Introduction

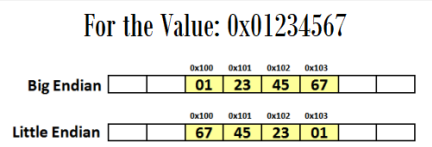
x86-64

In 64 bit processor, **address size is 64 bit**

Sizes

Byte	8 bits
Word	16 bits
Double Word (DWORD) a.k.a Long Word	32 bits
Quadruple Word (QWORD)	64 bits

Endianness (Order of storing values)



Big Endian: The most significant value in the sequence is stored first, at the lowest storage address.

Little Endian: The least significant value in the sequence is stored first, at the lowest storage address.

In x86-64, **Little Endian is used**.

Virtual Memory Layout

General Purpose Registers

Special Registers

RIP (Instruction Pointer)	Pointer to the next instruction to run
RFLAGS	Saves the current state of the processor.

Both registers are 64 bits registers.

Assembly File Structure

```
.global _start # entry point

.section .data
index: .int 1

.section .bss
.lcomm final, 4

.section .text
_start:
        movl (index), %eax
        addl $5, %eax
        movl %eax, (final)
```

The assembly file is **divided into sections** using "Section Directives".
Moreover, the file can contain Global and External declarations, Directives, Labels, Comments, and of course, the assembly Instructions.