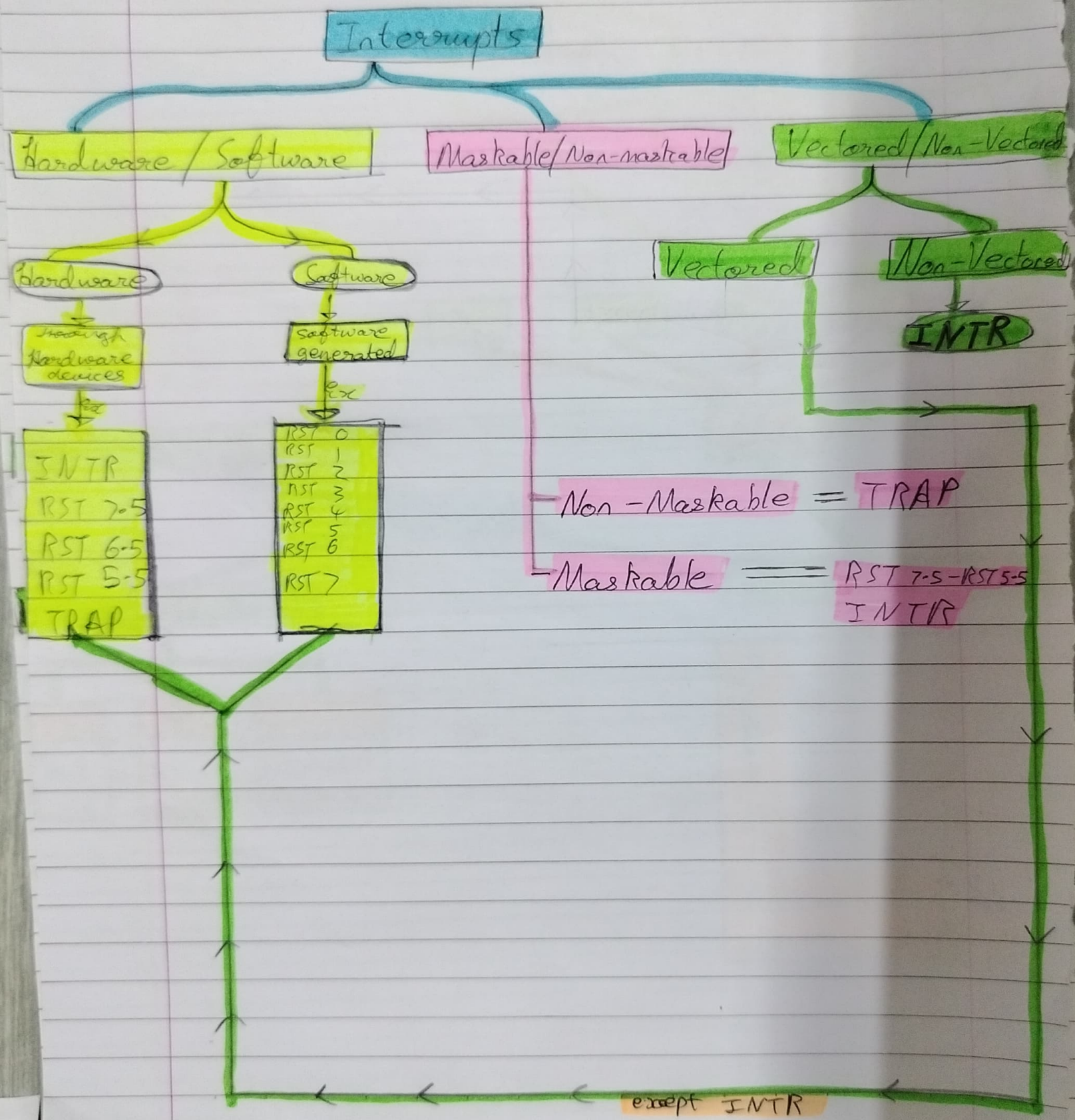
