

Mode: All

Left file: D:\workspace\study\Code-Optimization\MIT-6.172\Lectures\Week3\MIT6_172F18_hw3\homework3\loop-v-nu.s

Right file: D:\workspace\study\Code-Optimization\MIT-6.172\Lectures\Week3\MIT6_172F18_hw3\homework3\loop-v-nu-avx2.s

```

.text
.file "loop.c"
.section .rodata.cst8,"aM",@p
» rogbits,8
.p2align 3 # --
» Begin function main
.LCPI0_0:
.quad 4472406533629990549 # do
» uble 1.0000000000000001E-9
.text
.globl main
.p2align 4, 0x90
.type main,@function
main: # @m
» ain
.cfi_startproc
# %bb.0:
pushq %r15
.cfi_def_cfa_offset 16
pushq %r14
.cfi_def_cfa_offset 24
pushq %r12
.cfi_def_cfa_offset 32
pushq %rbx
.cfi_def_cfa_offset 40
subq $12328, %rsp # im
» m = 0x3028
.cfi_def_cfa_offset 12368
.cfi_offset %rbx, -40
.cfi_offset %r12, -32
.cfi_offset %r14, -24
.cfi_offset %r15, -16
movl $0, 12(%rsp)
leaq 8224(%rsp), %rdi
xorl %ebx, %ebx
xorl %esi, %esi
movl $4096, %edx # im
» m = 0x1000
callq memset
leaq 4128(%rsp), %rdi
xorl %esi, %esi
movl $4096, %edx # im
» m = 0x1000
callq memset
leaq 32(%rsp), %rdi
xorl %esi, %esi
movl $4096, %edx # im
» m = 0x1000
callq memset
leaq 16(%rsp), %rsi
movl $1, %edi
callq clock_gettime
movq 16(%rsp), %r15
movq 24(%rsp), %r14
.p2align 4, 0x90
.LBB0_1: # =>

=
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.type main,@function
main: # @m
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.cfi_startproc
# %bb.0:
pushq %r15
.cfi_def_cfa_offset 16
pushq %r14
.cfi_def_cfa_offset 24
pushq %r12
.cfi_def_cfa_offset 32
pushq %rbx
.cfi_def_cfa_offset 40
subq $12328, %rsp # im
» m = 0x3028
.cfi_def_cfa_offset 12368
.cfi_offset %rbx, -40
.cfi_offset %r12, -32
.cfi_offset %r14, -24
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movl $0, 12(%rsp)
leaq 8224(%rsp), %rdi
xorl %ebx, %ebx
xorl %esi, %esi
movl $4096, %edx # im
» m = 0x1000
callq memset
leaq 4128(%rsp), %rdi
xorl %esi, %esi
movl $4096, %edx # im
» m = 0x1000
callq memset
leaq 32(%rsp), %rdi
xorl %esi, %esi
movl $4096, %edx # im
» m = 0x1000
callq memset
leaq 16(%rsp), %rsi
movl $1, %edi
callq clock_gettime
movq 16(%rsp), %r15
movq 24(%rsp), %r14
.p2align 4, 0x90
.LBB0_1: # =>

```

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(continued)

