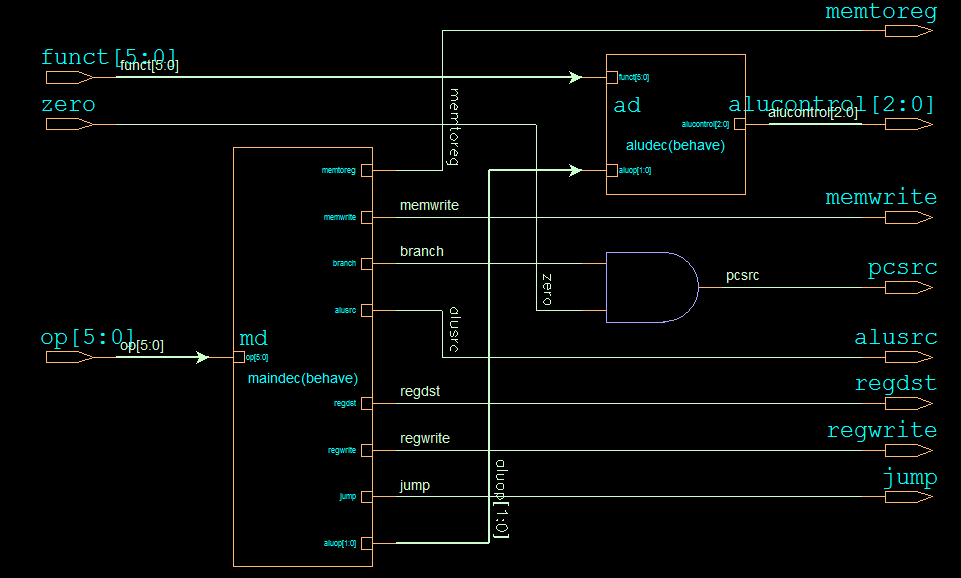
# 大框架：





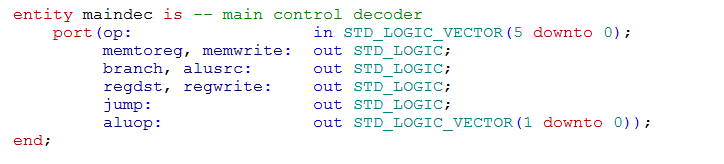
# controller.vhd组装 maindec.vhd aludec.vhd pc

