

Opcodes

x means source register number, DD means look at the source register codes. n means constant number (B for 8-bit, W for 16-bit, D for 32-bit, Q for 64-bit). For arguments to ops, R means destination register, S means source register, K means constant, P means memory address.

mov

mov R S \Rightarrow 48 89 DD
mov R K \Rightarrow 48 C7 Cx nQ

arithmetic

add

add R S \Rightarrow 48 01 DD
add R (K < 127) \Rightarrow 48 83 Cx nB
add rax K \Rightarrow 48 05 nQ
add R K \Rightarrow 48 81 Cx nQ

sub

sub R S \Rightarrow 48 29 DD
sub R (K < 127) \Rightarrow 48 83 C(x+8) nB
sub rax K \Rightarrow 48 2D nQ
sub R K \Rightarrow 48 81 E(x+8) nQ

mul

mul R \Rightarrow 48 F7 Ex
mul P \Rightarrow 48 F7 24 25 *

imul

imul R \Rightarrow 48 F7 E(x+8)
imul P \Rightarrow 48 F7 2C 25 *
imul R S \Rightarrow 48 0F AF DD

div

div R \Rightarrow 48 F7 Fx
div P \Rightarrow 48 F7 34 25 *

idiv

idiv R \Rightarrow 48 F7 F(x+8)
idiv P \Rightarrow 48 F7 3C 25 *

shift

`shr[1]` $R \Rightarrow 48 \text{ D1 } E(x+8)$
`shr[n]` $R \text{ K} \Rightarrow 48 \text{ C1 } E(x+8) \text{ nB}$
`sar[1]` $R \Rightarrow 48 \text{ D1 } F(x+8)$
`sar[n]` $R \text{ K} \Rightarrow 48 \text{ C1 } F(x+8) \text{ nB}$
`shl[1]` $R \Rightarrow 48 \text{ D1 } Ex$
`shl[n]` $R \text{ K} \Rightarrow 48 \text{ C1 } Ex \text{ nB}$

rotate

`ror[1]` $R \Rightarrow 48 \text{ D1 } C(x+8)$
`ror[n]` $R \text{ K} \Rightarrow 48 \text{ C1 } C(x+8) \text{ nB}$
`rol[1]` $R \Rightarrow 48 \text{ D1 } Cx$
`rol[n]` $R \text{ K} \Rightarrow 48 \text{ C1 } Cx \text{ nB}$

bitwise logic

`not` $R \Rightarrow 48 \text{ F7 } Dx$
`or` $R \text{ S} \Rightarrow 48 \text{ 09 } \dots$
`xor` $R \text{ S} \Rightarrow 48 \text{ 31 } \dots$
`and` $R \text{ S} \Rightarrow 48 \text{ 21 } \dots$

miscellaneous

`nop` $\Rightarrow 90$

Destination Registers

`rax` $\Rightarrow 0$
`rbx` $\Rightarrow 3$
`rcx` $\Rightarrow 1$
`rdx` $\Rightarrow 2$
`rdi` $\Rightarrow 7$

Source Registers

x means source register number
 $R \text{ rax} \Rightarrow Cx$
 $R \text{ rbx} \Rightarrow D(x+8)$
 $R \text{ rcx} \Rightarrow C(x+8)$
 $R \text{ rdx} \Rightarrow Dx$
 $R \text{ rdi} \Rightarrow F(x+8)$