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Homework #1

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**CH1:**

1.16: Name at least 3 things specified by an ISA.

1. Memory Addressing Modes
2. List of instructions
3. Memory Architecture (Address Space, Addressability)

1.19: List the levels of transformation and name an example for each:

1. Problems – Providing a clear set of instructions to send to the machine.
2. Algorithms – Like soring vectors, bubble sort, specified commands that the machine does.
3. Language: Mechanical Language, C++, Java, Python, C#, C
4. Machine (ISA) Architecture – Where the app runs and talks to the hardware. Like when a kernel gets loaded when the machine turns on; which loads the operating system.
5. Microarchitecture – After ISA, then comes the implementation. Microchips.
6. Circuits: A design that is a balance between speed and cost.
7. Devices – CMOS, NMOS, Final put together for the device technology

**CH2:**

2.8:

A. What is the largest positive number one can represent in an 8-bit 2’s complement code? Write your result in binary and decimal.

The largest positive number that can be represented as 2’s compliment code using 8 bits is 01111111.

1. In binary, it is represented as 01111111

2. In decimal, it is represented as follows:

So, the decimal value is 127.