» This Loop Header: Depth=1	#	» This Loop Header: Depth=1	#
» Child Loop BB0_2 Depth 2		» Child Loop BB0_2 Depth 2	
movq \$-4096, %rax	# im	movq \$-4096, %rax	# im
» m = 0xF000		» m = 0xF000	
.p2align 4, 0x90		.p2align 4, 0x90	
.LBB0_2:	#	.LBB0_2:	#
» Parent Loop BB0_1 Depth=1		» Parent Loop BB0_1 Depth=1	
	# =>		# =>
» This Inner Loop Header: Depth=2		» This Inner Loop Header: Depth=2	
movdqa 8224(%rsp,%rax), %xmm0	<>	vmovdqu 8224(%rsp,%rax), %ymm0	
paddb 12320(%rsp,%rax), %xmm0		vpaddb 12320(%rsp,%rax), %ymm0, %ymm0	
		» m0	
movdqa %xmm0, 4128(%rsp,%rax)		vmovdqu %ymm0, 4128(%rsp,%rax)	
addq \$16, %rax		addq \$32, %rax	
jne .LBB0_2	=	jne .LBB0_2	
# %bb.3:	#	# %bb.3:	#
» in Loop: Header=BB0_1 Depth=1		» in Loop: Header=BB0_1 Depth=1	
addl \$1, %ebx		addl \$1, %ebx	
cmpl \$100000, %ebx	# im	cmpl \$100000, %ebx	# im
» m = 0x186A0		» m = 0x186A0	
jne .LBB0_1		jne .LBB0_1	
# %bb.4:		# %bb.4:	
leaq 16(%rsp), %rsi		leaq 16(%rsp), %rsi	
movl \$1, %edi		movl \$1, %edi	
	-+	vzeroupper	
callq clock_gettime	=	callq clock_gettime	
movq 16(%rsp), %r12		movq 16(%rsp), %r12	
subq %r15, %r12		subq %r15, %r12	
movq 24(%rsp), %rbx		movq 24(%rsp), %rbx	
subq %r14, %rbx		subq %r14, %rbx	
leaq 12(%rsp), %rdi		leaq 12(%rsp), %rdi	
callq rand_r		callq rand_r	
movl %eax, %ecx		movl %eax, %ecx	
sarl \$31, %ecx		sarl \$31, %ecx	
shrl \$22, %ecx		shrl \$22, %ecx	
addl %eax, %ecx		addl %eax, %ecx	
andl \$-1024, %ecx	# im	andl \$-1024, %ecx	# im
» m = 0xFC00		» m = 0xFC00	
subl %ecx, %eax		subl %ecx, %eax	
cltq		cltq	
cvttsi2sdq %r12, %xmm1	<>	vcvttsi2sdq %r12, %xmm1, %xmm0	
xorps %xmm0, %xmm0			
cvttsi2sdq %rbx, %xmm0		vcvttsi2sdq %rbx, %xmm1, %xmm1	
movl 32(%rsp,%rax,4), %ebx	=	movl 32(%rsp,%rax,4), %ebx	
mulsd .LCPI0_0(%rip), %xmm0	<>	vmulsd .LCPI0_0(%rip), %xmm1, %xmm1	
addsd %xmm1, %xmm0		vaddsd %xmm0, %xmm1, %xmm0	
movl \$.L.str, %edi	=	movl \$.L.str, %edi	
movl \$1024, %esi	# im	movl \$1024, %esi	# im
» m = 0x400		» m = 0x400	
movl \$100000, %edx	# im	movl \$100000, %edx	# im
» m = 0x186A0		» m = 0x186A0	
movl \$.L.str.1, %ecx		movl \$.L.str.1, %ecx	
movl \$.L.str.2, %r8d		movl \$.L.str.2, %r8d	
movb \$1, %al		movb \$1, %al	
callq printf		callq printf	

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(continued)

<pre> movl %ebx, %eax addq \$12328, %rsp # im » m = 0x3028 popq %rbx popq %r12 popq %r14 popq %r15 retq .Lfunc_end0: .size main, .Lfunc_end0-main .cfi_endproc # -- » End function .type .L.str,@object # @. » str .section .rodata.str1.1,"aMS" » ,@progbits,1 .L.str: .asciz "Elapsed execution time: %f » sec; N: %d, I: %d, __OP__: %s, __TYPE__: % » s\n" .size .L.str, 72 .type .L.str.1,@object # @. » str.1 .L.str.1: .asciz "+" .size .L.str.1, 2 .type .L.str.2,@object # @. » str.2 .L.str.2: .asciz "uint32_t" .size .L.str.2, 9 .ident "clang version 6.0.0-1ubuntu » 2 (tags/RELEASE_600/final)" .section ".note.GNU-stack","", » ,@progbits </pre>	<pre> movl %ebx, %eax addq \$12328, %rsp # im » m = 0x3028 popq %rbx popq %r12 popq %r14 popq %r15 retq .Lfunc_end0: .size main, .Lfunc_end0-main .cfi_endproc # -- » End function .type .L.str,@object # @. » str .section .rodata.str1.1,"aMS" » ,@progbits,1 .L.str: .asciz "Elapsed execution time: %f » sec; N: %d, I: %d, __OP__: %s, __TYPE__: % » s\n" .size .L.str, 72 .type .L.str.1,@object # @. » str.1 .L.str.1: .asciz "+" .size .L.str.1, 2 .type .L.str.2,@object # @. » str.2 .L.str.2: .asciz "uint32_t" .size .L.str.2, 9 .ident "clang version 6.0.0-1ubuntu » 2 (tags/RELEASE_600/final)" .section ".note.GNU-stack","", » ,@progbits </pre>
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