

Princeton University  
 COS 217: Introduction to Programming Systems  
 Examples of x86-64 Instruction Operands

Type of Operand	Syntax	Semantics
<b>Immediate</b>	\$4 \$i	4 i (that is, the address denoted by i)
<b>Register</b>	%rax	reg[RAX]
<b>Memory: Direct/ Absolute Addressing</b>	4 i	mem[4] mem[i]
<b>Memory: Indirect Addressing</b>	(%rax)	mem[reg[RAX]]
<b>Memory: Base + Displacement Addressing</b>	4(%rax) i(%rax)	mem[4 + reg[RAX]] mem[i + reg[RAX]]
<b>Memory: Indexed Addressing</b>	(%rax,%r10) 4(%rax,%r10) i(%rax,%r10)	mem[reg[RAX] + reg[R10]] mem[4 + reg[RAX] + reg[R10]] mem[i + reg[RAX] + reg[R10]]
<b>Memory: Scaled Indexed Addressing</b>	(,%r10,8) 4(,%r10,8) i(,%r10,8) (%rax,%r10,8) 4(%rax,%r10,8) i(%rax,%r10,8)	mem[reg[R10] * 8] mem[4 + (reg[R10] * 8)] mem[i + (reg[R10] * 8)] mem[reg[RAX] + (reg[R10] * 8)] mem[4 + reg[RAX] + (reg[R10] * 8)] mem[i + reg[RAX] + (reg[R10] * 8)]