表 1 测试用代码段功能描述表

Address(HEX)	标号	仿真平台 2 输入代码（这样输入才不会出错）	仿真平台 2 显示代码	机器码（BIN）	机器码（HEX）	指令类型	描述
0		lui x10, 0	lui a0, 0	00000000000000000000010100110111	00000537	U	#initializex10 =base address 0
4		ori x4, x10, 0	oritp, a0, 0	00000000000001010110001000010011	00056213	I	#x4<- base address x10 + offset 0 =0
8		addi x25, x0, 1	addi s9, x0, 1	00000000000100000000110010010011	00100c93	I	#initialize x25 = 1
c		addi x26, x0, 2	addi s10, x0, 2	00000000001000000000110100010011	00200d13	I	# initialize x26 = 2
10		addi x27, x0, 3	addi s11, x0, 3	00000000001100000000110110010011	00300d93	I	# initialize x27 = 3
14		addi x28, x0, 4	addi t3, x0, 4	00000000010000000000111000010011	00400e13	I	# initialize x28 = 4
18		sw x25, 0(x4)	sw s9, 0(tp)	00000001100100100010000000100011	01922023	I	#[0] = 1
1c		sw x26, 4(x4)	sw s10, 4(tp)	00000001101000100010001000100011	01a22223	I	# [4] = 2
20		sw x27, 8(x4)	sw s11, 8(tp)	00000001101100100010010000100011	01b22423	I	# [8] = 3
24		sw x28, 12(x4)	sw t3, 12(tp)	00000001110000100010011000100011	01c22623	I	# [12] = 4
28		addi x5, x0, 4	addi t0, x0, 4	00000000010000000000001010010011	00400293	I	# x5 = 4，循环次数
2c	Call：	Call: jal sum	jalra, 128	00000101010000000000000011101111	054000ef	UJ	# call function sum 跳转到 pc = 80
30		sw x12, 0(x4)	sw a2, 0(tp)	00000000110000100010000000100011	00c22023	S	#[10] <- 0x0000000a (x12=0x0000000a)
34		lw x19, 0(x4)	lw s3, 0(tp)	00000000000000100010100110000011	00022983	I	#x19<- [10] ([10]=0x0000000a)
38		sub x18, x19, x12	sub s2, s3, a2	01000000110010011000100100110011	40c98933	R	#x18= 0
3c		addi x5, x0, 3	addi t0, x0, 3	00000000001100000000001010010011	00300293	I	#x5=3
40	loop2:	loop2:addi x5, x5, -1	addi t0, t0, -1	11111111111100101000001010010011	fff28293	I	#x5 <- (x5-1)，循环次数-1
44		ori x18, x5, -1	ori s2, t0, -1	11111111111100101110100100010011	fff2e913	I	#x18= 0xffffffff ，(x18 = x5 or 12bit 立即数有符号扩展 0xffffffff)
48		xori x18, x18, 1365	xori s2, s2, 1365	01010101011001100100100010011	55594913	I	#X18=0xfffffaaa

4c		addi x19, x0, -1	addi s3, x0, -1	11111111111100000 000100110010011	fff00993	I	#X19=0xffffffff
50		andi x20, x19, -1	andi s4, s3, -1	11111111111110011 111101000010011	fff9fa13	I	#X20=0xffffffff，（X20=0xffffffff and 0xffffffff）
54		or x16, x20, x19	or a6, s4, s3	0000000100111010 0110100000110011	013a6833	R	#X16=0xffffffff
58		xor x18, x20, x19	xor s2, s4, s3	0000000100111010 0100100100110011	010a78b3	R	#X18=0x00000000
5c		and x17, x20, x16	and a7, s4, a6	0000000100001010 0111100010110011	010a78b3	R	#X17=0xffffffff
60		beq x5, x0, shift	beq t0, x0, 104	00000000000000010 1000010001100011	00028463	SB	#Ifx5 = 0 Goto shift after finished loop2 4 times，goto pc= 68
64		j loop2	jal x0, 64	11111101110111111 111000001101111	fddff06f	UJ	#Loop Loop2 for 4 times，goto pc=40
68	shift:	shift:addi x5, x0, -1	addi t0, x0, -1	11111111111100000 000001010010011	fff00293	I	#X5=0xffffffff
6c		slli x18, x5, 15	slli s2, t0, 15	00000000111100101 001100100010011	00f29913	I	#X18=0xffff8000
70		slli x18, x18, 16	slli s2, s2, 16	0000000100001001 0001100100010011	01091913	I	#X18=0x80000000
74		srai x18, x18, 16	srai s2, s2, 16	0100000100001001 0101100100010011	41095913	I	#X18=0xffff8000
78		srli x18, x18, 15	srli s2, s2, 15	00000000111110010 101100100010011	00f95913	I	#X18=0x0001ffff
7c	finish:	finish:j finish	jal x0, 124	00000000000000000 0000000001101111	0000006f	UJ	#Endhere
80	sum:	sum:add x18, x0, x0	add s2, x0, x0	0000000000000000 0000100100110011	00000933	R	#X18 = 0
84	loop:	loop:lw x19, 0(x4)	lw s3, 0(tp)	0000000000000010 0010100110000011	00022983	I	#X19 <- [x4]
88		addi x4, x4,4	addi tp, tp,4	0000000001000010 0000001000010011	00420213	I	#x4 <- x4 + 4

8c		add x18, x18, x19	add s2, s2, s3	0000000100111001
				0000100100110011
					01390933	R	#X18= x18 + [x4],
							x18= 1

90		addi x5, x5, -1	addi t0, t0, -1	11111111111100101 000001010010011	fff28293	I	#x5 <- (x5-1)，循环次数-1
94		bne x5, x0, loop	bne t0, x0, 132	11111110000000101 001100011100011	fe0298e3	SB	#loop 循环累加 4 次，结果存于：x18
98		slli x12, x18, 0	slli a2, s2, 0	0000000000001001 0001011000010011	00091613	I	#X12<- x18 ，X12 = 0x0000000a，函数调用结果存于：x12
9c		Jr ra	jalr x0, 0(ra)	0000000000000000 1000000001100111	00008067	I	#函数 sum 调用返回，回到 pc = 30