Multiple Operating System Installation-By Dr. Vijay Gokhale Sir's Multiple Operating system Installation Seminar

SEMINAR NAME: MULTIPLE-OPERATING SYSTEM INSTALLATIONS.

(POST SCRIPT: PLEASE NOTE THAT THE NOTES ARE WRITTEN AT RUN TIME WHILE LISTENING AUDIO CLIPS, SO IT MAY POSSIBLE THAT SOME STATEMENTS MAY HAVE GRAMATICALLY INCORRECT, SOME WORDS MAY HAVE SPELLING MISTAKES, ETC. SO PLEASE IGNORE THAT PARTS, OTHERWISE, THE CONCEPTS WILL DEFINITELY GOING TO BE CLEAR BY READING THIS NOTES. REST OF ALL NOTES ARE WRITTEN VERY WELL).

THANKS TO THAT STUDENT WHO DONE THIS RECORDING.

AND MOST IMPORTANT: THANKS TO DR. VIJAY GOKHALE SIR.

OPERATING SYSTEMS:

1) WINDOWS XP
2) OPEN SOLARIS,
3) PC-BSD
4) WINDOWS-7,
5) OPEN SuSE 11.3,
6) WINDOWS-SERVER 2003 (IN VIRTUAL BOX), (THIS "WINDOWS SERVER 2003" OPERATING SYSTEM WE ARE GOING TO INSTALL ON "OPEN SuSE 11.3" OPERATING SYSTEM)
7) UBANTU (IN VIRTUAL BOX), (THIS "UBANTU" OPERATING SYSTEM WE ARE GOING TO INSTALL ON "WINDOWS XP" OPERATING SYSTEM)
8) RED HAT FEDORA CORE,
9) MAC OS X

OPERATING SYSTEMS MAIN BASIC TASKS

1) FILE MANAGEMENT
2)PROCESS MANAGEMENT
3)MEMORY MANAGEMENT
4)CPU SCHEDULING.
5)HARDWARE ABSTRACTION. (HIDDEN/ DOES - INTERNALLY THIS).

CONCEPTS OF OPERATING SYSTEMS:

OPERATING SYSTEMS ARE PUTTED ON "HARDDISKS". AND
OPERATING SYSTEMS ARE RUNS ON "MEMORY/RAM".
SO NOW, AFTER BOOTING, "CPU (CENTRAL PROCESSING UNIT)" BRINGS/PULLS OPERATING SYSTEM FROM HARDDISK TO MEMORY/RAM.
LAPTOP'S HARDWARE IS "VENDOR SPECIFIC".
FOR EXAMPLE: DELL's LAPTOP HARDWARE, SONY's LAPTOP HARDWARE, IBM'S LAPTOP HARDWARE, THESE ALL LAPTOPS HARDWARE ARE DIFFERENT FOR EACH OTHER. EVEN THEIR MOTHER BOARD ARE ALSO DIFFERENT FOR EACH OTHER.
OPERATING SYSTEMS ARE PUTTED ON HARDDISKS AND THEY ARE RUN ON MEMORY/RAM.

SOME COMPANIES MOTHERBOARD ARE VENDOR SPECIFIC, FOR EXAMPLE, INTEL DESIGN THE MOTHERBOARD OF APPLE COMPUTERS AND OTHER COMPUTERS ALSO. BUT THESE ARE NOT SAME MOTHER BOARDS, BUT THESE ARE DIFFERENT. FOR EXAMPLE, THE DRIVERS WHICH RUNS ON APPLE's COMPUTER ARE CAN NOT ABLE TO RUN

ON OTHER

MACHINES VENDORS COMPUTERS. ETC.
APPLE's MOTHERBOARD's ARE CALLED AS "LOGIC MOTHERBOARDS", SINCE AS IF THE DESIGNER OF MOTHERBOARD ARE INTEL, THE LOGIC IS BY APPLE, SO THEY ARE CALLED AS "LOGIC MOTHERBOARD".
SO THEREFORE, WE CAN NOT USE DRIVERS OF APPLE's COMPUTER ON SOME OTHER COMPUTERS AND VICE A VERSA. SO THEREFORE, LAPTOPS ARE "VENDOR SPECIFICS".
THERE ARE VENDOR SPECIFIC DESKTOPS ALSO AVAILABLE IN THE MARKET. THESE ARE CALLED AS BRANDED DESKTOPS. FOR EXAMPLE, SONY, HP, DELL, IBM, ETC. THEY ARE HAVING THEIR OOWN BRANDED NAMES.

BIOS: BASIC INPUT OUTPUT SYSTEM.

WHILE BOOTING A COMPUTER, IF WE PRESS "F2" OR "DEL" BUTTOON, THE SCREEN WHICH WE SEE ON COMPUTER\MONITOR IS NOTHING BUT "BIOS". IN THAT SCREEN, WE CAN SEE CLEARLY ALL THE OPERATING SYSTEM INSTALLED IN PC, NO MATTER, WETHER THEY ARE ENABLED OR DISSABLED.
DOS OPERATING SYSTEM IS "PERSONAL COMPUTER'S" FIRST OPERATING SYSTEM IN THE WORLD WHICH CAME INTO THE MARKET. BEFORE THAT, THERE WAS AN OPERATING SYSTEM FOR PERSONAL COMPUTER ALSO, BUT THAT OS WAS NOT AS MUCH SO FAMOUS AS THAT OF DOS. THAT OS NAME WAS “CENTRAL/OR CONTROL PROGRAM FOR MICROCOMPUTERS" i.e. "CP/M"
OPERATING SYSTEMS ARE PUTTED ON HARDDISKS. & OPERATING SYSTEMS ARE RUNS ON MEMORY/RAM. SO NOW, AFTER BOOTING, CPU (CENTRAL PROCESSING UNIT) BRINGS/PULLS OPERATING SYSTEM FROM HARDDISK TO MEMORY/RAM.
CP/M: CENTRAL PROGRAM FOR MICRO COMPUTER.
TIM PATTERSON DESIGNED AN OPERATING SYSTEM CALLED 86-DOS. (86 MEANS THAT TIME, 86 MICROPROCESSOR WAS AVAILABLE IN THE MARKET, SO & DOS STANDS FOR DISK OPERATING SYSTEM).
AFTER THAT, IBM TOLD/INVITED TO MICROSOFT THAT THEY SHOULD DESIGN AN OPERATING SYSTEM FOR THEIR OWN COMPUTERS i.e. IBM's COMPUTERS AND THE OS IS FROM MICROSOFT.
MICROSOFT ACCEPTED IBM's INVITATION, AND BROUGHT AN OPERATING SYSTEM FROM TIM PATTERSON's 86-DOS, AND RENAMED IT "8 IS REPLACED BY M, AND 6 IS REPLACED BY S" CALLED AS "MS-DOS" OPERATING SYSTEM.
LINUX IS CONFIGURABLE AND HIGHLY CUSTOMISABLE OPERATING SYSTEM.
WINDOWS AND MAC ARE FREE PACKAGED OPERATING SYSTEMS.

WINDOWS XP OPERATING SYSTEM:

1) THIS IS THE LAST VERSION OF OPERATING SYSTEM WHICH RUNS "TURBO C" SOFTWARE. SO FOR THAT PURPOSE, STILL MOST OF THE STUDENTS USES WINDOWS XP.
2) "WINDOWS XP" OPERATING SYSTEM IS MICROSOFT's MOST SUCCESSFUL OPERATING SYSTEM TILL NOW.

OPEN SOLARIS OPERATING SYSTEM:

1)OPEN SOLARIS IS DEVELOPED ON THAT FILE SYSTEM WHICH IS TODAYS ONE OF THE "FASTEST FILE SYSTEM". THAT FILE SYSTEM NAME IS: ZFS (ZETABYTE FILE SYSTEM)
2)FOR CLOUD COMPUTING, THIS IS THE BEST OPERATING SYSTEM AND THIS IS THE BEST FILE SYSTEM.
ARRANGEMENT OF HDD'S PARTITIONS IN WHICH WE PUT THE DATA, THAT FORMATS IS NOTHING BUT A FILE SYSTEM.

MICROSOFT WINDOWS FILE SYSTEM FORMATS:

FAT: FILE ALLOCATION TABLE.
1)FAT12: FILE ALLOCATION TABLE FOR 12BIT MICROPROCESSOR
2)FAT16: FILE ALLOCATION TABLE FOR 16BIT MICROPROCESSOR (WINDOWS 1.0, WINDOWS 2.0, WINDOWS 3.0, WINDOWS 3.1 TILL THIS, MICROSOFT WERE USING THIS FILE SYSTEM FAT16 FOR 16BIT CPU).
3) FAT32: FILE ALLOCATION TABLE FOR 32BIT MICROPROCESSOR.(WINDOWS NT .1,)
4) ExFAT: EXTENDED FAT32 FILE SYSTEM (THIS FILE SYSTEM CAME AFTER FAT32 FILE SYSTEM AND BEFORE NTFS).
5) NTFS: NEW TECHNOLGY FILE SYSTEM.
DIFFERENCE BETWEEN FAT32 AND NTFS FILE SYSTEM FORMAT IS:

1) THEIR STRUCTURE
2) FAT32 FILE SYSTEM CAN NOT STORE FILE BEYOND 4GB. THESE FILE SYSTEMS MAXIMUM SIZE OF FILE CAPACITY IS 4GB.
3) NTFS CAN STORE ANY SIZE FILE.

