

Summary of Important Items to Understand Chapter 1

1. Basic elements of a computer and their functions
 - Input
 - Output
 - Arithmetic and logic
 - Control
 - Memory
 - Bus
2. Basic terminology
 - Kilo
 - Mega
 - Giga
 - Tera
 - Milli
 - Micro
 - Nano
 - Pico
 - Most significant bit (msb)
 - Least significant bit (lsb)
3. Programmer's view
 - Compiler
 - Assembler
 - High level language
 - Assembly language
 - Machine language
 - Program
 - Stored program concept
 - Instruction
 - Instruction set architecture (ISA)
 - Operation code (Opcode)
 - Operands
 - Wordlength (byte, nibble, word)
 - Fetch-execute cycle
 - CISC (Complex Instruction Set Computer)
 - RISC (Reduced Instruction Set Computer)
4. Basic registers and their functions within the computer
 - Program counter
 - Instruction register
 - General-purpose registers
5. Bus structures
 - One bus

- Two bus
 - Serial and parallel
 - I/O bus
 - Memory bus
6. Signals which make up a bus
- Address
 - Data
 - Control (Read, write, etc.)
7. Computer logic design
- Data path
 - Control path
8. Instruction classes
- Data movement
 - Arithmetic and logic
 - Control flow
9. Memory hierarchy
- CPU registers
 - Cache memory
 - Main memory
 - Disk memory
 - Tape memory
10. Implementation issues
- Logic building blocks (multiplexers, registers, programmable logic devices, etc.)
 - Timing
 - Register transfer languages
 - Register transfer notation
11. Computer history
- Relay computers
 - Vacuum tube computers
 - Transistor-based computers
 - Small and medium scale integration (SSI and MSI)
 - Very Large Scale Integration (VLSI)
12. Computer integration levels
- Microprocessor
 - Microcomputer