

Princeton University  
 COS 217: Introduction to Programming Systems  
 Examples of IA-32 Instruction Operands

Type of Operand	Syntax	Semantics
<b>Immediate</b>	\$5 \$i	5 i (that is, the address denoted by i)
<b>Register</b>	%eax	reg[EAX]
<b>Memory: Direct/ Absolute Addressing</b>	i	mem[i]
<b>Memory: Indirect Addressing</b>	(%eax)	mem[reg[EAX]]
<b>Memory: Base + Displacement Addressing</b>	5(%eax) i(%eax)	mem[5 + reg[EAX]] mem[i + reg[EAX]]
<b>Memory: Indexed Addressing</b>	(%eax,%ecx) 5(%eax,%ecx) i(%eax,%ecx)	mem[reg[EAX] + reg[ECX]] mem[5 + reg[EAX] + reg[ECX]] mem[i + reg[EAX] + reg[ECX]]
<b>Memory: Scaled Indexed Addressing</b>	(,%ecx,4) 5(,%ecx,4) i(,%ecx,4) (%eax,%ecx,4) 5(%eax,%ecx,4) i(%eax,%ecx,4)	mem[reg[ECX] * 4] mem[5 + (reg[ECX] * 4)] mem[i + (reg[ECX] * 4)] mem[reg[EAX] + (reg[ECX] * 4)] mem[5 + reg[EAX] + (reg[ECX] * 4)] mem[i + reg[EAX] + (reg[ECX] * 4)]