

Computer Architecture and Organization

Basic computer organization and design: Computer instructions and their codes, timing and control, execution of instructions. Input, output and interrupt. Assembly language: Programming loops, programming arithmetic & logic operations, subroutines, I/O programming. Central processor organization: Processor bus organization. Arithmetic logic unit, stack organization. Instruction formats. Addressing modes. Data transfer and manipulation, program control. Micro-program control organization: Control memory. Address sequencing. Arithmetic processor design and algorithms: Comparison and subtraction of unsigned binary numbers, addition and subtraction algorithms, multiplication and division algorithms. Input/output organization: Peripheral devices, asynchronous data transfer, direct memory access. Memory organization: Auxiliary memory, virtual memory, cache memory, memory management hardware. Pipeline and vector processing.