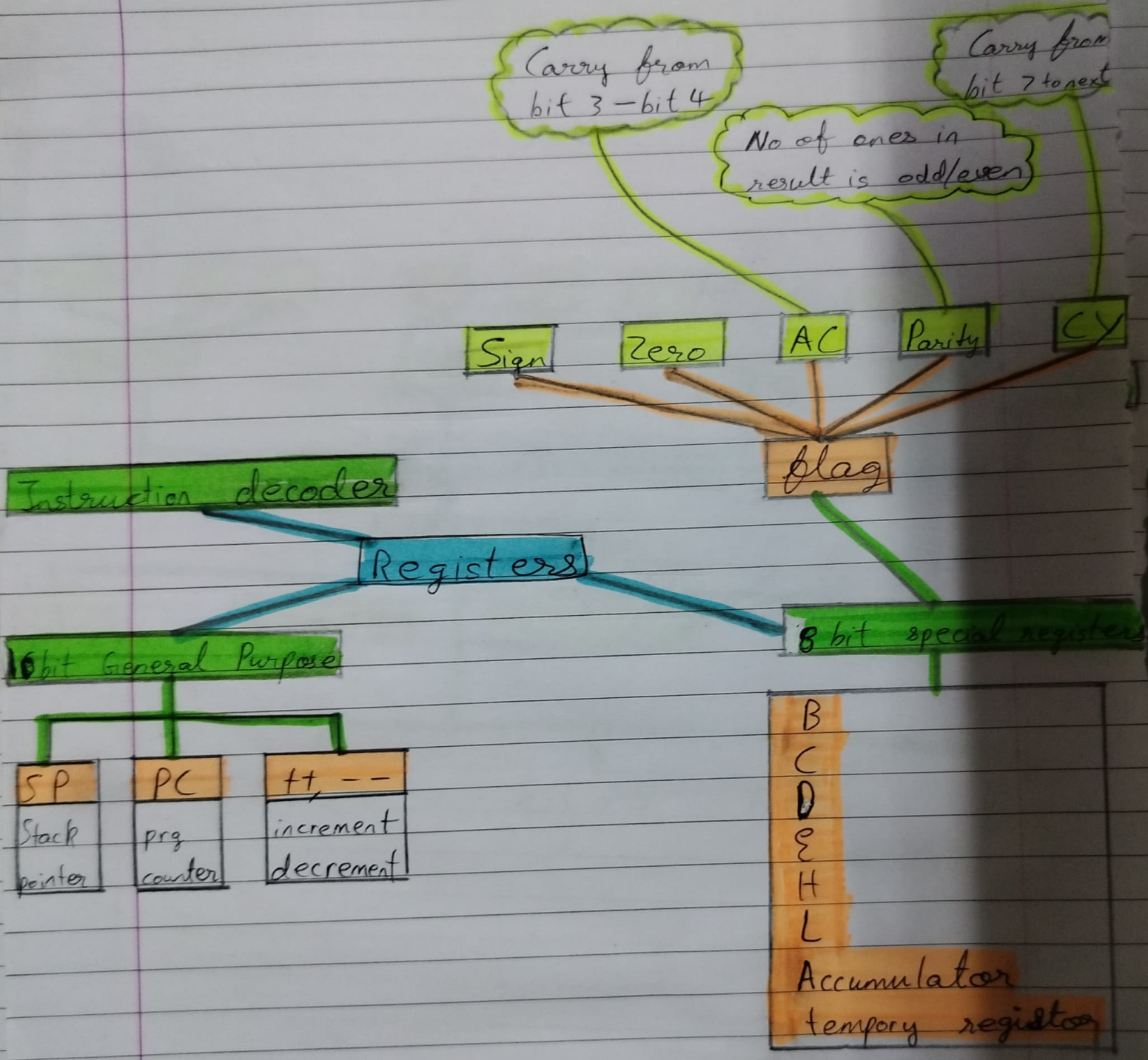
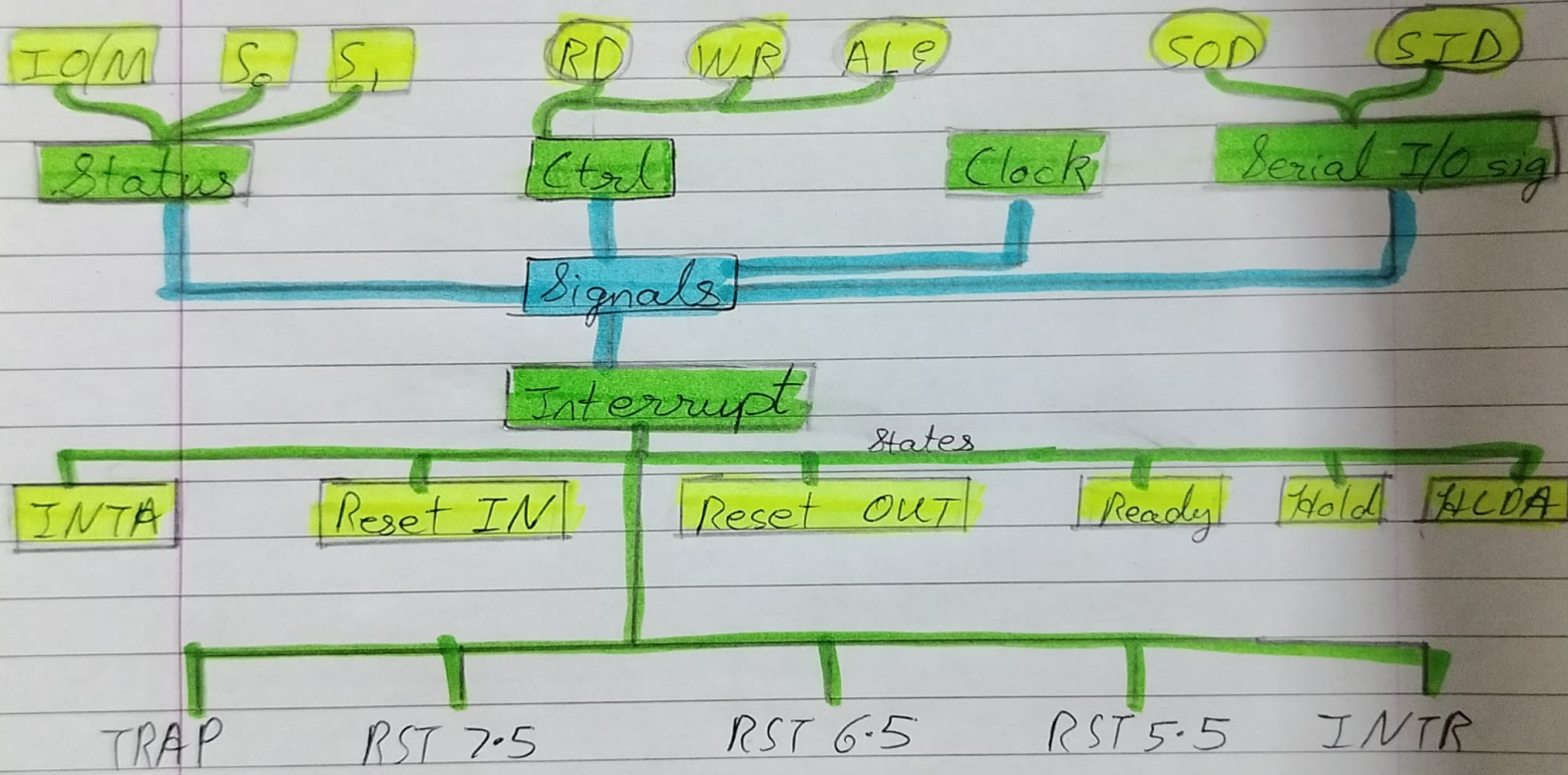
Study of major attributes of X-86 family