HAL: HARDARE ABSTRACTION LAYER.
AFTER REMOVING SOME PART OF HAL, WINDOWS 95 BORN INTO PICTURE
AFTER THIS, WINDOWS 98 BORN INTO PICTURE
NE

WINDOWS OPERATING SYSTEMS VERSIONS

MS-DOS
FOR END USERS

WINDOWS 1.0, WINDOWS 2.0, WINDOWS 3.0

(TILL THIS, MICROSOFT HAVING 16BIT MICROPROCESSOR).
WINDOWS 3.1
(27 JULY, 1993, MICROSOFT'S FIRST 32BIT WINDOWS OPERATING SYSTEM "WINDOWS NT" CAME INTO MARKET HAVING FILE SYSTEM AS NTFS)
(TILL THIS, PROGRAMMERS OR USER's PROGRAM CAN DIRECTLY TOUCH THE HARDWARE THROUGH PROGRAMS AND POSSIBLY CORRUPTS /AFFECTS/ THAT HARDWARE.) (BUT, BY RULE, USERS ARE NOT ALLOWED TO TOUCH THE HARDWARE. THEY SHOULD TOUCH TO THE OPERATING SYSTEM ONLY.)

WINDOWS NT

THEREFORE, MICROSOFT ADDED ONE LAYER INTO THIS OPERATING SYSTEM WINDOWS NT, CALLED AS "HARDWARE ABSTRACTION LAYER (HAL)" WHICH PREVENTS USERS PROGRAM FROM HARDWARE.
BUT BECAUSE OF THIS, GRAPHICS CARDS ARE NOT RUNNIG PROPERLY SINCE THEY WORKS ON HARDWARE. SO MICROSOFT's MARKET BECOMES DOWN (BECAUSE OF GAMING PURPOSE)(SINCE, GRAPHICS CARD ARE USED FOR GAMING ALSO).
SO MICROSOFT DECIDED TO REMOVE SOME PARTS/ OR AMOUNT OF FEATURES OF HARDWARE ABSTRACTION LAYER(HAL) FROM THAT "WINDOWS NT" OPERATING SYSTEM, AND FORMED A NEW OPERATING SYSTEM CALLED AS "WINDOWS 95" OPERATING SYSTEM FOR USER PURPOSE.

WINDOWS 95 (HAL), **WINDOWS 98, WINDOWS NE**

(BRANCHES OF "WINDOWS NT" FOR BOTH i.e. FOR USERS AND FOR DEVELOPERS)
FOR USERS: WINODOS NT.
1) WINDOWS NT
2) WINDOWS 95
3) WINDOWS 98
4) WINDOWS NE.

FOR DEVELOPERS: WINDOWS NT.
1) WINDOWS NT 4.0
2) WINDOWS NT 5.0
3) WINDOWS NT 6.0
4) WINDOWS NT 7.0

SO, MICROSOFT WAS SO TIRED BY DEVELOPING BOTH BRANCHES OF WINDOWS. AND WHILE DEVELOPING WINDOWS NEXT VERSION, HE LUCKLY GOT THAT OPERATING SYSTEM WHICH WAS CAPABLE OF FULLFILLINGS FROM BOTH THE SIDES i.e. FROM USERS AND FROM DEVELOPERS ALSO. i.e. THIS OPERATING SYSTEM WAS GOING TO SUPPORT "HAL" AND WAS ALSO GOING TO SUPPORT GAMING ALSO. AND THAT OPERATING SYSTEM NAME IS "WINDOWS XP".
FOR BOTH USERS i.e. FOR END USERS AND FOR DEVELOPER USERS:

WINDOWS XP:

SO FOR THAT PURPOSE, WINDOWS XP IS ONE OF THE MOST POPULER VERSIONS OF MICROSOFT.
SINCE THIS "WINDOWS XP" OPERATING SYSTEM WAS FOR END USERS ALSO AND FOR DEVELOPERS ALSO.

1) WINDOWS XP
2) WINDOWS VISTA
3) WINDOWS 7: USE NTFS FILE SYSTEM FORMAT.

WINDOWS SERVER OPERATING SYSTEMS EDITIONS ARE:

1) WINDOWS NT SERVER
2) WINDOWS 2000 SERVER
3) WINDOWS 2003: USE "NTFS" FILE SYSTEM FORMAT.
4) WINDOWS 2008 SERVER (CURRENTLY THIS VERSION IS RUNNING)

LINUX FILE SYSTEM FORMATS:

1) **EXT3 FILE SYSTEM:** "EXTENDED 3" FILE SYSTEM FOR LINUX OPERATING SYSTEM. 3 CAME SINCE THIS IS THE DISTRIBUTION OF FILE SYSTEMS AMONG THREE OPERATING SYSTEMS.
2) RED-HAT, SUSe, UBANTU FOR ALL THESE THREE OPERATING SYSTEM, EXT3 FILE SYSTEM IS USED.

3) PC-BSD: BERCLAY SOFTWARE DISTRIBUTION.

BSD - THIS OPERATING SYSTEM WAS ACTUALLY DEVELOPED FOR "VAX" MACHINE WHICH WAS A "MAINFRAME" COMPUTER. AFTERWORDS THIS OPERATING SYSTEM IS DEVELOPED FOR PERSONAL COMPUTER ALSO. SO THEREFORE THE NAME CAME: PC-BSD. (THIS IS A PRODUCT OF UCB- UNIVERSITY OF CALIFORNIA BERCLAY). FILE SYSTEM NAME IS: UFS

UFS: UNIX FILE SYSTEM.

THIS IS ONE OF THE BEST OPERATING SYSTEM SINCE THE WORDING "NETWORKING/OR SOCKET" CAME FROM THIS OPERATING SYSTEM. WORLDS BEST 13 SERVERS RUNS ON THIS OPERATING SYSTEM ALSO.
"ROOT OF INTERNET" IS ALSO CAME FROM THIS OPERATING SYSTEM.
"THIS OPERATING SYSTEM HAS KERNEL WHICH IS "ONE OF THE KERNEL" WHICH IS ONLY USED/SUPPORTED BY SOME OTHER OPERATING SYSTEM, AND THAT OPERATING SYSTEM NAME IS "MAC OS".

"MAC-OPERATING SYSTEM" USES THIS BSD's KERNEL".

WINDOWS 2003 SERVER OPERATING SYSTEM:

1) STUDENT MUST BE ABLE TO INSTALL AT LEAST ONE SERVER BASED OPERATING SYSTEM EDITION.
2) ACTIVE DIRECTORY IS CAME INTO THIS SERVER EDITION FULLY.

ACTIVE DIRECTORY: ACTIVE DIRECTORY IS THAT FEATURE OF MICROSOFT WINDOWS WHICH MADE MICROSOFT QUITE COMPARABLE OS THAN THOSE OTHER SERVERS.
REDHAT: RED OPERATING SYSTEM IS A DISTRIBUTION OF LINUX.
IN THIS 3 OPERATING SYSTEM COMES. A) RED-HAT. B) SuSE C) UBANTU.
THEIR NAMES ARE DIFFERENT BECAUSE THEIR DISTRIBUTIONS OF LINUX OPERATING SYSTEMS ARE DIFFERENT.
BUT THESE ALL THREE OPERATING SYSTEMS ARE LINUX OPERATING SYSTEMS.

RED-HAT OPERATING SYSTEM

1) THIS IS LINUX's FIRST POPULER DISTRIBUTED OPERATING SYSTEM.
2) RED-HAT BELONGS TO US (UNITED STATES).
3) FOR ENTERPRISE, THIS OPERATING SYSTEM IS BEST.
(ENTERPRISE MEANS DOING ENTERPRISE PROGRAMMING, AND DOING ENTERPRISE PROGRAMMING MEANS MULTI NATIONAL COMPANIES LIKE MICROSOFT, NVIDIA, INTEL ETC THEY ALL DOES CENTRALLISED PROGRAMMING i.e. WRITING A CODE CENTRALISE, ACCESSING DATA CENTRALISE, AND RUNS THEIR CODES ON

THERE OWN MACHINE ALSO AND ON CENTRALISED MACHINE ALSO.) THIS IS NOTHING BUT CENTRALISED PROGRAMMING AND WHICH IS NOTHING BUT ENTERPRISE PROGRAMMING.SO, THIS OPERATING SYSTEM DOES THIS ALL TASKS VERY NEATELY AND CLEALRY. OTHER LINUX ALSO DOES THAT BUT NOT AS MUCH BEST LEVEL AS RED-HAT.

4) THIS OPERATING SYSTEM's FEATURES NEEDS TO BE CONFIGURED LIKE MEDIA PLAYER, ETC. (FOR EXAMPLE, RED-HAT HAVE MEDIA PLAYER, BUT NOT BY-DEFAULT, THEY NEED TO CONFIGURE IT MANUALLY).