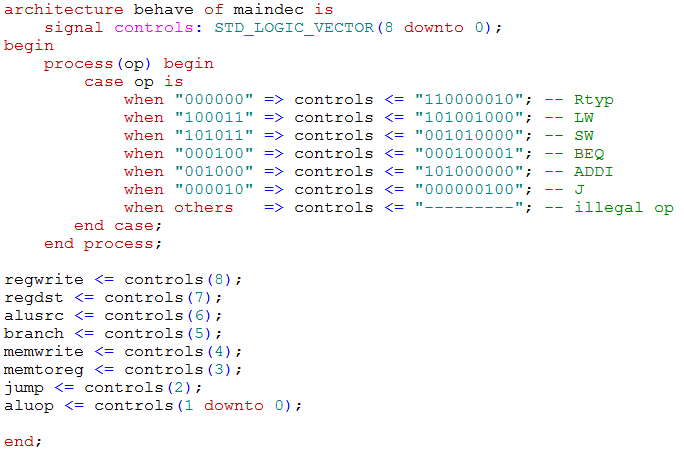
## 结构图



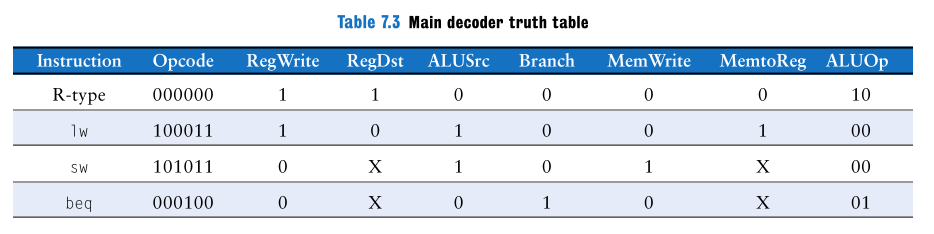
包含3个块 maindec aludec and2gate

## Maindec.vhd





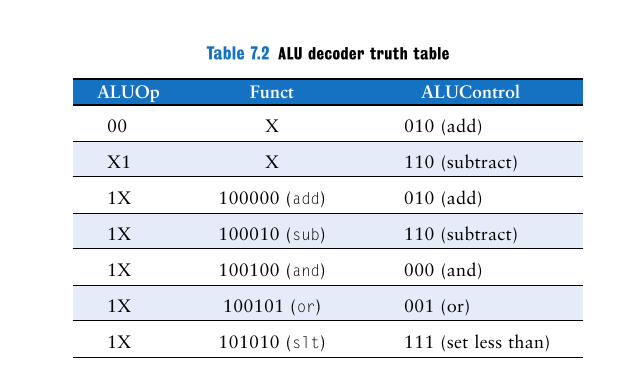
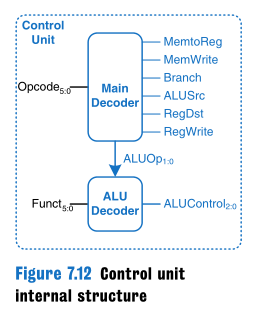
输入op得到以下值

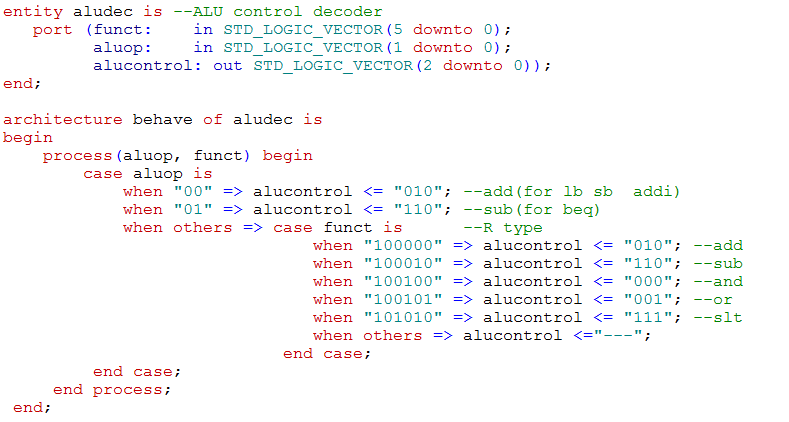


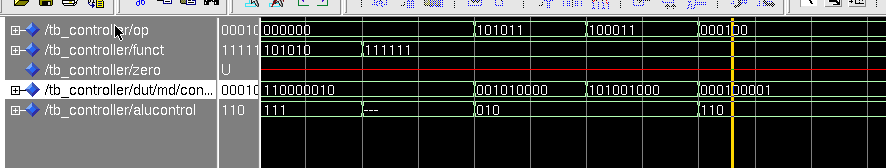
Aluop 00代表alu funct不作用

## Aludec.vhd

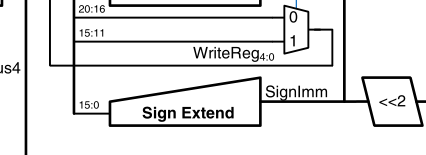
Aluop从maindec.vhd得到 ALUop =00时 输入funct 不起作用





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## 零散模块：

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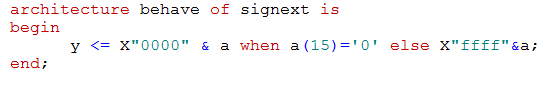
**Adder.vhd 加法器**

**Sl2.vhd 移位寄存器**

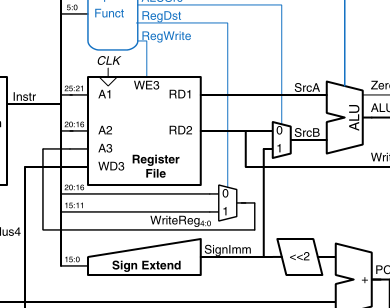
**Mux2.vhd 选择器**

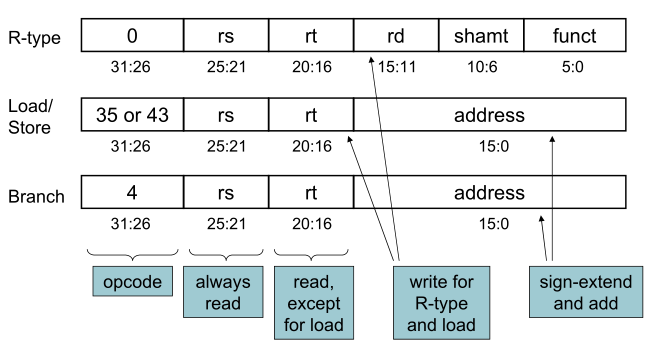
**Flopr.vhd flip-flop with synchronous reset**

