Topic for today:

Expanding Opcodes

Addressing modes

Expanding opcodes

An instruction set in which the opcode is of variable length is said to have an *expanding opcode*.

Instruction types

Instructions fall into several broad categories that you should be familiar with:

- Data movement.
- Arithmetic.
- Boolean.
- Bit manipulation.
- I/O.
- Control transfer.
- Special purpose.

3

Addressing

- Addressing modes specify where an operand is located.
- They can specify a constant, a register, or a memory location.
- The actual location of an operand is its *effective address*.
- Certain addressing modes allow us to determine the address of an operand dynamically.

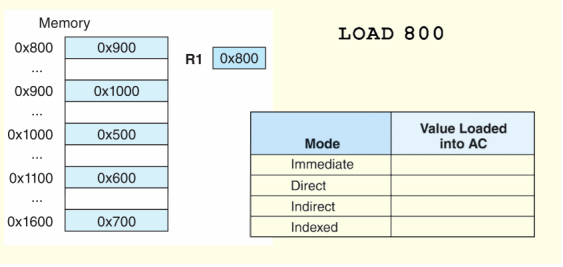
4

Addressing modes

- Immediate
- Direct
- Indirect
- Register
- Register indirect
- Indexing
- (*Lots of others*)

Addressing

- For the instruction shown, what value is loaded into the accumulator for each addressing mode?

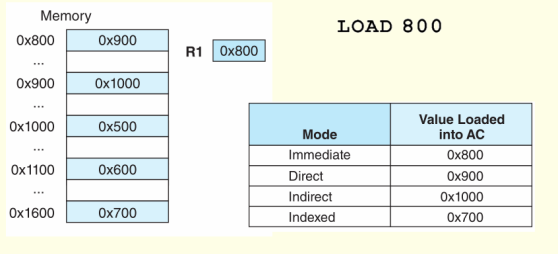


Mode	Value Loaded into AC
Immediate	
Direct	
Indirect	
Indexed	

6

Addressing

- For the instruction shown, what value is loaded into the accumulator for each addressing mode?



Mode	Value Loaded into AC
Immediate	0x800
Direct	0x900
Indirect	0x1000
Indexed	0x700

7