



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

Coimbatore-35

sns
INSTITUTIONS

DEPARTMENT OF BIOMEDICAL ENGINEERING

19BMB303 & Fundamentals of Microprocessors and Microcontrollers

Unit V - 32- BIT ARM PROCESSOR

III Year/ VI Sem

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ASP / BME / SNSCT**



MICROCONTROLLER BASED SYSTEM DESIGN



Reduced Instruction Set Computer

Design Physiology

RISC Vs CISC Architecture

ARM Processor Architecture

ARM Core data flow model, Barrel Shifter

ARM processor modes and families

Pipelining

ARM instruction Set and its Programming

Pulse oximeter using ARM processor



Pipelining

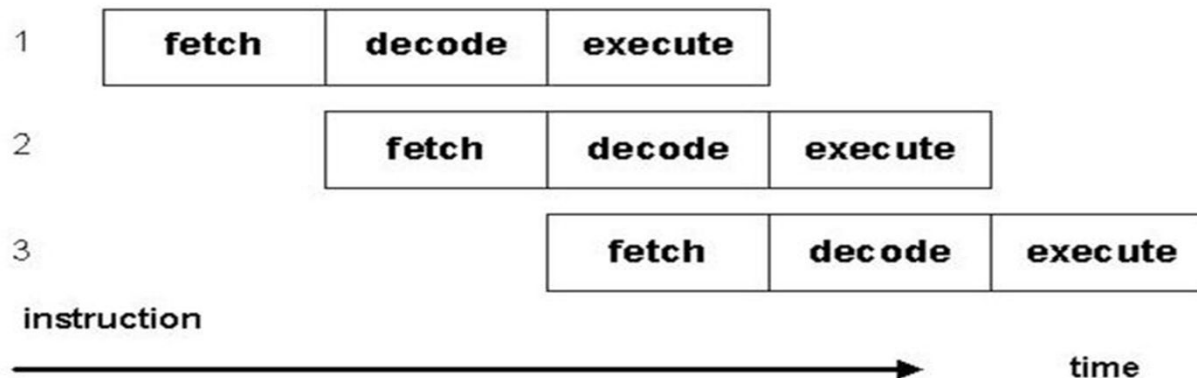
- **Pipelining** is a technique where **multiple instructions** are overlapped during execution, like an **assembly line**.
- Instead of completing one instruction before starting the next, ARM starts executing the next instruction while the previous one is still being processed.
- This **increases instruction throughput** — meaning **more instructions per second**



Pipelining

ARM processors up to the ARM7 employ a simple 3-stage pipeline with the following pipeline stages

1. ***Fetch***
2. ***Decode***
3. ***Execute***





Pipelining



Higher performance without increasing clock speed.

Better power efficiency (important for mobile devices).

Makes ARM processors suitable from **microcontrollers** to **smartphones**