ASSEMBLE VIVA

editor
ek software tool hota hai jo assembly language mein code likhne, edit, manage, modify aur debug karne ke liye use hota hai.

Assembler
Translator hota h jo assembly language ko machine code mein convert karta hai.

#Linker
ek tool hota hai jo alag-alag object files ko jod kar ek executable program banata hai.

#locator
ek tool ya software hai jo program ko memory mein load karne ke liye uske address specify karta hai, taki program sahi jagah par execute ho sake.

#debugger
Ek tool hota hai jo program ka execution step-by-step monitor karta hai aur bugs identify karne mein madad karta hai.

#Emulator
Ek software hota hai Jo operating system per ek virtual operating system banata hai jisse ham main operating system ki bajaye virtual operating system per application chala sakte hain

Asynchronous
Assembly mein asynchronous events interrupts se handle kiye jaate hain.

*latch
latch ek tarah ka memory element hota hai
jo data ko bina clock signal ke hold karta h

#difference
Latch: लेवल ट्रिगर होता है
मतलब जब भी input बदलता है, तब latch का output भी बदल जाता है.
Flip Flop: edge triggered होता
मतलब ये सिर्फ clock signal के बदलाव (rising edge या falling edge) के साथ ही अपना output बदलता है._

Simplex
Sender reciever ko ek direction mein data bhejta hai
Ex. tower signal to mobile

Half duplex mode
Sender ek baar mein data bhejne k baad reciver ki baari aati hai data ko bhejne ki
Ex. vocky tocky

Full duplex

Sender aur receiver ek dusre ko ek saath data bhejte aur recieve karte h
Ex. phone calls

Processor, ram, cpu
Processor aur ram k beech internal communication hoti h
Aur ram aur cpu k beech external comunication hoti h

*Dimm
RAM ka ek chhota package hota hai

*flash memory
Flash memory ek tarah ki non-volatile memory hoti hai
jise bar-bar erase aur program kiya ja sakta haim

*Raid
Redundant Array of Independent Disks
RAID data ko store karne ke liye kai hard disk ko ek saath मिला kar badi hard disk drive
banata h RAID data ki **copies** banakar **safe** rakhta hai, taki agar koi ek hard disk
drive fail ho jaati h to dusri copy se Backup liya ja sakta h m

direct mapping memoryj…. physical address par map ho jati hai

set associative mapping
memory management में एक technique है जहां cache lines को एक साथ कई sets में रखा जाता है

set associative
Set associative mapping एक memory management technique है जिसमें memory को sets में
बाँटा जाता है और हर address को एक set में map किया जाता है

*dma
DMA कंप्यूटर में सीपीयू cpu k bina memory aur ram k beech me data transfer hota

device controller
डिवाइस कंट्रोलर एक इलेक्ट्रॉनिक सर्किट होता है जो किसी खास डिवाइस से कंप्यूटर को बातचीत करने में
मदद करता है।

SRAM
ek tez aur mehenga memory hota hai
jo data ko bina refresh store karta hai

DRAM
ek sasta memory hota hai jo dheere hota hai aur data ko bar-bar refresh karna padta hai.

Decoder
Decoder. code aur encrypted message ko uski original form mein convert karta hai

#Data segment

program ke liye global aur static variable store hote Hain

*Code segment
Program ka part hota hai
Computer executable instruction ko samajhkar execute karta hai

*Stack segment
ek memory area hota hai Jahan temporary data aur function call information store hota hai

Register
computer ki memory mein ek Chhota hissa hota hai, yah Tej hota hai aur iska use data ko Store aur flow karne k liye hota h

Types of registers
General purpose -> jise ek se jyaada purpose k liye use kiya jata h
      1.ax accumulator
      2. Bx base
      3. Cx count
      4. Dx destinaton
Special purpose -> jise sirf ek purpose k liye use kiya jata h

MAR Memory address register
MBR Memory buffer register
MDR memory data register
PC Program counter
AR accumulator register
PC program counter
Current instruction register cir
Accumulator acc

*Accumulator
register ek special register hota hai
jo arithmetic operations aur temporary data storage ke liye use hota hai.

