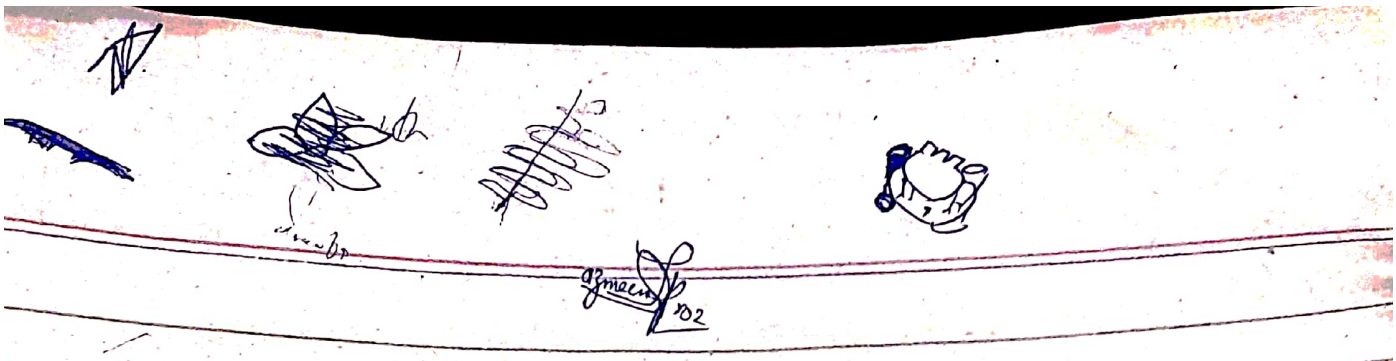
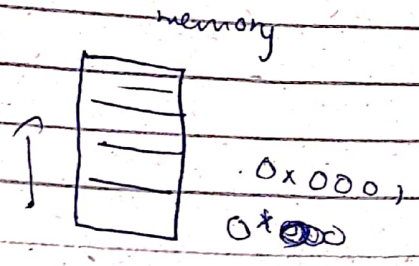
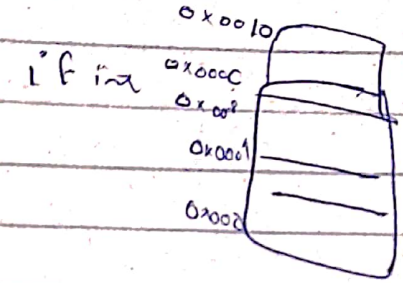
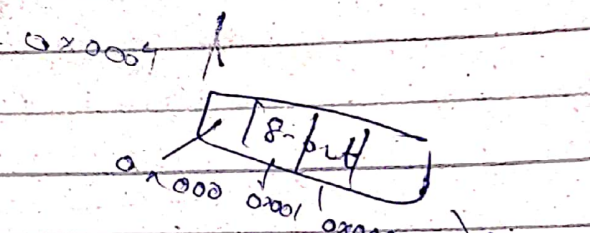




32 bit
if it is 8 bit addressable
then

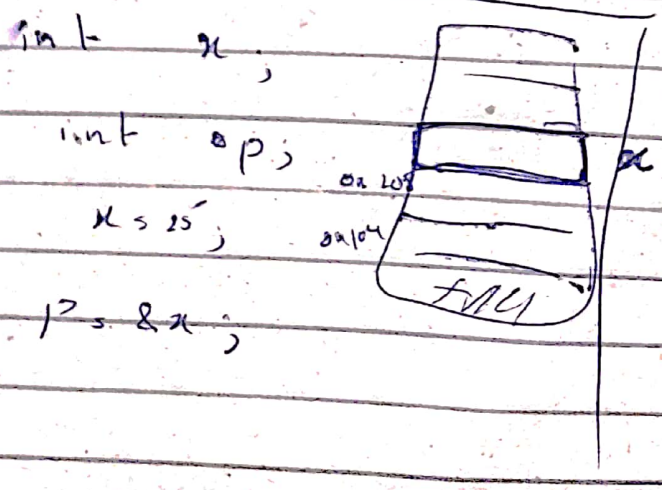


if int



nibble — 4-bit
byte — 8-bit
word — 16-bit
double-word — 32 bit
quad word — 64-bit

