

CS250

x86 Assembly Programming Examples

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Description	C code	Assembly Code
Using b, l and q suffixes	<pre>int i=0; long j=1; char c='A'; i++; j++; c++;</pre>	<pre>movl \$0, %eax movq \$1, %rdi movb \$41, %cl incl %eax incq %rdi incb %cl</pre>
Using printf()	<pre>int i=10; printf ("%d \n", i);</pre>	<pre>movl \$10, %ecx .str: .string "%d \n" .text: movl \$.str, %edi movl %ecx, %esi movq \$0, %rax call printf</pre>
A simple function greater()	<pre>char greater (int *a, int *b) { if (*a>*b) return 1; else return 0; }</pre>	<pre>greater: movl (%rdi), %ecx movl (%rsi), %edx cmpl %ecx, %edx jg gtr movb \$0, %al ret gtr: movb \$1, %al ret</pre>
while loop	<pre>while (i<10) { //CODE// }</pre>	<pre>whileloop: cmpl \$10, %ecx jge endwhileloop //CODE// jmp whileloop endwhileloop:</pre>

Description	C code	Assembly Code
for loop	<pre>for (i=0;i<5;i++) { //CODE// }</pre>	<pre>movl \$0, %ecx forloop: cmpl \$5, %ecx jge endforloop //CODE// incl %ecx jmp forloop endiforloop:</pre>
if..else statement	<pre>if (i==2) { //CODE1 } else { //CODE2 }</pre>	<pre>cmpl \$2, %ecx jne elsetrue //CODE1// jmp endif elsetrue: //CODE2// endif:</pre>
Using leaq	<pre>long rcx=rdi+4*rsi; long rcx=rdi+8;</pre>	<pre>leaq (%rdi, %rsi, 4), %rcx long rcx=rdi+8;</pre>