***Mar, Memory address register**
memory mein data ke location ka pata rakhta hai.

***Data register**
Memory mein data ko temporarily store karta hai.

Ar, Address register
memory mein data ka address store karta hai.

***Ir, Instruction register**
CPU ka part hota hai Jo current mein executed hua instruction ko store karta hai

*Pc, Program counter
Agale executive instruction k memory adress ko track karta hai

Int 21h
Int 21h ek DOS command hai jo computer se kaam karwane ke liye use hota hai, jaise file kholna ya band karna. ya print karna.

*AL, AH register
AL aur AH 8-bit general-purpose register hain
jinka upyog data aur instructions ko store karne ke liye kiya jata h

AL register ka upyog do sankhyaon ko jodne ke liye kiya ja sakta hai.
Least significant byte hota h

AH register ka upyog ek word ko output karne ke liye kiya ja sakta hai.
most significant byte hota h

*Flip flop
flip-flop ek tarah ka register hota hai jiska istemal data k ek bit ko store karne ke liye kiya jata hai, aur binary data store karta hai
ex SR flip flop, JK flip flop, d flip flop, t flip flop

*Loader
loader ek program hai jo ek object file ko memory mein load karta hai aur use chalata hai.

Encoder
जो information को एक format से दूसरे format में बदल देता है, usually size कम करने के लिए storage या transfer के लिए.

*Multiplexer
ek aisa digital circuit hai जो कई input signals mein se ek signal चुनकर output mein भेज देता है.

DONT CARE CONDITION
Isme karnag map ka use hota h
output 0 हो या 1 ho usse कोई फर्क नहीं पड़ता
kisi input k liye output par koi fark nhi padta

Local variable
Ek variable hota h
jise function k andar declare Kiya jata h

Global variable
Ek variable hota h
jise function k bahar declare Kiya jata h

Synchronous counter

Ek digital circuit hota h
jo clock signal ka use karta h events aur update ko
Count karne k liye aur apne output ko update karta rheta h

Ascii

ASCII (American Standard Code for Information Interchange)
jo sirf English ke letters aur kuch symbols ko hi support karta hai,
ASCII ek purana system hai
har character को ek unique code दिया जाता है.

*Unicode

Universal code
jo duniya bhar ki sabhi languages aur characters aur symbols ko support karta hai.
Unicode ek modern system hai Ismein har character को ek unique code दिया जाता है.

Complement

Ek binary no. Ko reciprocal karke nikale h aur 2s comp. Binary no. Me 1 ko add karke nikalte
h

IEEE

floating-point numbers ko represent करने का तरीका h
floating-point numbers ko memory mein store aur manipulate karte h

*Parity bit

Parity bit data transmission me error detect karne ke liye data ke saath ek extra bit होता h
Yeh 7 ya 8 bit ke data ke साथ use होता h

Hec

Hamming error code ek तरह का error correction code होता है
जिसे data transmission में errors को detect और correct करने के लिए use किया जाता है.

*Universal logic gate

Kisi bhi tarehe ka logic gate को बनाने के लिए इस्तेमाल किया जा सकता है.

SOP

Sum of product AB

POS

Product of sum A+B

*Combinational circuit

Ka output current input ke per depend karta hai

*Sequential circuit
Ka output current input aur phele state per Depend karta hai.

8086 microprocessor
ek computer chip hai
Cpu mein 8086 microprocessor data ko process karta h
large amount of data ko handle karta h
aur fast computing karta h

Interruption
ek signal hota hai jo CPU ka ek specific task ko rok kar ek dusra task karne ke liye force karta hai.

PLA
(Programmable Logic Array) एक ऐसा चिप है जिसे program करके digital logic functions कराए जा सकते हैं.