Stack → scalable



$x = 2^{10} \rightarrow 0 - 102$
if negative
$-512 - 1, 0 - 5$

Von neomann → [Data / Code] → same memory

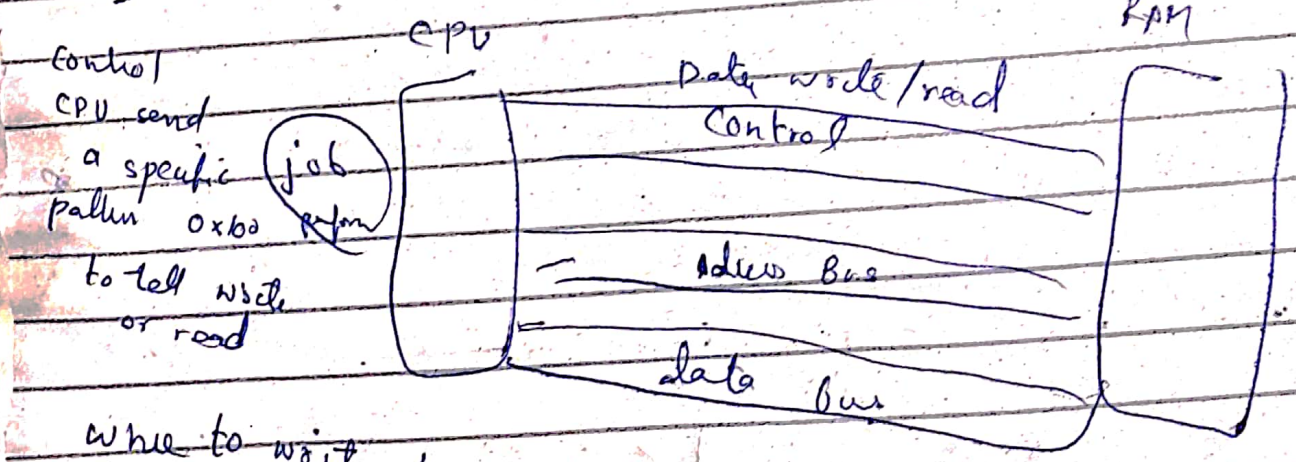
Harvard → [code] [data] → seperate memory

GPR
General Purpose registers

SFR
Seperate

Place at the top of the memory bcz memory start from 0 to High

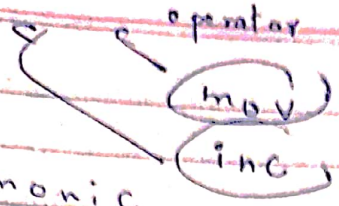
fetch Decode Execute
Computation



Where to write / Address bus / memory slots

What data
data bus

instruction



max 3 operands

Add ax, bx

destination source

chip

for ATmega328P

code

32 KB

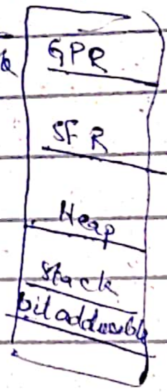
[org 0x0100] →

10 wires

$2^n - 1$

bit

byte addressable



interrupt
or
register

memory

bit addressable slot

byte addressable slot

A → Accumulator

B → base

C → count

D →

arithmetic →
accumulator register

org -> directive

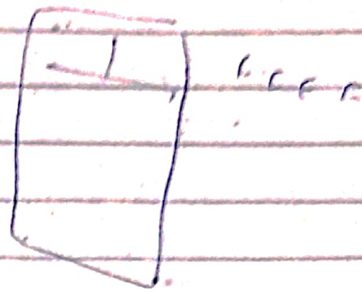
ret -> directive

↓

return

Coal

SP FFFE



mov [FFFE], 45000

word = 2 Byte

$2^{16} = 65536$

kbytes

$\frac{65536}{1024} = 64$ kbyte

$2^8 = 256$

0 - 255

4KB × 1024.

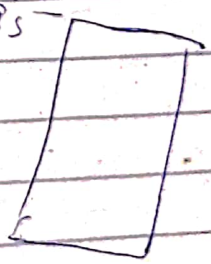
4096

FFF ← 400

0

0xFFF 4095

4KB



0005

0000 000 000 0101

= 0x000 0

16 bits

register

7202

Flags