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Topics Covered

Addressing Modes
Pseudo Code

Addressing Modes

•Direct:

- This is just like extended, except that the address range is from $00 to $FF. I.e., the operand is an eight-bit address.
- It is used instead of extended because it takes less room to store and it's quicker to fetch data in this region of memory.
- As an example, LDAA $45 retrieves the data stored in address $45 and puts it into ACCA.

•Indexed:

- The operand in this case is an integer followed by a comma and either an X or a Y.
- The operand represents an address, determined by adding the offset (the integer before the comma) to the value in either IX or IY.
- For example, if IX contained the address $1000, then the command LDAA 9,X would retrieve the data stored in address $1009 and put it into ACCA

Addressing Modes

- **Relative:**
  - This method of addressing takes the operand, which can only be a one-byte value from $00 to $FF, and adds it to the program counter. This will cause the next instruction to be executed at the new address in the program counter. Remember that only the "branch" instructions use relative addressing.
  - The addition is 2's complement signed addition, so any number from -128 to 127 can be added. (I.e., the program counter can be forced to jump up to 128 addresses backwards or 127 addresses forward.) If you get outside of this range, you need to use the JMP instruction.
  - Example, BRA $24 adds a hexadecimal $24 to the current address in the program counter.
- **Inherent:**
  - In this case there is no operand.
  - This is due to the assembly language commands that operate on no data.
  - For example, INCA increments the accumulator ACCA. No data is needed.

Pseudo Code

•It is a methodology that allows the programmer to represent the implementation of an algorithm

•It's simply an implementation of an algorithm in the form of annotations and informative text written in plain English

•It has no syntax like any of the programming language and thus can't be compiled or interpreted by the computer

Pseudocode

- So, we could state this as:

```
IF (sugar is required)
   THEN add sugar;
   ELSE don't add sugar;
ENDIF;
```