Edge-triggered circuit
सिग्नल ko badalne k liye use kiya jata h
high to low या low to high)

Cache memory
CPU ke andar ek chhoti aur fast memory hoti hai jo data or instruction ko store karti hai
Jisse fast access aur retrieval Kiya ja sake

Ram
 volatile hoti h jismain data ya progress destroy jata hai jab system band kar dete Hain

Rom
 non volatile hoti h jismein data ya progress save hota rahata hai aur permanently save hota hai fir chaye system ko band karde

Interpreter
high level language ko machine language mein line by line execute karta hai example ex. python

Compiler
Compiler ek translater hota hai jo high level language ko low level language mein convert karta hai
Yah ek bar mein pure code ko execute karta hai Ex c c++ Java

Operating system
computer mein ek software ya UI provide karta hai jisse computer ko chalana aasan ho jata hai
Os se computer mein data aur memory management hota hai

Operating system user ke liye security provide karta hai
Windows Android Linux Unix dos Mac

Number system
Binary - Base 2, digit 0 and 1
Octal - Base 8, digits 0-7
Decimal - base 10, digits 0-9
Hexadecimal - Base 16, digits 0-9 and A-F

***Latency**
Data ko ek jaghe se dusre jaghe pahuchne me kitna time lagta h
ek task ko pura karne mein kitna time ki unit lagti h instructions execute hone mein lagne wala time,hota h

***Seek time**
data ko dhoondne aur retreieve karne mein kitna time lagta hai.

***Busses in assembly**
Electrical paths hote hai
 jo data ko ek jaghe se dusri jaghe par exchange karti h

Basic computer architecture
Ram me data store hota h aur processor ram se data ko process karta h jese calculation

machine language
Me o or 1 ka use hota hai, difficult hoti hai

Assembly language
low level, 0 aur 1 ka bhi use hota hai, english ka bhi use hota h, Assembly language ka use operating system embedded system performance critical system software mein likhane ke liye use Kiya jata hai

High level
Jisme 0 or 1 use nahi hota hai
Aur english ka use hota hai
Java, javascript, python, c#

***Assembly Advantages**
Memory efficient Hota hai
kam memory ki need hoti hai
Yah speed mein fast hota hai aur execution time kam leta hai
Yah hardware oriented hoti hai

System software
Ismein pre install apps hote Hain
Operating system ka part hota hai Jaise notepad calculator camera

***Mov instruction**

Copy instruction hota h
Data ko ek jagah se dusri jagah per copy karta hai
Data bytes ko do operands ke bich mein move karta hai

*Logic gate
ek electronic circuit hai jo ek ya ek se jyaada input bit leta hai aur ek output bit generate karta ha

Logic gate ke types hote Hain
AND gate:
jab donon input 1 hote hain to output 1 hota hai.
OR gate:
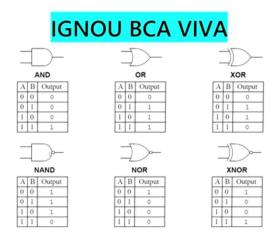jab koi bhi input 1 hota hai to output 1 hota hai.
NOT gate:
jab input 1 hota hai to output 0 hota hai.
XOR gate:
Me or gate ki condition hoti h aur
1 1 0 hota h

USER SE INPUT LENA AUR OUTPUT SHOW KARNA

Include 'emu8086.inc'
.stack 100h
.model small

.data

.code

        main proc

                print 'enter you character:'
                Mov ah, 01h   ; data al mein store hoga

```
            Int 21h

            mov bl, al        ;bl = al

            mov dl,10         ; new line
            mov ah,02h
            Int 21h

            mov dl,13         ; carriage return
            Mov ah,02h
            Int 21h

            Print 'you character : '

            mov dl,bl         ; dl = bl
            mov ah,02h
            Int 21h

      main endp

end main
```

Explaination:

https://chatgpt.com/share/6eebd607-3107-4112-ae31-e4518179a3a2