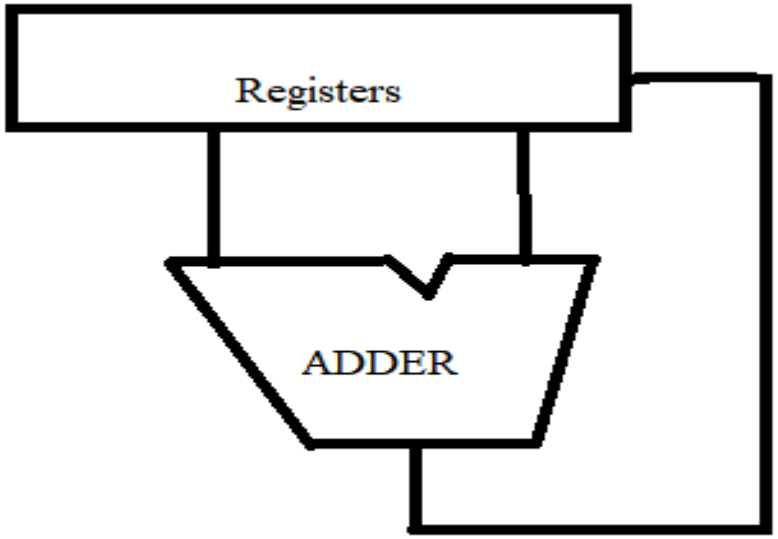
Computer Organization & Architecture-19CSE211

Consider this Case Scenario…

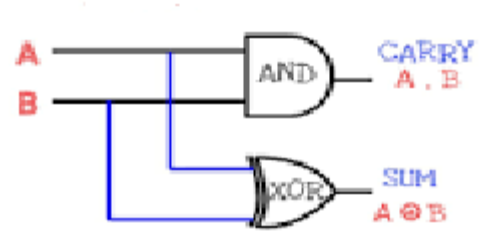
- Write a C code to find factorial of a number.
- for(i=1;i<=n;i++)
  fact=fact*i;
- The Instruction Set(ISA) Level
- load/add/store instructions
- Architectural Level



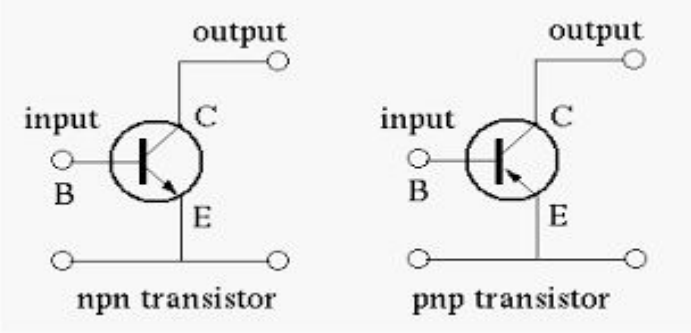
Varied levels of Abstraction……

- Digital Electronics-

  Logic Level



- Transistor Level



- Physics/Chemistry

Properties of atoms/electron

Abstraction omits unneeded detail, helps us cope with complexity

What is Computer Architecture & What is Computer Organization?

- Architecture is always concerned with what to do?
- Organization will take care of how to do?

- Architecture is concerned with High level Design-Analysis of what all types of instructions, Addressing Modes, Usage of Registers.
- Organization is concerned with Implementation or Building Process.

- ✓ Architecture carries higher precedence than Organization.
- ✓ Only after the Design (Architecture), Implementation (Organization) can be done.

Example for Computer Architecture & Computer Organization?

- If a calculator is to be built:
  - Architecture-Division operation
  - Organization-Implemented as single ‘div’ instruction or repeated ‘sub’ instruction

✓ Organization –Understands design issues or challenges

Comparison for Computer Architecture & Computer Organization?

Computer Architecture	Computer Organization
High level design and feature description	Realization of the high level design through Implementation
Connected to InstructionSet, Support for data types, memory consideration etc	More from implementation Aspect is given importatnce -selection of circuit components,peripherals, ALU implemetation etc
Logic wil be given importance	Implementation of the logic is given importance
What to do?	How to do?
Eg: In Calculator-decision to support for Multiplication	Multiplication to be implemented through repeated addition