

1 Primary Storage Devices

Secondary Storage Devices

Devices

2 Secondary Storage Devices

Primary Storage Devices: Storage devices directly

accessible to the Microprocessor

are called as Primary storage

Devices.

Examples: RAM, Rom

·] RAM: It is an electrical dependent storage device used for temporary storage. Every program is loaded into RAM before execution.

RAM it becomes ROM.

Every ROM before becoming Rom is treated as RAM.

2] Secondary Storge Devices: Storage devices which are used for storing data permanently are called secondary Storage Devices.

Data is first stored in Primary & then gets loaded out Secondary

Hard Disk: Hard Disk is a secondary Storage Device used to store date using Magnetism

Any file created is saved on newd Disi

as Toolchain in a set of tools bound together like a chain where output of one tool is connected to input of another. The output of last tool is the final output. V-86 Toolchaine is the toolchain 86 family & Intel. microprocessons where X = 80,802,803, etc. Tool chain is used to converting a programming Longrage from human understændable formæt to Machine understandable format (binary) Programmer (Demo. 0) Editor Preprocessor (Demoil) (Demo, asm Compoiler (heno. 65) Assembler Demo. exe) Linker Loader

Q4] What are the types of CPU registers? Explain use of each crovegister

Registers are divided according to requirement Ans

General Purpose Registers (GPR)

1) Ax (AH, AL) -> Arithmetic or Accumulator Register

2] BX (BH, BL) -> Base Register

3) CX CCH, CL) -> Count Register

- Dater Register 4] DX (DH, PZ)

Pointer Register

5] SP - Stack Pointer

6) BP - Base Pointer

Indesc Registers

7] SI - Source Index

87 DI - Destination Ender

The Arithmetic Register performs arithmetic operations as it is a point of ALU:

The Base Register is used to store values & numbers in the address information & transform them to effective adding the Stack Régister stores data un (LIFO) format.

Data Register holds the memory operand

- 1.2. Editor, Preprocessor, compiler, Assembler, Linker, Loader.
- If Editor is a software used to writtee the program.

 Then program is stored is saved using c'
 extension it is stored on the Hard Disk.
 - content in it.
- 2] Preprocessor accepts the 'c' files as input & converts it into a new escipanded version of the strength of
 - The file is eschanded because of including libraries in the program (i.e. header files). Header files have standard functions in them.

 For e.g. #include < stdio.b) where stdio.h in a

For e.g #include < stdio.b> where stdio.h in a standard input output header tile.

- .) : i' stands for intermediate code
- Dit file content is Human Readable & Human Understandable.
- 3] Compiler accepts the output of i' file &.
 - 2) compiler is a software used for conversion of program from one language to other.
 - DIn our case compiler converts program from "Humand understandable" to "Machine Dependent" format.
 -) The file prepared by compiler has extension casm or so where asm stands for

assembly language.

- .) Assembly language is a mid-level language.
- 4] Assembler accepts the output of -obj': asm' file.
- DASsembler is a software used to convert the program from machine dependendent to machine understandable
- Machine understandable format in Binary format.

 3. The file created by assembler has extension obj

- Steps: JLinker works for linking the 'obj' file & dependent obj' file for execution purpose
 - The assembler's file is not completely ely executable. Hence it has to be added some content to make it executable
 - I the linker creates an executable file of iexé extension.

Step 6: - Flogder.

- of the file created by linker in stored on thard Disk. To execute the Ale it needs to be loaded in RAM.
- 7 this Bir done by the Loader.
- .] Loader with help of operating system loads the file into RAM for execution purpose & the program is converted in to 'process'

a 6] what are the tasks of Operating Systems? Ans! The Operating Systems perform 5 tasks

7 File Management

2) vnemory Magagement

3] Process Management

4] CPU scheduling

5] Hardware Abstraction.

a8] Explain each step of below diagram

And Step 1:] Editor is used to write the program

] File is saved using . c'extension.

] In our case Hello.c is the file.

Step 2: -] Mello.c file is given to the compiler

Ju our case compiler is a combination of (preprocessor, compiler & Assembler)

·I : obj' file is created which has binary format in it.

I the Hello obj file in divided into 3 parts

Tent: Tent section stores the

Compile instructions in binary format

2] Data: Data section stores the 'Global Variables'.

3] Symbol Table: A table which has information about the symbols (variables) used in program.

Step 3: 17his file is passed to the linker

I Linker works for linking the Hello.obj with its

the dependent other.obj file.

.] Linker creates the <u>exé</u> (executable) file.

Step 4: I The file created by the linker is stored on the Hard Disik.

·] A new thing is added into the exe file called 'Primary Header'.

Thrimany neader stores the address of entry point function (int main (i) & other information about exe file.

- Steps: To execute the "exe" file it needs to be loaded on RAM.
 - It win task is performed by Loader
 - i) After the file is loaded on RAM the address of int main function is passed to RAM.
 - Decomes "process"
 - Text, Data, Stack.
 - 1) The stack section contains information about the function written in the program.
- Step 6:] Since RAM cannot execute the process it is passed to the microprocessor.
- Step 7: 1 But Microprocessor has limited spacementary
 space, the 3 section Text, Data & Stack
 are divided into moltiple segments.

 These

I the Text section gets copied into Text(ode Segment)

I the Data section gets copied into DS(Data Segment)

I The Stack section gets copied into SS(Stack segment)

I The All three segments become full extra data is Stored in ES (Extra Segment)

III ES also gets full . FS & GS is osed.

Step 8: 17 Data stored in segment à copied into instruction queve.

I Instruction Pointer CIP à responsible for fetching one instruction at a time & forwarding it for execution purpose.

aThese instructions are passed to the cu & ALU , out of which arithmetic instructions are handled by ALU. CUC Control Units Auc Arithmetic Logic Unit) 7 To show the interneu status of microprocessor FLAGS are used

Step 9: 17 To process these instruction temporary memory locations are used which are called CPU régisters

1) AX(AH, AL) -> Arithmetic or Accumulator Register

27 BX (By, BL) -> Base Rægisten

3JCX (CH, CL) -> Count Register

4] DXCOH, DLD -> Data Register

-> Brace Pointer -s Base pointer

-> Source Indes

77 SI 8] DI -> Destination Index

Step 10: INow these instruction's output get forwarded to the operating system with help of Internal Data Bus (IDB)

I The output is displayed on screen by the

Ans. The Primary Header Contains the adolerss

of entry point function is main functional

it has information about other content of erefile

Old What is meant by Text, Data, Stack section?
Ans

- The Text section stores the program functions in binary format.
- 2] The Data Section stores the global variables
- 3] The stack section stores the information about

Q7] what is cache Memory & what are types of cache memory?

Ans cache memory stores the input given by usen

- 17 Primary cha Cache

 Eg: Accumulator, address Register
- 2) secondary cache
- 3) Main memory