

Quick Review Questions 1

Consider a computer that is used for simple numerical problems. It uses 9 bits for an opcode and 25 bits for a memory address.

- a) What is the size of its instruction? 34 bits $6+12$
opcode + address code
- b) How many different instructions can it have? $2^6 = 64$
- c) What is the maximum size that it can address? $2^{12} = 4K$
- (Hint: Assume that 2^{10} is about 1M).

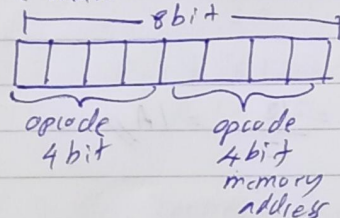
Tut. 02

Quick Review Questions 2

Given a CPU with a 8 bit word, 8 registers and instructions that are exactly 1 word long and which has 2 operands

- a) How long can the opcode field be in an instruction?
- b) How many instructions can the CPU support?

A) a) 8 bit \rightarrow 1 word - instruction size = 8 bits
opcode size should be less than the memory address
so the maximum size of opcode should be 4 bit.



b) $2^8 = 256$

Quick Review Question 3

Q) Consider a computer that is used for simple numerical problems. It uses 9 bits for an opcode and 25 bits for a memory address.

a) What is the size of its instructions?
32 bits

$$\begin{aligned}\text{Instruction size} &= \text{opcode} + \text{memory address} \\ &= 9 \text{ bits} + 25 \text{ bits} \\ &= \underline{\underline{32 \text{ bits}}}\end{aligned}$$

b) How many different instructions can it have?
 $\underline{\underline{2^9 = 512 \text{ bits}}}$

c) What is the maximum memory size that it can address?
 $2^{25} / 2^{20} = 2^5 = 32 \text{ M}$
(Hint: Assume that 2^{20} is about 1M)