

# CS 210: Principles of Computer Organization

## IJVM

<u>Op-code (Hex)</u>	<u>Assembly Language Mnemonic</u>	<u>Operands</u>	<u>Description</u>
0x10	BIPUSH	byte	Push a byte onto stack
0x59	DUP	N/A	Copy top word on stack and push onto stack
0xA7	GOTO	label name	Unconditional jump
0x60	IADD	N/A	Pop two words from stack; push their sum
0x7E	IAND	N/A	Pop two words from stack; push Boolean AND
0x99	IFEQ	label name	Pop word from stack and branch if it is zero
0x9B	IFLT	label name	Pop word from stack and branch if it is less than zero
0x9F	IF_ICMPEQ	label name	Pop two words from stack and branch if they are equal
0x84	IINC	variable name, byte	Add a constant value to a local variable
0x15	ILOAD	variable name	Push local variable onto stack
0xB6	INVOKEVIRTUAL	method name	Invoke a method
0x80	IOR	N/A	Pop two words from stack; push Boolean OR
0xAC	IRETURN	N/A	Return from method with integer value
0x36	ISTORE	variable name	Pop word from stack and store in local variable
0x64	ISUB	N/A	Pop two words from stack; push their difference
0x13	LDC_W	constant name	Push constant from constant pool onto stack
0x00	NOP	N/A	Do nothing
0x57	POP	N/A	Delete word from top of stack
0x5F	SWAP	N/A	Swap the two top words on the stack
0xC4	WIDE	N/A	Prefix instruction; next instruction has a 16-bit index

1. Give two different IJVM translations for the following Java statement

$i = k + n + 5;$

2. Give the Java statement that produces the following IJVM code:

```
ILOAD j  
ILOAD n  
ISUB  
BIPUSH 7  
ISUB  
DUP  
IADD  
ISTORE i
```