Risk - V Superscalar Simulation

Generated: 2025-02-23 00:29:14

1. Program Information

Index	Instruction
0000	0x430820
0001	0xa62022
0002	0x20070005
0003	0xc84024
0004	0xe94825
0005	0x65080
0006	0xb5842
0007	0x8c0c0000
0008	0xac0d0004
0009	0x10a60002
0010	0x430820
0011	0x14a60002
0012	0xc84024
0013	0x8000000

2. Performance Analysis

Metric	Value
Total Cycles	50
Instructions	14
CPI	3.57
Efficiency	14.0%

3. Pipeline Stages Analysis

Risk - V Superscalar Simulation

Generated: 2025-02-23 00:29:14

Cycle 1

Stage	Instructions
IF	4392992, 10887202
ID	NOP, NOP
EX	NOP, NOP
MEM	NOP, NOP
WB	NOP, NOP

Cycle 2

Stage	Instructions
IF	537329669, 13123620
ID	ADD, SUB
EX	NOP, NOP
MEM	NOP, NOP
WB	NOP, NOP

Cycle 3

Stage	Instructions
IF	15288357, 413824
ID	ADDI, AND
EX	ADD, SUB
MEM	NOP, NOP
WB	NOP, NOP

Cycle 4

Stage	Instructions
IF	NOP, NOP
ID	NOP, NOP

EX	NOP, NOP
MEM	NOP, NOP
WB	NOP, NOP

Cycle 5

Stage	Instructions
IF	743490, 2349596672
ID	NOP, NOP
EX	NOP, NOP
MEM	NOP, NOP
WB	NOP, NOP

Cycle 6

Stage	Instructions
IF	2886533124, 279314434
ID	SRL, LW
EX	NOP, NOP
MEM	NOP, NOP
WB	NOP, NOP

Cycle 7

Stage	Instructions
IF	4392992, 346423298
ID	SW, BEQ
EX	SRL, LW
MEM	NOP, NOP
WB	NOP, NOP

Cycle 8

Stage	Instructions
IF	NOP, NOP
ID	NOP, NOP
EX	NOP, NOP
MEM	NOP, NOP
WB	NOP, NOP

Cycle 9

Stage	Instructions
IF	13123620, 134217728
ID	NOP, NOP
EX	NOP, NOP
MEM	NOP, NOP
WB	NOP, NOP

Cycle 10

Stage	Instructions
IF	NOP, NOP
ID	AND, J
EX	NOP, NOP
MEM	NOP, NOP
WB	NOP, NOP

Cycle 11

Stage	Instructions
IF	4392992, 10887202
ID	NOP, NOP

EX	AND, J
MEM	NOP, NOP
WB	NOP, NOP

Cycle 12

Stage	Instructions
IF	537329669, 13123620
ID	ADD, SUB
EX	NOP, NOP
MEM	AND, J
WB	NOP, NOP

Cycle 13

Stage	Instructions
IF	15288357, 413824
ID	ADDI, AND
EX	ADD, SUB
MEM	NOP, NOP
WB	AND, J

Cycle 14

Stage	Instructions
IF	NOP, NOP
ID	NOP, NOP
EX	NOP, NOP
MEM	NOP, NOP
WB	NOP, NOP

Risk - V Superscalar Simulation

Cycle 15

Stage	Instructions
IF	743490, 2349596672
ID	NOP, NOP
EX	NOP, NOP
MEM	NOP, NOP
WB	NOP, NOP

4. Final Register State

Register	Value
R0	0x0
R1	0x0
R2	0xa
R3	0x14
R4	0x0
R5	0x32
R6	0x1e
R7	0xf
R8	0x1e
R9	0xf0
R10	0x55
R11	0xf
R12	0xf0
R13	0xaa
R14	0x0
R15	0x0
R16	0x0

R17	0x0
R18	0x0
R19	0x0
R20	0x0
R21	0x0
R22	0x0
R23	0x0
R24	0x0
R25	0x0
R26	0x0
R27	0x0
R28	0x0
R29	0x0
R30	0x0
R31	0x100

5. Detailed Performance Metrics

Metric	Value
Total Cycles	50
Total Instructions	14
Cycles Per Instruction (CPI)	3.57
Instructions Per Cycle (IPC)	0.28
Hazard Stalls	0
Ideal Cycles (no hazards)	7.0
Pipeline Efficiency	14.0%