

## Homework 8

### Y86-64 Instructions

Please write down the byte codes of the following Y86-64 instructions.

Y86-64 instructions	Byte codes (hex value)
rrmovq %rbx, %rdx	[1]
jmp 0xabc	[2]
addq %rbx, %rax	[3]
call 0x1234	[4]
rmmovl %rcx, 0x12(%rbx)	[5]
jle 0x280	[6]
pushq %rax	[7]

### Y86-64 Programs

0x000:		.pos 0
0x000: 30f4 00100000 00000000		Init: irmovq 0x1000, %rsp
0x00a: 30f5 00100000 00000000		irmovq 0x1000, %rbp
0x014: _[1]_		call Main
0x01d: 00		halt
_[2]_:		.align 8
_[3]_: 33010000 00000000		Array: .quad 0x133
0x028: fc0d0000 00000000		.quad 0xdfc
0x030: 2f0f0000 00000000		.quad 0xf2f
0x038: 33020000 00000000		.quad 0x_[4]_
_[5]_: a05f		Main: pushq %rbp
0x042: 2045		rrmovq %rsp, %rbp
0x044: a03f		____[6]____
0x046: ____[7]____		irmovq Array, %rdx
0x050: 5002 00000000 00000000		mrmovq (%rdx), %rax
0x05a: 5032 08000000 00000000		mrmovq 8(%rdx), %rbx
0x064: 5012 10000000 00000000		mrmovq 0x10(%rdx), %rcx
0x06e: 5022 18000000 00000000		mrmovq 0x18(%rdx), %rdx

<b>_ [8] _:</b>	<b>_____ [9] _____</b>	<b> </b>	<b>addq %rax, %rbx</b>
<b>0x07a:</b>	<b>6112</b>	<b> </b>	<b>subq %rcx, %rdx</b>
<b>0x07c:</b>	<b>6131</b>	<b> </b>	<b>_____ [10] _____</b>
<b>0x07e:</b>	<b>b03f</b>	<b> </b>	<b>popq %rbx</b>
<b>0x080:</b>	<b>70 55000000 00000000</b>	<b> </b>	<b>jmp End</b>
<b>0x08a:</b>	<b>2054</b>	<b> </b>	<b>End: rrmovq %rbp, %rsp</b>
<b>0x08c:</b>	<b>b05f</b>	<b> </b>	<b>popq %rbp</b>
<b>0x08e:</b>	<b>90</b>	<b> </b>	<b>ret</b>

1. Please fill in the blanks within above Y86-64 binary and assembly code.
2. Please calculate the value of below registers after the program HALT.

%rdx	[1]
%rsp	[2]
CC.ZF	[3]
CC.SF	[4]
CC.OF	[5]