4) RED-HAT AND FEDORA ARE SAME OPERATING SYSTEMS. AFTER RED-HAT VERSION 9, THE FEDORA VERSION CAME INTO MARKET.(FEDORA CORE 1,2,.. 10, 11, 12,13).

SUSe OPERATING SYSTEM:

1) SUSe OS BELONGS TO UROPE.
2)SUSe IS GOOD/OR BETER THAN RED-HAT FROM GOKHALE SIR's POINT OF VIEW.
3) SUSe HAVING EVERYTHING. FOR EX. MOST OF THE FAETURES ARE BY DEFAULT IN SUSe. LIKE, MEDIA PLAYER. (THERE IS NO NEED TO CONFIGURE EACH AND EVERYTHING IN THIS OPERATING SYSTEM LIKE RED-HAT DOES WHICH NEED MOST OF THE FEATURES CONFIGURED).
ALSO GRAPHICS CARD, OR FAN, OR PEN DRIVE, OR DATA CARD ETC ARE BY-DEFAULT DETECTS BY THIS OPERATING SYSTEM, WHICH MAY/OR MAY NOT BE DETECTED OR DETECTS/RUN BY DEFAULT IN RED HAT OR OTHER OPERATING SYSTEM.

4) IN SUSe, MOST OF THE FEATURES ARE BY DEFAULT, NO NEED TO CONFIGURE EACH AND EVERYTHING LIKE RED-HAT.

UBANTU OPERATING SYSTEM:

1) UBANTU IS A "COMMUNITY DRIVEN LINUX".
"COMMUNITY DRIVEN LINUX" MEANS: THIS OS IS FOR STUDENTS. SO IF ANY STUDENT HAVE ANY DIFICULTY ON PERFORMING OPERATIONS ON THIS OS AND IF HE MAIL THAT QUERY/QUESTION TO THEM ON THEIR SITE UBANTU.ORG, HE WILL DEFINITLY GOING TO GET BACK THE RESULT IN NEXT 24 HOURS, OR 48 HOURS FOR SURE.
LIKE WINDOWS OR ANY OTHER OS, LINUX IS ALSO OF TWO TYPES LIKE "DESKTOP LEVEL" AND "SERVER LEVEL".
DESKTOP LEVEL LINUX IS FOR END USERS WHICH ALSO SUPPORTS SOME FEATURES OF DEVELOPERS LEVEL/SERVER LEVEL" OS ALSO, FOR EXAMPLE "ENTERPRISE PROGRAMMING"

EXT2: EXTENDED 2 FILE SYSTEM
REISER FS: RIESER FILE SYSTEM.
FOR LINUX, MAIN FILE SYSTEM IS **EXT2**.

JFS: JOURNELLED FILE SYSTEM.

WINDOWS 7 OPERATING SYSTEM:

1) RICHEST OPERATING SYSTEM BY MICROSOFT NOW.
2) LATEST WINDOWS OPERATING SYSTEM.
3) MICROSOFT WINDOWS CHANGED THEIR WINDOWS XP's BOOT LOADER IN THIS WINDOWS 7 OPERATING SYSTEM.

BOOTLOADERS OF WINDOWS OPERATING SYSTEMS:
WINDOWS XP's BOOTLOADER IS: NTLDR. (NEW TECHNOLOGY BOOT LOADER)
WINDOWS 2003's BOOTLOADER IS: NTLDR. (NEW TECHNOLOGY BOOT LOADER)
WINDOWS VISTA's BOOT LOADER IS: BCD (BOOT CONFIGURATION DATA)/OR BOOTMGR (BOOT MANAGER).

WINDOWS 7's BOOTLOADER IS: BCD/OR BOOTMGR (BOOT MANAGER).
BCD (BOOT CONFIGURATION DATA) CONTAINS THE INFORMATION ABOUT THE HARDWARE. FOR EX. HDD, RAM, ETC. AND BOOTMGR (BOOT MANAGER) CONTAINS THE INFORMATION ABOUT THE BOOTLOADERS OF OPERATING SYSTEMS.
(PLEASE NOTE THAT BCD AND BOOTMGR ARE TOTALLY DIFFERENT).

WINDOWS 7 FILE SYSTEM FORMATS:
NTFS: NEW TECHNOLOGY FILE SYSTEM

MACINTOSH OPERATING SYSTEM:

MAC OPERATING SYSTEM FILE SYSTEM FORMATS.

HFS: HEIRARCHIEAL FILE SYSTEM. &

HFS+: HIERARCHICAL FILE SYSTEM (NEXT VERSION OF HFS WHICH IS A CASE SENSITIVE).

MAC OS-X BELONGS TO APPLE COMPUTERS/ OR APPLE HARDWARE.

1) THIS IS THE BEST OPERATING SYSTEM BY APPLE COMPUTERS. - FROM GOKHALE SIR's POINT OF VIEW.
2) THIS OS IS FOR "ART" PEOPLE.
3) THIS OS IS NOT A COPIED VERSION. RATHER THEIR FEATURES ARE NOT COPIED FEATURES LIKE ((((("windows")))).
4) MAC OS RUNS ON iPHONE ALSO.(ACTUALLY iPHONE RUNS ON iOS, BUT iOS IS NOTHING BUT EMBEDDED VERION OF MAC OPERATING SYSTEM).
5) IT IS THE ONLY OPERATING SYSTEM IN THE WORLDS WHICH RUNS ON TWO KERNELS. I.e. THIS OPERATING SYSTEM HAS TWO KERNELS.

ONE IS BSD's KERNEL NAME IS: XNU: (XNU LONG FORM IS: X IS NOT UNIX, AGAIN "X" STANDS FOR XNU....) (THIS IS CALLED AS "RECURSIVE ACRONYME").(THIS KERNEL IS DEVELOPED BY BERCLAY SOFTWARE DISTRIBUTION (BSD).). EXCEPT THIS OS, ALL THE OPERATING SYSTEM HAS ONE AND ONLY ONE KERNEL.

AND SECOND KERNEL NAME IS: MACH-O (THIS KERNEL IS DEVELOPED BY KERNIGH MILLAN UNIVERSITY)

MAC OPERATING SYSTEM IS SO FAMOUS BECAUSE OF ITS GRAPHICS. THIS OPERATING SYSTEM's GRAPHICS IS "ANTI ALLIESED FLUID" GRAPHICS.(CLEAR-CUT/ OR PRAVAHI GRAPHICS). THIS GRAPHICS FIRST CAME IN MAC OS. THEN OTHER OS'ES. SAME GRAPHICS CAN BE SEEN IN MANDRIC OS ALSO. THIS TYPE OF GRAPHICS NEEDS ONE OF THE KERNEL THAT KERNEL NAME IS "MICROKERNEL".

KERNEL TYPES:

A) MICROKERNEL:

(ALL EXE'S ARE INTERCONNECTED WITH EACH OTHER THROUGH CENTRAL EXE. THROUGH WHICH CONNECTIONS AND MESSAGE PASSING ARE DONE WITH EACH OTHER. THIS TYPE OF KERNEL IS KNOWN AS MICROKERNEL)

B) MONOLITHIC KERNEL.

ALL EXE'S ARE COMBINED AND FORMED ONE COMMON EXE. OR A COMMON PART IS CALLED AS MONOLITHIC KERNEL.

THIS MONOLITHIK KERNEL IS BECAUSE OF ITS ROBUSTNESS. THIS KERNEL IS A ROBUST KERNEL OR CRASH PROOF.

6) LATE VIRUS. NO VIRUS
7) RECOVERY FEATURES BY THIS FILE SYSTEM'S CONTRIBUTION BECAUSE OF FILE SYSTEM "HFS".

HFS: HEIRARCHIEAL FILE SYSTEM. & HFS+: HIERARCHICAL FILE SYSTEM (NEXT VERSION OF HFS WHICH IS A CASE SENSITIVE).

ALL THE OPERATING SYSTEM's MOTHER IS "UNIX OPERATING SYSTEM" EXCEPT WINDOWS (BECAUSE OF DOS OPEARATING SYSTEM). (BUT ACTUALLY SPEAKING, CONCEPTS OF DOS IS ALSO CAME UNDER UNIX OPERATING SYSTEM, SO THEREFORE, WINDOWS OPERATING SYSTEM'S MOTHER IS ALSO UNIX OPERATING SYSTEM)

MAC IS ALSO COMES UNDER UNIX OPERATING SYSTEM.

(INSTALLING MACHINTOSH MEANS "WE ARE GOING TO DO A "CRIME" WHICH SHOULD NOT BE DONE"). (WE ARE GOING TO INSTALL ACTUALLY A HACHINTOSH AND NOT A PROPER MACHINTOSH). (IF WE ARE DONE WITH A SUCCESSFUL INSTALLATION OF HACHINTOSH, WE ARE ACTUALLY THEN RUNNING THIS OS (MACHINTOSH/OR IN MORE SPECIFIC WORD HACHINTOSH) ON THEN ON SAFE MODE.)

