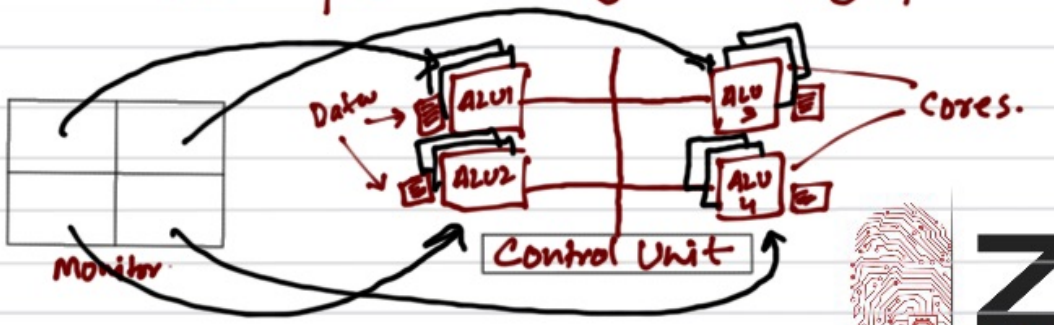
3.3.6 Parallel Processing:

1. SISD
2. SIMD
3. MISD
4. MIMD

Single Instruction Single Data (SISD)
↳ Single Processor
↳ Dedicated memory

Example: Von Neumann Architecture
This is not-parallel in nature.

Single Instruction Multiple Data (SIMD)
↳ Multiple ALU
↳ Also called "Array Processor"
↳ Used in graphics related applications like gaming.
↳ Separate memory for every core.
↳ Examples: Gaming Consoles, graphic cards.



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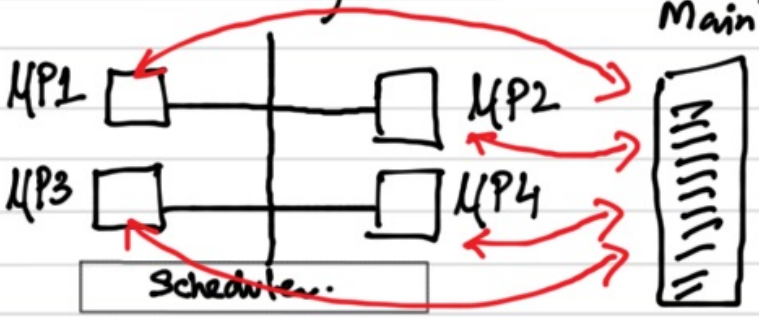
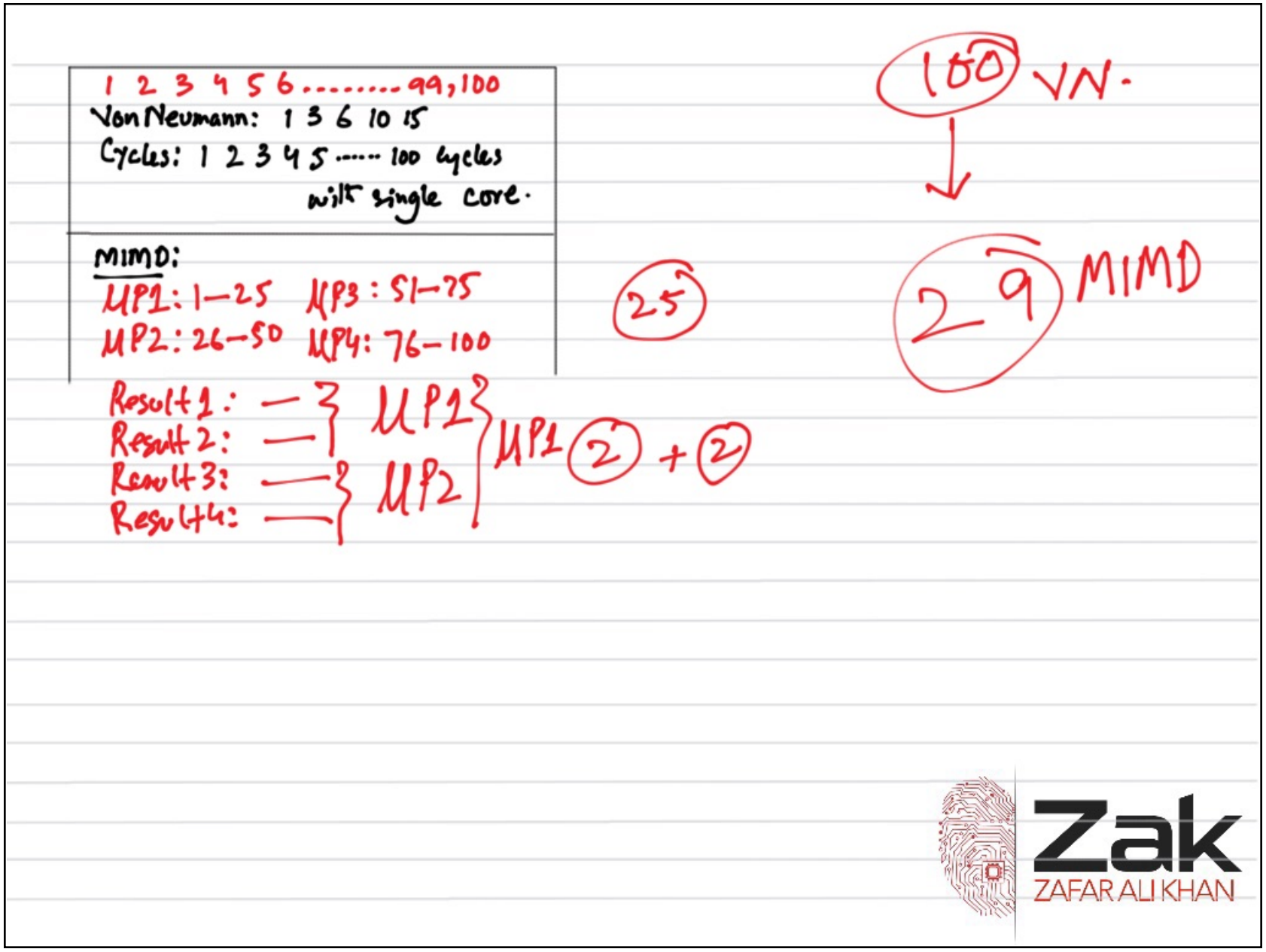
MULTIPLE INSTRUCTIONS SINGLE DATA (MISD):

- Not very common
- Just a form to be utilised mostly in S.W form
- Pipelining is an example.

MUTIPLE INSTRUCTIONS MULTIPLE DATA (MIMD):

- Multiple cores
- Working under Scheduler
- Shared main memory
- Single job can be divided among multiple processors/cores.
- Multiple processors may execute multiple jobs simultaneously.




1 2 3 4 5 6 ..... 99, 100
Von Neumann: 1 3 6 10 15
Cycles: 1 2 3 4 5 ..... 100 cycles
with single core.
MIMD:
MP1: 1–25 MP3: 51–75
MP2: 26–50 MP4: 76–100
Result 1: —
Result 2: —
Result 3: —
Result 4: —
MP1
MP2
MP1 (2) + (2)
25
100 VN.
2 9 MIMD
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