**movq %rdx, %rcx:**

This operation moves the current value of %rdx in %rcx. Since rdx has the value of i, rcx also holds that value now.

**imluq $8, %rcx:**

This operation multiplies the constant 8 with the value in %rcx. This is represented as 8 \* i.

**addq %rsi, %rcx:**

This operation adds the value in %rsi to %rcx. Since %rsi holds the value of the first element (its address) in a, %rcx now has that address added to it. This is represented as (8 \* i + (char \*)a).

Combined, these operations are represented as **\*(long\*)((8\*i+(char\*)a).**

The address of the first element of a is in rcx. This value now has to be incremented during each iteration of the loop. In order to do this, 8 \* i is added to the (char \*) a as the elements in a are of type long, which are spaced by 8 bytes on x86\_64.