



Daily Practice Problems: Micro-Operations & Instructions

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Question 1

Consider a register-based architecture system which can support maximum 2-address instructions. For this system the following intermediate code is going to be converted in machine code. Minimum how many registers are required in system so that the code can run without register spill?

$$t1 = X + Y$$

$$t2 = Z * 2$$

$$t3 = t2 + A$$

$$t4 = t3 - t1$$

$$t5 = t4 + t3$$

a) 1

b) 2

c) 3

d) None

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Question 2

Consider an AC-based architecture system. For this system the following intermediate code is going to be converted in machine code. Minimum how many registers are required in system so that the code can run without register spill?

$t1 = X + Y$

a) 1

$t2 = t1 - Z$

b) 2

$t3 = t1 + t2$

c) 3

$t4 = t3 + m$

d) None

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Question 3

Consider a register-memory architecture system. For this system the following intermediate code is going to be converted in machine code. Minimum how many registers are required in system so that the code can run without register spill?

$t1 = X + Y$

a) 1

$t2 = t1 - Z$

b) 2

$t3 = t1 + t2$

c) 3

$t4 = m + t3$

d) None

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Question 4

The memory of a computer has 256K words of 32-bit each. The computer has an instruction format with four fields; an operation code field, a mode field to specify one of 8 addressing modes, a register address field to specify one of the 64 processor registers and a memory address field. Specify the instruction format and the number of bits in each field if the instruction is stored exactly in one word? Maximum How many instructions supported by the computer?

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Question 5 ESE-19

A digital computer has a memory unit with 32-bits per word. The instruction set consists of 240 different operations. All the instructions have an operation code part (opcode) and an address part (allowed for only 1 address). Each instructions is stored in on word of memory.

- 1.How many bits are needed for opcode?
- 2.How many bits are left for address part of instruction?
- 3.What is the maximum allowable size of memory?

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Question 6

A computer supports only 3 address instructions with length 35-bits each. There are 129 distinct instructions supported by the system. If the memory used in the system is word addressable with word size of 32 bits. The maximum size memory supported by system is _____ KBytes?

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Question 8

Disadvantage of using 2-address instructions in place of 1-address instructions is/are?

1. More memory required for program
2. Larger sized instructions
3. More number of instructions

- (A) Only 1
(B) Only 1 & 3
(C) Only 2
(D) All 1, 2 and 3

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Question 7

Advantage of using 4-address instructions in place of 3-address instructions is?

1. Less memory required for program
2. Smaller sized instructions
3. Less number of instructions

- (A) Only 1
(B) Only 1 & 3
(C) Only 2
(D) None

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