

表 1 测试用代码段功能描述表

Ad dre ss(HE X)	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	000000 000000 000000 000101 001101 11	0000053 7	U	#initialize x10 =base address 0
4		ori x4, x10, 0	oritp, a0, 0	000000 000000 010101 100010 000100 11	0005621 3	I	#x4<- base address x10 + offset 0 =0
8		addi x25, x0, 1	addi s9, x0, 1	000000 000001 000000 001100 100100 11	00100c9 3	I	#initialize x25 = 1
c		addi x26, x0, 2	addi s10, x0, 2	000000 000010 000000 001101 000100 11	00200d1 3	I	#x26 = 2
10		addi x27, x0, 3	addi s11, x0, 3	000000 000011 000000 001101 100100 11	00300d9 3	I	#x27 = 3
14		addi x28, x0, 4	addi t3, x0, 4	000000 000100 000000 001110 000100 11	00400e1 3	I	#x28 = 4
18		sw x25, 0(x4)	sw s9, 0(tp)	000000 011001	0192202 3	S	#[0] = 1

				001000 100000 001000 11			
1c		sw x26, 4(x4)	sw s10, 4(tp)	000000 011010 001000 100010 001000 11	01a2222 3	S	# [4] = 2
20		sw x27, 8(x4)	sw s11, 8(tp)	000000 011011 001000 100100 001000 11	01b2242 3	S	#[8] = 3
24		sw x28, 12(x4)	sw t3, 12(tp)	000000 011100 001000 100110 001000 11	01c2262 3	S	#[12] = 4
28		addi x5, x0, 4	addi t0, x0, 4	000000 000100 000000 000010 100100 11	0040029 3	I	# x5 = 4, 循环次数
2c	Call :	Call: jal sum	jalra, 128	000001 010100 000000 000000 111011 11	054000ef	U J	# call function sum 跳转到 pc = 80
30		sw x12, 0(x4)	sw a2, 0(tp)	000000 001100 001000 100000 001000 11	00c2202 3	S	#[16] <- 0x0000000a (x12=0x0000000a)
34		lw x19, 0(x4)	lw s3, 0(tp)	000000 000000 001000 101001	0002298 3	I	#x19<- [16] (0x10) ([16]=0x0000000a)

				100000 11			
38		sub x18, x19, x12	sub s2, s3, a2	010000 001100 100110 001001 001100 11	40c9893 3	R	#x18= 0
3c		addi x5, x0, 3	addi t0, x0, 3	000000 000011 000000 000010 100100 11	0030029 3	I	#x5=3
40	loop2:	loop2:addi x5, x5, -1	addi t0, t0, -1	111111 111111 001010 000010 100100 11	fff28293	I	#循环次数 x5 -= 1
44		ori x18, x5, -1	ori s2, t0, -1	111111 111111 001011 101001 000100 11	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	010101 010101 100101 001001 000100 11	5559491 3	I	#x18= 0xfffffaaa
4c		addi x19, x0, -1	addi s3, x0, -1	111111 111111 000000 001001 100100 11	fff00993	I	#X19=0xffffffff
50		andi x20, x19, -1	andi s4, s3, -1	111111 111111 100111 111010	fff9fa13	I	#X20=0xffffffff , (X20=0xffffffff and 0xffffffff)

				000100 11			
54		or x16, x20, x19	or a6, s4, s3	000000 010011 101001 101000 001100 11	013a683 3	R	#X16=0xffffffff
58		xor x18, x20, x19	xor s2, s4, s3	000000 010011 101001 001001 001100 11	013a493 3	R	#X18=0x00000000
5c		and x17, x20, x16	and a7, s4, a6	000000 010000 101001 111000 101100 11	010a78b 3	R	#X17=0xffffffff
60		beq x5, x0, shift	beq t0, x0, 104	000000 000000 001010 000100 011000 11	0002846 3	S B	#Ifx5 = 0 Goto shift after finished loop2 4 times, goto pc= 68
64		j loop2	jal x0, 64	111111 011101 111111 110000 011011 11	fddff06f	U J	#Loop Loop2 for 4 times, goto pc=40
68	shif t:	shift:addi x5, x0, -1	addi t0, x0, -1	111111 111111 000000 000010 100100 11	fff00293	I	#X5=0xffffffff
6c		slli x18, x5, 15	slli s2, t0, 15	000000 001111 001010 011001 000100 11	00f29913	I	#X18=0xffff8000

70		slli x18, x18, 16	slli s2, s2, 16	000000 010000 100100 011001 000100 11	01091913	I	#X18=0x80000000
74		srai x18, x18, 16	srai s2, s2, 16	100000 010000 100101 011001 000100 11	81095913	I	#X18=0xffff8000
78		srli x18, x18, 15	srli s2, s2, 15	000000 001111 100101 011001 000100 11	00f95913	I	#X18=0x0001ffff
7c	finish:	finish:j finish	jal x0, 124	000000 000000 000000 000000 011011 11	0000006f	U J	#Endhere
80	sum:	sum:add x18, x0, x0	add s2, x0, x0	000000 000000 000000 001001 001100 11	00000933	R	#X18 = 0x00000000
84	loop:	loop:lw x19, 0(x4)	lw s3, 0(tp)	000000 000000 001000 101001 100000 11	00022983	I	#X19 <- [x4]
88		addi x4, x4, 4	additp, tp, 4	000000 000100 001000 000010 000100 11	00420213	I	#x4 <- x4+4
8c		add x18, x18, x19	add s2, s2, s3	000000 010011	01390933	R	#X18= x18 + [x4],

				100100 001001 001100 11			
90		addi x5, x5, -1	addi t0, t0, -1	111111 111111 001010 000010 100100 11	fff28293	I	#x5 <- (x5-1), 循环 次数-1
94		bne x5, x0, loop	bne t0, x0, 132	111111 100000 001010 011000 111000 11	fe0298e3	S B	#loop 循 环 累 加 次, 结果存于: X18
98		slli x12, x18, 0	slli a2, s2, 0	000000 000000 100100 010110 000100 11	0009161 3	I	#X12<- x18 , X12 = 0x0000000a, 函数调 用结果存于: X12
9c		Jr ra	jalr x0, 0(ra)	000000 000000 000010 000000 011001 11	0000806 7	I	#函数 sum 调用返 回, 回到 pc = ra