MAC OPERATING SYSTEM NEEDS SATA HARDDISK.

PATA IS NOW A HISTORY NW A DAYS.

WINDOWS FILE SYSTEM FORMATS:

FAT: FILE ALLOCATION TABLE

1) **FAT12**: FOR 12BIT MICROPROCESSOR
2) **FAT16**: FOR 16BIT MICROPROCESSOR
3) **FAT32**: FOR 32BIT MICROPROCESSOR
4) **ExFAT**: EXTENDED FAT.(PLEASE NOTE: THIS FILE SYSTEM "ExFAT" WAS CAME AFTER "FAT32" FILE SYSTEM AND BEFORE "NTFS" FILE SYSTEM)

5) **NTFS**: NEW TECHNOLOGY FILE SYSTEM.

LINUX FILE SYSTEM FORMATS:

1)**EXT3**: EXTENDED 3 FILE SYSTEM (MAIN FILE SYSTEM)

SOLARIS FILE SYSTEM FORMAT:

ZFS: ZETABYTE FILE SYSTEM.

BSD FILE SYSTEM:

UFS: UNIX FILE SYSTEM.

RED-HAT FILE SYSTEM:

EXT3: EXTENDED 3 FILE SYSTEM

SUSe FILE SYSTEM:

EXT3: EXTENDED 3 FILE SYSTEM

UBANTU FILE SYSTEM:

EXT3: EXTENDED 3 FILE SYSTEM

ALL THESE ABOVE THREE OPERATING SYSTEMS (RED-HAT, SUSe, and UBANTU) USES THIS "EXT3" FILE SYSTEM FORMATS.

SIMILLARLY LINUX HAS 3 MORE FILE SYSTEM FORMATS AS:

1) EXT2, 2) REISER FS AND 3) JFS

EXT2: EXTENDED 2 FILE SYSTEMS (THIS IS MAIN FILE SYSTEM FOR LINUX OPERATING SYSTEM). (BUT WE CAN USE OTHER EXT3 FILE SYSTEM ALSO).

REISER FS: REISER FILE SYSTEM.

JFS: JOURNALLED FILE SYSTEM.

LINUX'S MAIN FILE SYSTEM FORMAT IS "EXT3".

MAC OS FILE SYSTEM FORMATS:

1) HFS: HIERARCHIAL FILE SYSTEM.

2) **HFS+: HIERARCHICAL FILE SYSTEM PLUS (NEXT VERSION OF HFS).**

HARD CODED RULES/IMPORTANT RULES FOR INSTALLING AN OPERATING SYSTEM INTO THE MACHINE:

1) WINDOWS OPERATING SYSTEM:

A) IF WE WANT TO INSTALL ONLY ONE "WINDOWS" OPERATING SYSTEM, THEN IT MUST INSTALL ON "FIRST" PARTITION AND ON "PRIMARY" PARTITIONS. (HERE, FIRST AND PRIMARY BOTH ARE DIFFERENT WORDS).

IF WE WANT TO INSTALL "ONLY ONE WINDOWS" OPERATING SYSTEM THEN IT MUST BE INSTALLED ON FIRST PARTITION AND PRIMARY PARTITION.(BECAUSE, WINDOWS SOME FILES SHOULD BE WRITTEN IN ATLEAST FIRST 1MB PARTITION. (SOME FILES LIKE FOR EXAMPLE: BOOTLOADER FILE, KERNEL FILE, BOOTSECTOR FILE ETC.)).BECAUSE THESE FILES SHOULD BE WRITTEN BEFORE 1MB OF HDD's FIRST PRIMARY PARTITIONS

B) IF WE WANT TO INSTALL MORE THAN ONE VERSIONS OF WINDOWS/OR "MULTIPLE VERSIONS OF WINDOWS" THEN ONE MUST FOLLOW THIS FIRST RULE i.e. AT LEAST ONE WINDOWS VERSION HAS TO INSTALL ON "FISRT" AND ON "PRIMARY PARTITIONS". REST ALL CAN INSTALL EITHER ON "PRIMARY PARTITIONS" OR ON "LOGICAL PARTITIONS".

2) SOLARIS OPERATING SYSTEM:

A) IF WE WANT TO INSTALL "SOLARIS" OPERATING SYSTEM, THEN IT MUST INSTALL ON THAT PARTITION WHICH IS A PRIMARY PARTITION. IT DOES NOT TROUBLE LIKE WINDOWS. IT CAN BE INSTALLED ON ANY PARITION BUT THAT MUST BE A PRIMARY PARTITION.

B) Its PARTITION OF BOOTING PROCESS SHOULD START BEFORE 1024 CYLINDER BOUNDRY/OR 8GB.

FORMATION OF HARDDISKS: (CHS) (C: CYLINDER H: HEAD S: SECTOR).

(CYLINDER --> HEAD --> SECTOR --> PLATTER --> THEN HARDDISK)

SO IN SHORT, IF WE WANT TO INSTALL "SOLARIS" THEN IT MUST INSTALL ON PRIMARY PARTITION AND ITS BOOTING PROCESS MUST BE INSTALLED ON 1024 CYLINDER BOUNDRY. AND 1024 CYLINDER BOUNDRY IS NEARLY EQUAL TO 8GB.

8GB: 1024 CYLINDER * 256 HEADS * 63 SECTORS * 512 (SINCE ONE SECTOR SIZE IS 512 BYTES) i.e.
1024 * 256 * 63 * 512 = 8455716864 BYTES
DIVIDING BY 1024 WE GET IT IN KILOBYTE: i.e.
8455716864\1024=8257536KB
AGAIN DIVIDING THIS NUMBER BY 1024 WE GET IT IN MEGABYTE: i.e.
8257536\1024=8064MB
AGAIN DIVIDING THIS NUMBER BY 1024 WE GET IT IN GIGABYTE: i.e.
8064\1024=7.875GB, WHICH IS NEARLY EQUAL TO 8GB.

3) PC-BSD OPERATING SYSTEM:

IF WE WANT TO INSTALL "PC-BSD" OPERATING SYSTEM, THEN IT MUST BE INSTALLED ON "PRIMARY PARTITION". IT DOES NOT TROUBLE LIKE WINDOWS AND SOLARIS OPERATING SYSTEMS.
(ONE THING IS COMMON IN ALL THESE THREE OPERATING MENTIONED ABOVE i.e. WINDOWS, SOLARIS AND PC-BSD IS THAT ALL OF THEM REQUIRE PRIMARY PARTITION).
(ONE SMALL BUT IMPORTANT HISTORY: WHEN "PERSONAL COMPUTER's" FIRST OPERATING SYSTEM WAS BOOTING, THEN THAT TIME, ONE SCHEMA IS FOLLOWED AT THAT TIME THAT SCHEME IS KNOWN AS "FDISK SCHEME").

MASTER BOOT RECORD'S (MBR)'S FDISK SCHEME RULES:
1) WE CAN CREATE ONLY 4 PRIMARY PARTITIONS.
2) ONE OF PARTITIONS OF HDD'S MAXIMUM SIZE IS 2TB. (BECAUSE THIS SCHEME DOESNOT SUPPORT HDD's WHOSE PARTITIONS SIZE IS BEYOND/GREATER THAN 2TB).
3) THEN ALSO IF WE WANT TO CREATE A PARTITION WHOSE SIZE IS GREATER THAN 2TB, OR MORE THAN 3 PRIMARY PARTITIONS, THEN AT THAT TIME, MAKE 4TH PRIMARY PARTITION AS AN "EXTENDED PARTITION" IN WHICH WE CAN CREATE MANY "LOGICAL PARTITIONS" IN THIS EXTENDED PRIMARY PARTITIONS.
PARTITIONS 2 TYPES:
A) PRIMARY PARTITIONS
B) SECODARY/OR LOGICAL PARTITIONS.
AND IF WE WANT TO CREATE A SECONDORY/OR LOGICAL PARTITIONS, THEN WE HAVE TO CREATE FIRST EXTENDED PARTITION AND THEN FROM THIS, WE CAN CREATE LOGICAL/SECONDARY PARTITIONS.
4) WE MUST WRITE A PROGRAM (i.e. THROUGH INSTALLING OS) CALLED AS "BOOTSTRAP PROGRAM" ON HDD'S FIRST 1024 BYTES --> FIRST 512 --> FIRST 446 --> 440 PARTITION. IN THERE, A PROGRAM HAS TO BE WRITTEN THAT PROGRAM IS CALLED AS "BOOTSTRAP PROGRAM".
(SO IN SHORT, HDD's FIRST 1024 BYTES, FROM THIS, FIRST 512 BYTES, FROM THIS, FIRST 446 BYTES, FROM THIS, 440 (BOOTSTRAP PROGRAM), THIS PROGRAM IS LOCATED IN THIS 440BYTES MEMORY).
AND THE OPERATING SYSTEM IS ACTUALLY BOOT FROM THIS 440BYTES MEMORY. I.e. BOOTING OF OPERATING SYSTEM ACTUALLY STARTS ITS BOOTING FROM THIS 440BYTES LOCATION BY A PROGRAM CALLED AS "BOOTSTRAP PROGRAM".
SO, WE CAN INSTALL MULTIPLE OPERATING SYSTEM BY ALLOWING INSTALL MANY "BOOTSTRAP PROGRAM" CORROSPONDING TO THEIR OWN PARTITIONS. SO EACH OPERATING SYSTEM HAS THEIR OWN PARTITION, AND HAS THEIR OWN BOOTSTRAP PROGRAM.
ONE OPERATING SYSTEM CAN NOT HAVE MORE THAN ONE BOOTSTRAP PROGRAM. EVERY OPERATING SYSTEM HAS THEIR OWN SEPARATE BOOTSTRAP PROGRAM.

