Quiz 7 - pipelined Y86-64 architecture

Duration: 10 minutes

<u>open notes, please show your work</u>

Name:....................................
ID#:......................................

Question: Given the following assembly code identify all *load-use* dependencies, would they turn into hazards if forwarding is used?

```
sum_rows1(double*, double*, long):
        testq   %rdx, %rdx
        jle     .L1
        movq    %rsi, %r8
        leaq    0(,%rdx,8), %r9
        leaq    (%rdi,%r9), %rcx
        leaq    (%rsi,%r9), %rdi
        negq    %rdx
        leaq    0(,%rdx,8), %rsi
.L4:    movq    %r8, %rdx
        movq    $0x000000000, (%r8)
        leaq    (%rcx,%rsi), %rax
.L3:    movsd   (%rdx), %xmm0
        addsd   (%rax), %xmm0
        movsd   %xmm0, (%rdx)
        addq    $8, %rax
        cmpq    %rcx, %rax
        jne     .L3
        addq    $8, %r8
        addq    %r9, %rcx
        cmpq    %rdi, %r8
        jne     .L4
.L1:    ret
```