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Topics Covered

Assembly Language

68HC11

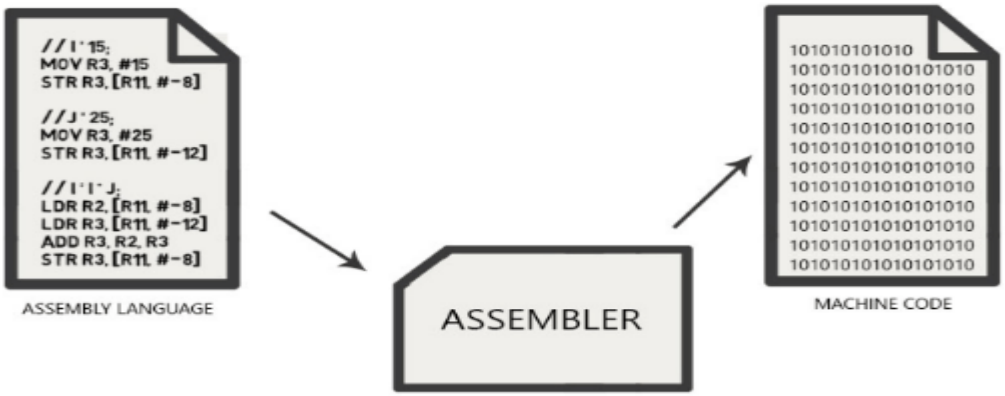
Addressing Modes

Assembly Language

•Each personal computer has a microprocessor that manages the computer's arithmetical, logical, and control activities

•A processor understands only machine language instructions, which are strings of 1's and 0's. However, machine language is too obscure and complex for using in software development

•The low-level assembly language is designed for a specific family of processors that represents various instructions in symbolic code and a more understandable form



- The 68HC11 supports a few different "data types," or ways of representing numbers.
- Most high-level languages (like C) support many data types, such as integers, floating point numbers, strings, and arrays. In assembly language, a programmer is given only "the bits" and must build more complex data types with subroutine libraries.
- The 68HC11 has two data types: 8-bit numbers and 16-bit numbers.
- There are instructions that process numbers of length eight bits (bytes), and there are instructions that process numbers of length sixteen bits (words).
- Keep in mind the range of an eight-bit number versus a sixteen-bit number.
- An eight-bit number can have 256 different values ($2^8=256$), and a sixteen-bit number can have 65536 different values ($2^{16}=65536$).

Addressing Modes

- **Immediate:**
  - This is when you want the operand to represent a specific number.
  - For example, if I wished to load accumulator ACCA with the hexadecimal number $45, this would be immediate addressing. You specify this mode by putting a "#" before the data. For example, LDAA #$45 loads a hexadecimal $45 into ACCA.
- **Extended:**
  - The operand in this case is an address from $0100 to $FFFF. (I'll explain in a second why it starts at $0100).
  - The actual data that will be used is the data stored at the address referred to by the operand. It is indicated by an absence of the pound sign.
  - For example, LDAA $1045 retrieves the data stored in address $1045 and puts it into ACCA.

MCQ

1. **for‘ loop in C program , if the condition is missing**
   a) assumed to be present and taken to be false
   b) assumed to be present and taken to be true
   c) syntax error
   d) execution will be terminated abruptly

2. **break statement can use with Loop ii)switch iii) block**
   a) only I
   b) only ii, iii
   c) only i, iii
   d) all

3. **Which among the following is not checked in switch case**
   a) character
   b) integer
   c) float
   d) none

4. **What are the entry controlled loops among the following i. while ii. Do-while iii. For**
   a) only i
   b) only ii,iii
   c) only iii
   d) only i, iii

5. **for(;;) can be terminated by**
   a) break
   b) exit
   c) return (0)
   d) all of the above