4) WINDOWS-7 OPERATING SYSTEM:

IF WE WANT TO INSTALL ONLY ONE "WINDOWS" OPERATING SYSTEM, THEN IT MUST INSTALL ON "FIRST" AND ON "PRIMARY" PARTITIONS. (HERE, FIRST AND PRIMARY BOTH ARE DIFFERENT WORDS).
IF WE WANT TO INSTALL "ONLY ONE WINDOWS" OPERATING SYSTEM THEN IT MUST BE INSTALLED ON FIRST PRIMARY PARTITION.
(BECAUSE, WINDOWS SOME FILES SHOULD BE WRITTEN IN ATLEAST FIRST 1MB PARTITION. (SOME FILES LIKE FOR EXAMPLE: BOOTLOADER FILE, KERNEL FILE, BOOTSECTOR FILE ETC.)). BECAUSE THESE FILES SHOULD BE WRITTEN BEFORE 1MB OF HDD's FIRST PRIMARY PARTITIONS
IF WE WANT TO INSTALL MORE THAN ONE VERSIONS OF WINDOWS/OR "MULTIPLE VERSIONS OF WINDOWS" THEN ONE MUST FOLLOW THIS FIRST RULE i.e. AT LEAST ONE WINDOWS VERSION HAS TO INSTALL ON "FISRT"

AND ON "PRIMARY PARTITIONS". REST ALL CAN INSTALL EITHER ON "PRIMARY PARTITIONS" OR ON "LOGICAL PARTITIONS".

5) LINUX OPERATING SYSTEM:

IF WE WANT TO INSTALL "LINUX" OPERATING SYSTEM, THEN IT CAN BE INSTALLED ON ANY TYPE OF PARTITIONS. IT CAN BE INSTALLED ON PRIMARY PARTITIONS, IT CAN BE INSTALLED ON EXTENDED PARTITION, IT CAN BE INSTALLED ON EXTENDED'S LOGICAL PARTITIONS, ETC. SO THEREFORE LINUX OPERATING SYSTEM IS SO BEUTIFUL, SO LOVEBLE, SO USERFRIENDLY, SO SECURE,SO NICE, SO ETC.. ETC.

6) MAC OPERATING SYSTEM:

A) IF WE WANT TO INSTALL MACINTOSH OPERATING SYSTEM, THEN IT MUST INSTALL ON "FIRST" PARTITION AND ON "PRIMARY" PARTITIONS. (HERE, FIRST AND PRIMARY BOTH ARE DIFFERENT WORDS).

B) MAC MUST REQUIRE SATA HARDDISKS.

"CPU" BOOTS "BOOTSTRAP PROGRAM" -> "BOOTSTRAP PROGRAM" BOOTS "KERNEL" AND KERNEL IS SIMILLAR TO OS (i.e. RATHER KERNEL IS OS AND OS IS KERNEL) AND SO WHILE BOOTING FINALLY CPU BRINGS ACTUALLY OS/KERNEL FROM HDD's TO MEMORY/RAM THROUGH THIS PROCESS. I.e. BOOTING OF "BOOTSTRAP PROGRAM" PROCESS STARTS, i.e. BOOTING OF "KERNEL" PROGRAM STARTS i.e. BOOTING OF

WHILE INSTALLING MULTIPLE OPERATING SYSTEM, OPERATING SYSTEM GIVES TO USER THE CHOICES THAT WHICH OPERATING SYSTEM YOU/OR USER WANT TO/ OR GOING TO BOOT/SELECT.

THE REMAINING 512 BYTES (HDD'S FIRST 1024 BYTES's LAST 512 BYTES) FROM HDD'S 1024 BYTES ARE RESERVERD FOR A PROGRAM CALLED AS "BOOTLOADER", WHICH GIVES OPTIONS TO USER THAT WHICH OPERATING USER WANTS TO BOOT, OR IN MORE SPECIFIC WORD IT GIVES THE OPTIONS TO USER THAT WHICH BOOTSTRAP PROGRAM USER WANTS TO BOOT ACTUALLY. THAT PROGRAM IS NOTHING BUT "BOOTLOADER".

THIS "BOOTLOADER" SHOULD BE KEPT BEFORE HDD'S FIRST 1024 BYTES's LAST 512 BYTES.

AND FINALLY HARDDISKS FIRST 1024 BYTES ARE CALLED AS "BOOT SECTOR".

I.e. BOOT SECTOR IS THAT SECTOR WHICH NOT ONLY HAS "BOOTSTRAP" PROGRAM, BUT ALSO HAS "BOOTLOADER" PROGRAM.

1024=512+512, 512=440+4+2+64+2, 512-440=72, 72= 4+2+64+2

FIRST 440 BYTE: BOOTSTRAP PROGRAM.

4 BYTE: HDD's BINARY SIGNATURE / EX. SEAGATE's SIGNATURE, TOSHIBA's SIGNATURE IN BINARY FORMAT.

2 BYTE: NULL (ACTUAL NULL)

64 BYTE: PARTITION TABLE (VERY IMPORTANT)(HERE IN THIS, EACH PARTITIONS ENTRY ARE PUTTED IN THIS TABLE PARTITION TABLE).(IF WE LOSS THIS PARITION TABLE, THEN WE LOSS EVERYTHING INCLUDING OS).

2 BYTE: FDISK SIGNATURE 0xaa55 (FDISK SCHEME's OWN SIGNATURE).

I.e. 512=440=4=2+64+2

AND THE REMAINING 512 BYTES FROM FIRST 1024 BYTES's NEXT 512 BYTE ARE CALLED AS "BOOTLOADER" PROGRAM.

AND HDD's PARTITIONS FIRST 1024 BYTES ARE CALLED AS "BOOTSECTOR/BOOTBLOCK".

OPERATING SYSTEM's BOOTLOADER NAME LISTS:

EVERY OPERATING SYSTEM HAS THEIR OWN BOOTSTRAP PROGRAM AND BOOTLOADER BUT WE SHOULD INSTALL THAT BOOTLOADER WHO SHOULD IDENTFY ALL THE OPERATING SYSTEM.

AND THE BOOTLOADER WHICH INCORPORATE/IDENTIFY ALL THE OPERATING SYSTEMS ARE CALLED AS “GRUB" (GR: GRAND U: UNIFIED B: BOOTLOADER) WHICH IS ACTUALLY A LINUX's BOOTLOADER. LINUX HAS ALSO ONE MORE ANOTHER BOOTLOADER CALLED AS "LILO" (LINUX LOADER).

LINUX OPERATING SYSTEMS BOOTLOADER:

1) **GRUB**: GRAND UNIFIED BOOTLOADER.
2) **LILO**: LINUX LOADER.

WINDOWS OPERATING SYSTEMS BOOTLOADER

1) WINDOWS 98 BOOTLOADER: **MSDOS.SYS**

2) WINDOWS BOOTLOADER(TILL WINDOWS VISTA) NAME IS : **NTLDR**.(NEW TECHNOLOGY LOADER)

WINDOWS VISTA AND WINDOWS 7 BOOTLOADER NAME IS: **BCD**/OR **BOOTMGR**. (BOOT CONFIGURATION DATA)/OR BOOT MANAGER.

BCD (BOOT CONFIGURATION DATA): CONTAINS THE INFORMATION ABOUT THE HARDWARE. FOR EX. HDD, RAM, ETC. AND BOOTMGR (BOOT MANAGER): CONTAINS THE INFORMATION ABOUT THE BOOTLOADERS OF OPERATING SYSTEMS.

(PLEASE NOTE THAT BCD BOOTLOADER AND BOOTMGR BOOTLOADER ARE TOTALLY DIFFERENT WITH EACH OTHER).

PC-BSD/OR BSD's OPEARATING SYSTEM's BOOTLOADER

PC-BSD/OR BSD's OPEARATING SYSTEM's BOOTLOADER NAME IS: **BTX** (BooTeXtended).

ACTUAL SOLARIS BOOTLOADER NAME IS: SILO (SPARC IMPROVED LOADER) (BUT HERE, IN THIS SEMINAR, WE ARE GOING TO INSTALL LINUX's BOOTLOADER i.e. GRUB).