COMPUTER SCIENCE

Attribute	8086	8088	286	386 - SX	386 - DX	486 - SX	486 - DX	Pentium
Data Bus	16 bits	8 bits	16 bits	16 bits	32 bits	32 bits	32 bits	64 bits
Address Bus	20 bits	20 bits	24 bits	32 bits	32 bits	32 bits	32 bits	32 bits
Operating Speed (MHz)	5, 8	5, 8, 10	6, 8, 10, 12.5, 16, 20	16, 20, 25, 33	16 ,20 ,25 , 33, 40	25, 33, 50	25, 33, 50	50, 60, 66, 100
Instruction cache				16 bytes	16 bytes	32 bytes	32 bytes	8 Kbytes
Data Cache				256 bytes	256 bytes	8 Kbytes	8 Kbytes	8 Kbytes
Math coprocessor	External 8087	External 8087	External 80287	External 80287	External 80387	External 80387	Internal	Internal
Memory Management	External Unit	External Unit	Internal Unit	Internal Unit	Internal Unit	Internal Unit	Internal Unit	Internal Unit
Physical Memory addressed	1 Mbyte	1 Mbyte	16 Mbyte	4 Gbyte	4 Gbyte	4 Gbyte	4 Gbyte	4 Gbyte
Internal Data Word Size	16 bits	16 bits	16 bits	16 bits	32 bits	32 bits	32 bits	32 bits
Introduction date	1978	1978	1982	1985	1985	1989	1989	1993


Interrupts
Hardware / Software
Maskable/Non-maskable
Vectored/Non-Vectored
Hardware
Software
Vectored
Non-Vectored
through Hardware devices
software generated
ex
INTR
RST 7.5
RST 6.5
RST 5.5
TRAP
RST 0
RST 1
RST 2
RST 3
RST 4
RST 5
RST 6
RST 7
Non-Maskable = TRAP
Maskable == RST 7.5-RST 5.5 INTR
except INTR


Carry from bit 3 – bit 4
Carry from bit 7 to next
No of ones in result is odd/even
Sign
Zero
AC
Parity
CY
flag
Instruction decoder
Registers
16 bit General Purpose
8 bit special registers
SP
Stack pointer
PC
prg counter
++, --
increment decrement
B
C
D
E
H
L
Accumulator
tempory register


IO/M
S0
S1
RD
WR
ALE
SOD
SID
Status
Ctrl.
Clock
Serial I/O sig
Signals
Interrupt
States
INTA
Reset IN
Reset OUT
Ready
Hold
HLDA
TRAP
RST 7.5
RST 6.5
RST 5.5
INTR

Comparison of Network Topologies

Network Topologies: Advantages & Disadvantages

Topology	Main Characteristic	Advantages ☑	Disadvantages ✕
Bus 🚌	**Single cable** connects all devices	1. Simple setup 2. Cost-effective 3. Works for small networks	1. One cable failure = network down 2. Slow with many devices 3. Hard to troubleshoot
Ring 🔄	**Data moves in a loop**	1. No data collisions 2. Equal access for all 3. Works well under heavy load	1. One failure affects the whole network 2. Slower than star 3. Hard to reconfigure
Star ⭐	**Central hub controls network**	1. Easy to manage 2. High speed 3. Reliable (if one device fails, others work)	1. Hub failure = entire network down 2. More expensive 3. Uses more cables
Tree 🌳	**Branched structure** (like a tree)	1. Scalable for large networks 2. Easy to manage in sections 3. Good for hierarchical systems	1. Backbone failure affects the network 2. Expensive to set up 3. Complex structure
Mesh 🔗	**Multiple connections** between devices	1. Super reliable 2. No single point of failure 3. Handles high traffic well	1. Very expensive 2. Hard to set up 3. Requires lots of cables
Hybrid 🔀	**Mix of two or more topologies**	1. Flexible and scalable 2. Efficient for large systems 3. Can combine the best features	1. Complex setup 2. Expensive 3. Difficult to manage

Easy Memorization Tip

☑ **Advantages (Common to All Topologies):**

- Reliable (works well)
- Scalable (can grow)
- Efficient (good performance)

✕ **Disadvantages (Common to All Topologies):**

- Expensive (setup costs)
- Complex (hard to manage)
- Failure risk (if key parts break, problems occur)