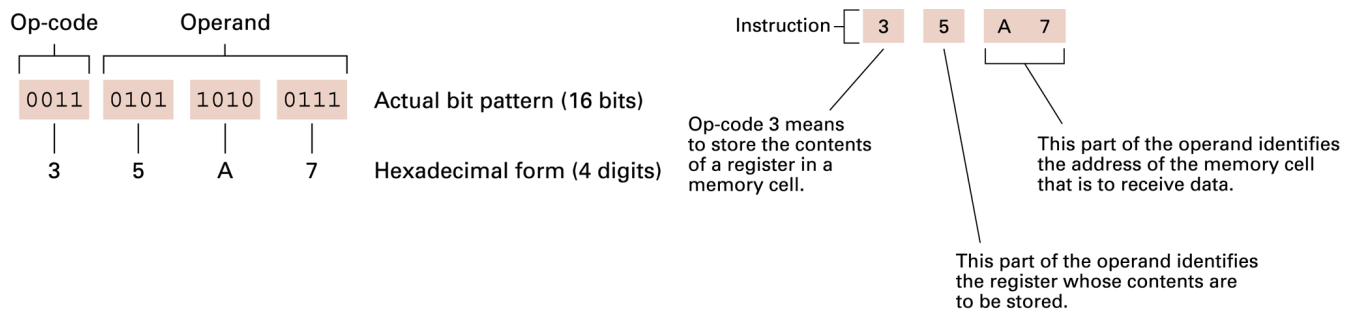


Model 1 Machine Instructions



Questions (8 min)

Start time: _____

1. How many bits is the op-code? How many possible op-codes can the machine support?

With 4-bit op-codes, the machine can have at most 16 different op-codes.

2. The op-code for loading data from memory into a register is 1. Write an instruction (in hex) for loading data from address 3D into register 4.

143D

3. Why is the instruction register in ?? twice as large as the other registers? How many memory cells are needed to store a single instruction?

Instructions are 16 bits, and memory cells are 8 bits; one instruction takes up two cells. Note the instructions need to be large enough for their operand to represent a memory address.