MACHINOTSH'S BOOTLOADER

PROPER/ACTUAL MACINTOSH OPERATING SYSTEM's BOOTLOADER NAME IS: **BOOTCAMP.**

HACHINTOSH/NOT PROPER MACHINTOSH BOOTLOADER NAME IS: CHAMELEON (WE ARE GOING TO USE THIS BOOTLOADER SINCE WE ARE NOT USING PROPER APPLE HARDWARE).(ACTUALLY "CHAMELEON" IS A PACKAGE OF BOOTLOADER, THE ACTUAL BOOTLOADER WHOSE NAME IS "DARWIN")

PRACTICAL:

"BIOS" CAN BE SEEN IN OUR COMPUTER BY PRESSING "F2" OR "DEL" BUTTON.

SCREEN WILL BE SEEN AS:

BOOT FROM:

1) CD/DVD ROM
2) HDD

WHILE DOING PARTITIONS, WE SHOULD BOOT FROM BOOTABLE CD/DVD NAMES AS "GPARTED CD". "GPARTED" MEANS: G STANDS FOR GNU; PART STANDS FOR PARTITION ED STANDS FOR EDITOR. (I.e. THE EDITOR WHICH CAN DO PARTITIONS OF HDD's)

NOW AFTER BOOTING GPARTED CD, GUI COMES, THEN SELECT THE PROPER ENTRIES AS FOLLOWS.

1) WINDOWS XP PARTITION: SELECT PARTITION AS "PRIMARY PARTITION" AND FILE SYSTEM FORMAT AS "FAT32".
2) OPEN SOLARIS PARTITION: SELECT PARTITION AS "PRIMARY PARTITION" AND FILE SYSTEM FORMAT AS "EXT3" (BUT ACTUALLY SOLARIS's FILE SYSTEM FORMAT IS "ZFS"?) ANS:
3) PC-BSD: SELECT PARTITION AS "PRIMARY PARTITION" AND FILE SYSTEM FORMAT AS "EXT3".(NOW ONWORDS, WE ARE GOING TO INSTALL OTHER OPERATING SYSTEMS ON EXTENDED PARTITION WHICH IS NOTHING BUT PRIMARY PARTITION IN WHICH WE ARE GOING TO CREATE AS MUCH LOGICAL/SECONDARY PARTITIONS AS WE REQUIRED. SO
4) WINDOWS 7 PARTITION: SELECT PARTITION AS "EXTENDED PARTITION" AND FILE SYSTEM FORMAT AS "NTFS".
5) SUSe: SELECT PARTITION AS "EXTENDED PARTITION" AND FILE SYSTEM FORMAT AS "EXT3".
6) SWAP: SELECT FILE SYSTEM FORMAT AS "LINUX-SWAP".
7) PATA_DATA : SELECT PARTITION AS "EXTENDED PARTITION" AND SELECT FILE SYSTEM AS "NTFS"

A) SELECT "INSTALL OPEN SOLARIS" OPTION. AND CLICK ON NEXT.

B) THE NEXT SCREEN SHOWS SCREEN WITH TITLE "Disk" ASKING YOU "WHERE SHOLD OPEN SOLARIS BE INSTALLED?" (SELECT THE PROPER DISK AND THEN FROM THAT DISK SELECT 2nd OPTION ON THE SCREEN "PARTITION THE DISK" AND BELOW THAT IT SHOWS 4 COMBO BOXEX.)

C) THE FIRST COMBO BOX SHOWS "Ext WIN95", SECOND COMBO BOX SHOWS "LINUX NATIVE" CLICKS ON IT AND SELECT "SOLARIS" PARTITION TYPE. AND THEN CLICK ON NEXT.

SECOND AUDIO CLIP:

MBR (MASTER BOOT RECORD) PARTITIONING SCHEME (i.e. FDISK SCHEME).

FIRST 512 BYTES = 440 + 4 + 2 + 64 + 2

440 BYTES: BOOTSTRAP PROGRAM.

4 BYTES: HDD's BINARY SIGNATURE / EX. SEAGATE's SIGNATURE, TOSHIBA's SIGNATURE IN BINARY FORMAT.

2 BYTE: NULL (ACTUAL NULL)

64 BYTE: PARTITION TABLE (VERY IMPORTANT)(HERE IN THIS, EACH PARTITIONS ENTRY ARE PUTTED IN THIS TABLE PARTITION TABLE). (IF WE LOSS THIS PARITION TABLE, THEN WE LOSS EVERYTHING INCLUDING OS).
2 BYTE: FDISK SIGNATURE 0xaa55 (FDISK SCHEME's OWN SIGNATURE).
I.e. 512=440=4=2+64+2
PARTITION TABLE: 64 BYTES
SO EACH PARTITION, i.e. IN MORE SPECIFIC WORD, EACH PRIMARY PARTITION(THERE ARE TOTAL 4 PRIMARY PARTITIONS AMONG THEM, 3 ARE ACTUAL PRIMARY PARTITIONS AND LAST REMAINING 1 PARTITION IS EXTENDED PARTITION WHICH IS ITSELF AS A PRIMARY PARTITION) GETS 16 BYTES. (I.e. 64/4=16) BYTES, SO FORMATION OF EACH PRIMARY PARTITION's OF 16 BYTES/OR PARTITION MAP IS AS FOLLOWS.
1 BYTE + 3 BYTES + 1 BYTE + 3 BYTES + 4 BYTES + 4 BYTES = 16 BYTES
IN FDISK SCHEME, THIS PARTITIONING SCHEME IS CALLED AS "MBR" (MASTER BOOT RECORD).
64 BYTES (16*4) SO WE HAVE 4 PRIMARY PARTITIONS (3 PRIMARIES + 1 EXTENDED PARTITION, WHICH IS ITSELF AS PRIMARY PARTITION)
16 BYTES ACTUAL FORMATION/OR PARTITION MAP: (1 BYTE + 3 BYTES + 1 BYTE + 3 BYTES + 4 BYTES + 4 BYTES = 16 BYTES).

1) 1 BYTE: THIS BYTE TELLS WHETHER PARTITION IS "ACTIVE PARTITION" OR NOT "ACTIVE PARTITION".
2) 3 BYTE: IT GIVES CHS (CYLINDER,HEAD,SECTOR) OF HARDDISK's FIRST BLOCK(HDD IS MADE UP OF BYTES AND SECTORS, AND SECTOR IS MADE UP OF BLOCK, BLOCK IS MADE UP OF PLATTERS ETC).i.e. IT GIVES PARTITIONS STARTING BLOCK OF CHS.
3) 1 BYTE: TYPE OF THE FILE SYSTEM.(YES, BUT IT IS NOT SHOWN IN WORDS, BUT RATHER IT IS MENTIONED IN HEDECIMAL BYTE SYSTEM FORMAT).
4) 3 BYTE: IT GIVES PARTITIONS ENDING BLOCK OF CHS (CYLINDER, HEAD, and SECTOR).
5) 4 BYTE: IT GIVES PARTITIONS BLOCKS LBA.(LBA: L:LOGICAL B:BLOCK A:ADDRESS)
6) 4 BYTE: IT GIVES NUMBER OF LOGICAL BLOCK ADDRESSES IN A HDD.

MILLION DOLLER RULE:
IF WE HAVE ANY "N" NUMBER OF OPERATING SYSTEMS, THE ONLY THAT OPERATING SYSTEM WILL BOOT WHOSE PARTITION IS AN ACTIVE PARTITION. AND, IN HDD, ONE AND ONLY ONE PARTITION WILL BE ACTIVE AT ONE TIME.
IN HDD, WE CAN MAKE PARTITION AS AN ACTIVE PARTITION BY USING TWO WAYS:

1) THROUGH HARDWARE/OR HARDWARE WISE ACTIVE PARTITION:
(CREATING HDD PARTITION AS AN ACTIVE USING "DISK SECTOR" IS CALLED AS HARDWARE WISE ACTIVE PARTITION.) (I.e. IN SHORT, DOING PARTITION AS AN ACTIVE PARTITION "NOT USING/THROUGH" BOOTLOADER, IT IS CALLED AS HARDWARE WISE ACTIVE PARTITION).

2) THROUGH SOFTWARE/OR SOFTWARE WISE ACTIVE PARTITION.
MAKING HDD PARTITION AS AN ACTIVE PARTITION USING "GRUB", IT IS CALLED AS SOFTWARE WISE ACTIVE PARTITION.(i.e. IN SHORT, DOING PARTITION AS AN ACTIVE PARTITION THROUGH BOOTLOADER, IT IS CALLED AS SOFTWARE WISE ACTIVE PARTITION).
WE CAN SEE WHICH PARTITION IS "ACTIVE PARTITION" AND WHICH IS "NOT ACTIVE PARTITION" BY USING FOLLOWING DETAILS:

1) 0x80: MEANS ACTIVE PARTITION.
2) 0x00: MEANS NOT ACTIVE PARTITION.