**Signext.vhd 符号扩展**



# Datapath.vhd 组装alu， registerfile， pc

****

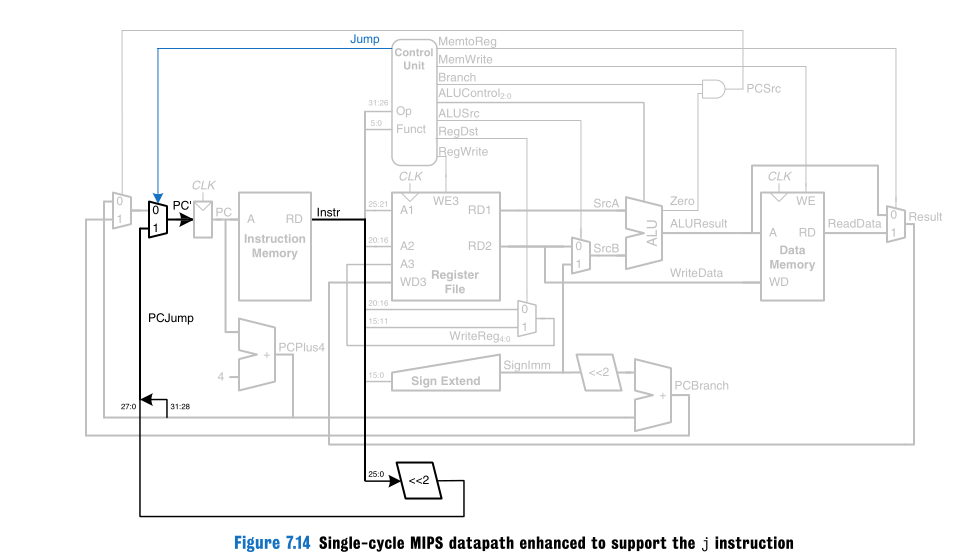
****

**MIPS指令中rs 寄存器 (a1, rd1) 只读, 对应ra1 , rd1**

**Rd(只有r type有)寄存器 (15:11🡪a3,wd3) 只写 ，对应 wa3, wd2**

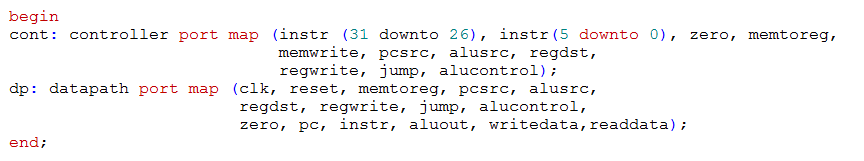
**而 lw 命令，需要rt 可写(20:16 –>a3, wd3),对应**

**Sw指令, rs rt 皆只读**

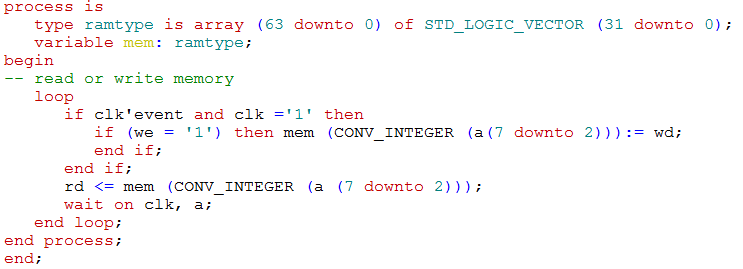
****

**Datapath 不含 imm 和 dmm**

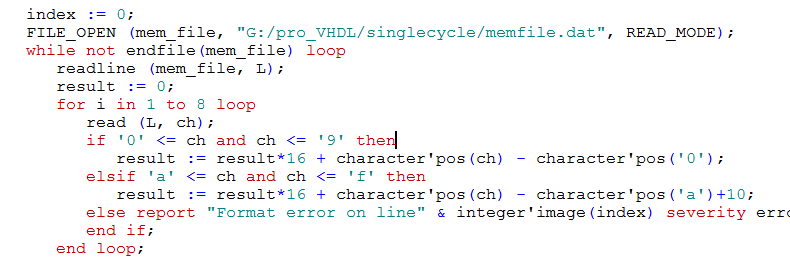
# Mips.vhdl 组装 datapath 和controller



# Dmem.vhdl



# Imem.vhdl



# TOP.vhdl.

