

CS2010 Quiz 2

Name: _____

1. (2) Which of the following is not contained in a CPU? _____

- A. Instruction register B. Program counter
C. General-purpose register D. Memory cell

2. The following table shows a portion of a machine's memory containing a program written in the language described in the language description table. Answer the questions below assuming that the machine is started with its program counter containing 00.

address	content		address	content
00	10		10	B0
01	04		11	13
02	23		12	25
03	04		13	B0
04	B3		14	1C
05	10		15	C0
06	21		16	00
07	C0		17	C0
08	31		18	00
09	0E		19	23
0A	22		1A	B0
0B	00		1B	03
0C	32		1C	B0
0D	0F		1D	17
0E	FF			
0F	FF			

A. (3) What bit pattern will be in register 0 after the execution of instruction at the address of 00? _____

B. (3) What bit pattern will be in register 3 after the execution of instruction at the address of 02? _____

C. (3) What bit pattern will be in the program counter after the execution of instruction at the address of 04? _____

D. (3) What bit pattern will be in register 2 after the execution of instruction at the address of 0A? _____

E. (4) What bit pattern will be in the program counter when the machine halts? _____

F. (2) If the content at the address of 01 is 03, what bit pattern will be in the program counter when the machine halts? _____

The following table is from Appendix C of the text. It is included here so that it can be incorporated in tests for student reference. Questions in this test bank refer to this table as the “language description table.”

Op-code	Operand	Description
1	RXY	LOAD the register R with the bit pattern found in the memory cell whose address is XY. <i>Example:</i> 14A3 would cause the contents of the memory cell located at address A3 to be placed in register 4.
2	RXY	LOAD the register R with the bit pattern XY. <i>Example:</i> 20A3 would cause the value A3 to be placed in register 0.
3	RXY	STORE the bit pattern found in register R in the memory cell whose address is XY. <i>Example:</i> 35B1 would cause the contents of register 5 to be placed in the memory cell whose address is B1.
4	ORS	MOVE the bit pattern found in register R to register S. <i>Example:</i> 40A4 would cause the contents of register A to be copied into register 4.
5	RST	ADD the bit patterns in registers S and T as though they were two’s complement representations and leave the result in register R. <i>Example:</i> 5726 would cause the binary values in registers 2 and 6 to be added and the sum placed in register 7.
6	RST	ADD the bit patterns in registers S and T as though they represented values in floating-point notation and leave the floating-point result in register R. <i>Example:</i> 634E would cause the values in registers 4 and E to be added as floating-point values and the result to be placed in register 3.
7	RST	OR the bit patterns in registers S and T and place the result in register R. <i>Example:</i> 7CB4 would cause the result of ORing the contents of registers B and 4 to be placed in register C.
8	RST	AND the bit patterns in register S and T and place the result in register R. <i>Example:</i> 8045 would cause the result of ANDing the contents of registers 4 and 5 to be placed in register 0.
9	RST	EXCLUSIVE OR the bit patterns in registers S and T and place the result in register R. <i>Example:</i> 95F3 would cause the result of EXCLUSIVE ORing the contents of registers F and 3 to be placed in register 5.
A	R0X	ROTATE the bit pattern in register R one bit to the right X times. Each time place the bit that started at the low-order end at the high-order end. <i>Example:</i> A403 would cause the contents of register 4 to be rotated 3 bits to the right in a circular fashion.
B	RXY	JUMP to the instruction located in the memory cell at address XY if the bit pattern in register R is equal to the bit pattern in register number 0. Otherwise, continue with the normal sequence of execution. (The jump is implemented by copying XY into the program counter during the execute phase.) <i>Example:</i> B43C would first compare the contents of register 4 with the contents of register 0. If the two were equal, the pattern 3C would be placed in the program counter so that the next instruction executed would be the one located at that memory address. Otherwise, nothing would be done and program execution would continue in its normal sequence.
C	000	HALT execution. <i>Example:</i> C000 would cause program execution to stop.