MBR: MASTER BOOT RECORD.
MBR = BOOTSECTOR (BS) + PARTITION TABLE (PT)
MBR HAS THE FOLLOWING CONTENTS:

1) BOOTSTRAP
2) VENDOR SIGNATURE
3) PARTITION TABLE
4) NULL
5) FDISK SIGNATURE(0xAA55) ,

1ST BYTE IS RESERVERD FOR ACTIVE PARTITION.IF WE HAVE AS MANY OPERATING SYSTEM AS WE HAVE, THE ONLY ONE OPERATING SYSTEM WILL BOOT, WHOSE PARTITION IS AN "ACTIVE PARTITION"AND ON HDD, ONE AND ONLY ONE PARTITION/OS WILL BE ACTIVE AT ONE TIME.
A PARTITION WHICH DOES NOT HAVE BOOTSTRAP PROGRAM IS CALLED AS **NON-BOOTABLE PARTITION**.
FOR EXAMPLE IN THIS OUR HDD:

A) EXTENDED PARTITION IS NOT A BOOTABLE PARTITION.

B) SWAP PARTITION IS NOT A BOOTABLE PARTITION.
C) PATA_DATA PARTITION IS NOT A BOOTABLE PARTITION.
DOS SUPPORTS 16 LOGICAL DRIVES IN EXTENDED PARTITION. AND WINDOWS SUPPORTS 128 LOGICAL PARTITIONS, AND GPARTED SUPPORTS 200 AND ABOVE
8088: PC-XT (NO HDD)
8088: PC-AT (HDD COMES INTO PICTURE). THAT TYPE OF HARDDISK WAS CALLED AS PATA (PARALLEL ADVANCED TECHNOLOGY ATTACHMENTS) IDE (INTEGRAL/INTEGRATED DRIVE ELECTRONIC)

HARDDISKS TYPES:

1) **PATA**: PARALLEL ATA. (PARALLEL AT ATTACHMENT):
    A) THIS TYPE OF HARDDISK IS ALSO CALLED AS "IDE" (INTEGRATED DRIVE ELECTRONICS).
    B) MAXIMUM SIZE OF PATA HARDDISK IS 2TB.
    C) THIS IS SLOW AS COMPARED TO SATA.

THE WHITE COLOR CABLE INSIDE WHICH IS HAVING A SOME SMALL WIRES, SO THIS WHITE COLOR CABLE's ONE END IS CONNECTED TO MOTHERBOARD AND ANOTHER END CONNECTED TO HARDDISK "PARALLELY". SO THEREFORE IT IS CALLED AS "PATA"(PARALLEL ADVANCED TECHNOLOGY ATTACHMENTS). ("AT" WORD IS LIBERTY WORD CREATED FOR 8080 MACHINE BY IBM)

2) **SATA**: SERIAL ATA. (SERIAL AT ATTACHMENT) ((AT WORD IS LIBERTY WORD CREATED FOR 8080 MACHINE BY IBM)
    A) IT IS ALSO CALLED AS "SCSI" (SMALL COMPUTER SYSTEM INTERFACE).
    B) B) FAST AS COMPARED TO PATA.

3) **SSD**: SOLID STATE DRIVE
    A) THIS IS NEW/LATEST TYPES OF HARDDISK.
    B) LATEST LAPTOPS AND COMPUTERS HAVE HARDDISK TYPE AS SSD (SOLID STATE DRIVE) FOR EXAMPLE. APPLE, SONY'S VIAO, ETC.

LIVE CD/DVD:
THE OS WHICH IS IF NOT BOOTING FROM HARDDISK BUT RATHER IT IS BOOTING FROM CD/DVD, THAT CD/DVD IS CALLED AS LIVE CD/DVD. THE OS IS ONLY PUTTED ON CD/DVD, BUT WHILE BOOTING, CPU BRINGS THIS OS FROM CD/DVD TO MEMORY/RAM. I.e. IN SHORT, THIS CD/DVD IS HAVING ITS OWN BOOTSTRAP PROGRAM, SO THIS CD/DVD IS CALLED AS LIVE CD/DVD.

EPBR: EXTENDED PARTITION BOOT RECORD.
AS LIKE PRIMARY PARTITION HAVE MBR (MASTER BOOT RECORD), SIMILLARLY THE EXTENDED PARTITION ASLO HAVE A RECORD CALLED AS EPBR (I.E. EXTENDED PARTITION BOOT RECORD).
Q. WHY WINDOWS CAN NOT SHOWS/DETECTS LINUX PARTITIONS BUT LINUX CAN SHOWS/DETECTS LINUX AS WELL AS WINDOWS PARTITIONS?
ANSWER: WINDOWS OPERATING SYSTEM IS A COMMERCIAL OPERATING SYSTEM; SO THEREFORE, IT DETECTS ONLY THOSE OPERATING SYSTEM WHICH IT BELONGS. FOR EXAMPLE. FAT32, NTFS ETC.
BUT, AS USUAL, LINUX IS OPEN SOURCE, SO IT IS NOT COMMERCIAL, SO IT SUPPORTS ALL THE OPERATING SYSTEM's FILE SYSTEM FORMATS, FOR EXAMPLE, IT SUPPORTS EXT3, IT SUPPORTS FAT32, NTFS, ANY FILE SYSTEM FORMAT TYPES (BECAUSE OF GRUB ALSO). SO THEREFORE WINDOWS ONLY DETECTS THOSE FILE SYSTEMS WHICH IT CAN SUPPORT AND LINUX SUPPORTS ALL THE FILE SYSTEMS.
THEREFORE, WINDOWS CAN NOT SHOWS/DETECTS LINUX PARTITIONS BUT LINUX CAN SHOWS/DETECTS WINDOWS PARTITIONS ALSO.
BOOT.INI: THIS FILE CONTAINS THE INFORMATION ABOUT THE OPERATING SYSTEMS WHICH, THE OERATING SYSTEMS ARE AVAILABLE FOR BOOTING BY BOTLOADER (I.e. NTLDR)(WNIDOWS XP'S BOOTLOADER).
SELECT "CUSTOM INSTALLATION" WHILE INSTALLING ANY OPERATING SYSTEM.
MOUNT POINT: MOUNT POINT IS THAT DIRECTORY FROM WHERE FILE SYSTEM BEGINS.
EVERY OPERATING SYSTEM HAS ITS OWN MOUNT POINT.
IN LINUX, THIS MOUNT POINT IS CALLED AS "ROOT" OR "/" (FORWARD SLASH).
IN WINDOWS, THIS MOUNT POINT IS CALLED AS "MY COMPUTER".
HOST CONTROLLER INTERFACE:

USB VERSIONS AND THIER SPEED ACCORDING TO VERSIONS

1) USB 1.0 SPEED: 1.5MB/SECOND TO 12 MB/SECOND.
2) USB 2.0 SPEED: 60MB/SECOND TO 480MB/SECOND.
3) USB 3.O SPEED: 640MB/SECOND TO 5GB/SECOND (THIS IS A LATEST VERSION OF USB).

ENHANCED HOST CONTROLLER INTERFACE (EHCI):

/ROOT/DEV

IN LINUX:

SATA HARDDISK IS CALLED AS "sd" AND PATA HARDDISK IS CALLED AS "hd" (THESE ARE IN OLD LINUX).

NOW A DAYS, ALL IN LATEST VERSIONS OF LINUX, THE HARDDISKS ARE TREATED AS "sd".

IN WINDOWS:

SATA HARDDISK IS CALLED AS "hd" AND PATA HARDDISK IS CALLED AS "sd".

FDISK-L

VIRTUAL OPERATING SYSTEM INSTALLATION:

WE CAN HAVE 8 VIRTUAL MACHINE MANAGERS/SOFTWARES AVAILABLE. THE SOFTWARES ARE:

1) VIRTUAL BOX.
2) VMware (OPEN SOURCE FREE SOFTWARE)
3) QEmulator

ADVANTAGES/DISADVANTAGES OF VIRTUAL OPERATING SYSTEM:

ADVANTAGES:

1) NO NEED TO REBOOT FOR TWO OPERATING SYSTEM.
2) WE CAN HANDEL TWO OPERATING SYSTEM AT SAME TIME.
3) CAN BE USEFULL FOR SMALL PROGRAMMING/WHICH DOES NOT REQUIRE ANY HARDWARE OR DRIVERS /OR GRAPHICS CARD.

DISADVANTAGES:

1) OPERATING SYSTEMS RUNS LITTLE BIT SLOW.
2) WE CAN NOT DO HIGH END GRAPHICS PROGRAMMING BECAUSE HIGH LEVEL GRAPHICS PROGRAMMING REQUIRE HARDWARE NATIVE DRIVERS SO THEREFORE THSE TWO DIFFERENT OS's DRIVERS WILL NOT BE COMPATIBLE WITH EACH OTHER.

Q. WHY HARDDISK SHOWS ITS CAPACITY LESS THAN THE ACTUAL CAPACITY OF HARDDISKS.?

ANSWER:

1) CONVERSION OF SI UNIT INTO BINARY UNIT, SO DOING ROUDING OFF, SOME BYTES ARE LOST (i.e. STANDARD UNIT TO BINARY UNIT) EX. 1024 IS CONSIDERED AS 1000KB. (24 BYTES ARE ROUNDED OFF/LOST).
3) CONVERTING "CHS TO LBA"
4) WHILE FORMATTING HDD, WE ARE NOT ACTUALLY CLEANING THE HDD, BUT WE ARE GOING TO FORMAT/ARRANGEMENT OF HDD AS PER FORMAT "i.e. CREATING ITS OWN FILE SYSTEM". I.e. IN SHORT "FORMATTING OVERHEAD"
5) RESERVERD FOR INODE.

