

Byte	0	1	2	3	4	5	6	7	8	9
halt	0	0								
nop	1	0								
rrmovq rA , rB	2	0	rA	rB						
irmovq V , rB	3	0	F	rB	V					
rmmovq rA , D(rB)	4	0	rA	rB	D					
mrmovq D(rB) , rA	5	0	rA	rB	D					
OPq rA , rB	6	fn	rA	rB						
jXX Dest	7	fn	Dest							
cmovXX rA , rB	2	fn	rA	rB						
call Dest	8	0	Dest							
ret	9	0								
pushq rA	A	0	rA	F						
popq rA	B	0	rA	F						

Operations	Branches		Moves											
addq <table><tr><td>6</td><td>0</td></tr></table>	6	0	jmp <table><tr><td>7</td><td>0</td></tr></table>	7	0	jne <table><tr><td>7</td><td>4</td></tr></table>	7	4	rrmovq <table><tr><td>2</td><td>0</td></tr></table>	2	0	cmovne <table><tr><td>2</td><td>4</td></tr></table>	2	4
6	0													
7	0													
7	4													
2	0													
2	4													
subq <table><tr><td>6</td><td>1</td></tr></table>	6	1	jle <table><tr><td>7</td><td>1</td></tr></table>	7	1	jge <table><tr><td>7</td><td>5</td></tr></table>	7	5	cmovle <table><tr><td>2</td><td>1</td></tr></table>	2	1	cmovge <table><tr><td>2</td><td>5</td></tr></table>	2	5
6	1													
7	1													
7	5													
2	1													
2	5													
andq <table><tr><td>6</td><td>2</td></tr></table>	6	2	j1 <table><tr><td>7</td><td>2</td></tr></table>	7	2	jg <table><tr><td>7</td><td>6</td></tr></table>	7	6	cmovl <table><tr><td>2</td><td>2</td></tr></table>	2	2	cmovg <table><tr><td>2</td><td>6</td></tr></table>	2	6
6	2													
7	2													
7	6													
2	2													
2	6													
xorq <table><tr><td>6</td><td>3</td></tr></table>	6	3	je <table><tr><td>7</td><td>3</td></tr></table>	7	3		cmove <table><tr><td>2</td><td>3</td></tr></table>	2	3					
6	3													
7	3													
2	3													

Figure 4.3 Function codes for Y86-64 instruction set. The code specifies a particular integer operation, branch condition, or data transfer condition. These instructions are shown as OPq, jXX, and cmovXX in Figure 4.2.

Number	Register name	Number	Register name
0	%rax	8	%r8
1	%rcx	9	%r9
2	%rdx	A	%r10
3	%rbx	B	%r11
4	%rsp	C	%r12
5	%rbp	D	%r13
6	%rsi	E	%r14
7	%rdi	F	No register

Figure 4.4 Y86-64 program register identifiers. Each of the 15 program registers has an associated identifier (ID) ranging from 0 to 0xE. ID 0xF in a register field of an instruction indicates the absence of a register operand.