SRI VASAVI INSTITUTE OF ENGINEERING & TECHNOLOGY
(An Autonomous Institute)
(Approved by AICTE, New Delhi & Affiliated to JNTU Kakinada)
Accredited by NBA (Mech, ECE & CSE) & NAAC with 'A' Grade
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Department of Electronics & Communication Engineering

Differentiation

Name of the Faculty: K.Sai Sudheer   **AY: 2023-24**
Course: DSP
Course Code: C323   **Class: III B.Tech. – II Sem.**

Topic : Difference between Processors

The main difference between a Digital Signal Processor (DSP) and a general-purpose microprocessor lies in their architecture and optimization for specific tasks. DSPs are specialized for high-speed, repetitive mathematical operations, particularly in signal processing tasks like audio and video processing, while general-purpose microprocessors are designed for a wide range of computing tasks, including those that involve signal processing

Differentiation by Content

Parameters	DSP processor	Microprocessor
Instruction cycle	Instructions are executed in single cycle of the clock	Multiple clocks cycles are required for execution of one instruction.
Instruction execution	Parallel execution is possible.	Execution of instruction is always sequential.
Memories	Separate data and program memory.	No such separate memories are present.
On chip/Off chip memories	Program and Data memories are present on chip extendable off chip.	Normally on chip cache memory present, main memory is off chip.
Program flow control	Program sequencer and instruction register take care of program flow	Program counter take care of flow of execution.
Pipelining	Pipelining is implicate through instruction register and instruction cache.	Queuing is perform explicate by one queue register to support pipelining.
Operand Fetch	Multiple operands can be fetched simultaneously.	Operands are fetched sequentially.
Address and data bus multiplexing	Address and data bus are not multiplexed. They are separate on chip as well as off chip.	Address and data bus are multiplexed.
Computational units	Three separate computational units: ALU, MAC and shifter.	Only one main unit ALU.
On chip address and data bus	Separate address and data bus for program and data memory.	Address and data bus are the two buses on the chip
Addressing modes	Direct and indirect addressing modes.	Direct, indirect Register, Register indirect, Immediate addressing mode etc.
Application	Signal processing, audio processing, speech processing and array processing etc	General Purpose applications.

Signature of the Faculty