IF HARDDISKS SIZE GREATER THAN 1TB THEN HARDDISK DETECTED SIZE WILL BE:

DETECTED SIZE = 0.91 * ACTUAL SIZE OF HARDDISKS.

IF HARDDISKS SIZE LESS THAN 1TB THEN HARDDISK DETECTED SIZE WILL BE:

DETECTED SIZE = 0.93 * ACTUAL SIZE OF HARDDISKS.

"ALWAYS INSTALL LOVER VERSION FIRST THEN UPPER VERSION LATER". (INSTALL LATER... LATER...) FIRST SELECT/INSTALL LOWEST VERSION AND THEN INSTALL UPPER VERSION AND SO ON...

FOURTH AUDIO CLIP:

WINDOWS-7 OPERATING SYSTEM INSTALLATION:

X86 ARCHITECHTURE: 8086's ARCHITECTURE's 32BIT VERSION.

64 BIT VERSIONS:

"SELECT 32-BIT INSTALLATION"

"BCDEDIT.EXE" IS A PROGRAM, WHICH CAN MODIFY THE BCD (BOOT CONFIGURATION DATA) BOOTLOADER.

UBANTU OPERATING SYSTEM INSTALLATION:

UBANTU COMES IN TWO FLAVOURS:

1) UBANTU WITH "**GNOME**" (G: GNU, N: NETWORK, O: OBJECT, M: MODEL, E: ENVIRONMENT)
2) UBANTU WITH "**KDE**" (K: K UBANTU, KOMMON, D : DESKTOP, E : ENVIRONMENT)

BY DEFAULT, UBANTU BELONGS TO "GNOME DESKTOP".

THE ACTUAL/MAJOR DIFFERENCE BETWEEN THE "COMMERCIAL OPERATING SYSTEM" (LIKE FOR EXAMPLE: MICROSOFT WINDOWS OPERATING SYSTEM) AND "OPEN/OR FREE OPERATING SYSTEM" (LIKE FOR EXAMPLE: LINUX OPERATING SYSTEM) IS THAT:

1) THE COMERCIAL OPERATING SYSTEM (LIKE FOR EXAMPLE: WINDOWS OS) ALWAYS KEEP THEIR "LOOK AND FEEL/DESKTOP GUI" ALWAYS "CONSTANT"/OR MORE SPECIFIC WORD "CONSISTENT". (FOR EXAMPLE: IF WE GO ANYWHERE IN THE WORLD, WE WILL LOOK THAT WINDOWS OPERATING SYSTEM's ONLY LANGUAGE WILL VARY, BUT "LOOK AND FEEL"/OR "DESKTOP GUI" WILL ALWAYS REMAINS SAME OR "CONSISTENT")

2) AS FREE/OPEN OPERATING SYSTEMS ARE FREE OR OPEN SOURCE, THEIR KERNELS ARE ALSO OPEN SOURCE, SO THE COMPANIES ARE DESIGNING THEIR OWN GUI USING THIS KERNEL AS THEIR COMMON BASE. SO THEREFORE THEIR "LOOK AND FEEL/ DESKTOP GUI" MAY VARY ACCORDINGLY.

"UBANTU" LINUX OPERATING SYSTEM IS SPECIAL BECAUSE, IT IS A "COMMUNITY DRIVEN OPERATING SYSTEM".

VIRTUALISATION:

LBA: LOGICAL BLOCK ADDRESS.

LVM: LOGICAL VOLUME MANAGER.

THIS IS ONE OF THE PARTITIONING SCHEMES.

WHEN YOU HAVE MULTIPLE HARDDISKS, BUT YOU WANT TO CLUB THEM TOGHETHER TO FORM AS A SINGLE HARDDISK THEN GO WITH THE HARDWARE CALLED AS “RAID”

BEST EX: RAID (REDUNDANT ARRAY OF INEXPENSIVE DISK).

THIS IS A HARDWARE TYPE IN WHICH, WE CAN ADD MORE THAN ONE HARDDISK AND WE CAN FORM/TREAT IT AS SINGLE HARDDISK.FOR EXAMPLE : IF WE HAVE 2TB's 5 HARDDISKS, THEN LVM TREAT IT AS 10TB's 1 HARDDISK AND WILL NOW THE PARTITIONING FROM THIS 10TB HARDDISK TREATING IT AS A SINGLE HARDDISK..

CD BOOT

CD BOOTSECT.EXT / nt60 ALL / force

nt52: WINDOWS 2000 AND WINDOWS 2003, AND WINDOWS XP's BOOTSECTOR's NAME OR RATHER BOORLOADER's NAME.

nt60: WINDOWS VISTA's /OR WINDOWS-7's BOOTSECTOR's NAME OR RATHER BOOTLOADER's NAME.

LIMITATIONS OF LINUX OPERATING SYSTEMS:

1) SWAP PARTITION SHOULB BE DOUBLE AS THE SIZE OF "RAM". (NOT COMPULSORY).
2) LINUX's SWAP PARTITION CAN NOT GROW DYNAMICALLY.

RATHER IN MORE SPECIFIC WORD, PARTITIONS NEVER GROW DYNAMICALLY.

BUT WINDOWS OPERATING SYSTEM's "PAGEFILE.SYS" FILE WHICH ACTS LIKE SWAP PARTITION IN LINUX, CAN GROW DYNAMICALLY, SO THEREFORE IN WINDOWS THERE IS NO ANY "SWAP PARTIIONING" AVAILABLE BUT INSTEAD, THEY HAVE PROVIDED US "PAGEFILE.SYS" NAMED FILE WHICH ACTS LIKE "SWAP PARTITION" IN LINUX. SO THEREFORE MICROSOFT WINDOWS HAS REMOVED THIS SWAP PARTITIONING FEATURE FROM THEIR WINDOWS OPERATING SYSTEM. BUT THEY HAVE INTRODUCED NEW "FILE FEATURE" WHICH JUST ACTS LIKE SWAP PARTITIONING OF LINUX. THIS FILE IS CALLED AS "PAGEFILE.SYS". THE ADVANTAGE OF THIS "PAGEFILE.SYS" FILE IS THAT IT CAN GROW DYNAMICALLY.

AS WE KNOW, LINUX IS THE GREAT OPERATING SYSTEM,

SWAP PARTITION IS NOT COMPULSORY IN LINUX; WE CAN CREATE PAGEFILE.SYS FILE IN LINUX ALSO LIKE WINDOWS OPERATING SYSTEM (MAKE SWAP COMMAND).

VMM: VIRTUAL MACHINE MANAGER.

Q. WHAT ACTUALLY DOES THIS VMM?
ANSWER: THIS VMM (VIRTUAL MACHINE MANAGER) DOES THE CONVERSION OF NATIVE FILE SYSTEM TO ANOTHER FILE SYSTEM AND VICE A VERSA. FOR EXAMPLE, IT DOES THE CONVERSION OF "NTFS TO NATIVE EXT3" AND "NATIVE EXT3 TO NTFS" AND VICE A VERSA.

VFF: VIRTUAL FILE SYSTEM:
VIRTUAL FILE SYSTEM "CAN NOT" BE SEEN. THE VIRTUAL FILE SYSTEM IS ACTUALLY A CONVERSION OF ONE FILE SYSTEM TO ANOTHER FILE SYSTEM.
i.e. FOR EXAMPLE, IF WE ARE USING "WINDOWS 7" OPERATING SYSTEM, AND INSIDE "WINDOWS 7", WE HAVE A "VIRTUAL MACHINE", WHICH RUNS "SuSE "OPERATING SYSTEM", AND THEN IF WE ARE RUNNING ANY SuSE's ANY APPLICATION, THEN IT INTERNALLY CONVERTS SuSE's "NATIVE "EXT3" FILE SYSTEM" INTO WINDOWS's "NTFS" FILE SYSTEM, AND WINDOWS NATIVE "NTFS" FILE SYSTEM INTO LINUX "EXT3" FILE SYSTEM. THIS IS NOTHING BUT "VIRTUAL FILE SYSTEM". AND ALL THESE TASKS ARE DONE BY A MANAGER CALLED AS "VIRTUAL MACHINE MANAGER".
VIRTUAL MACHINE MANAGER (VMM) HAS VIRTAUL FILE SYSTEM (VFS). BUT VIRTUAL FILE SYSTEM (VFS) CAN NOT BE SEEN. THIS IS A TYPE OF LOGICAL FILE SYSTEM WHICH CONVERTS OTHER OPERATING SYSTEM's FILE SYSTEM TO OUR OWN OPERATING SYSTEM's FILE SYSTEM, AT RUN TIME/DYNAMICALLY.
WINDOWS's "MY COMPUTER" MEANS LINUX's "ROOT" I.e."/"
AND WINDOWS's BOOT.INI FILE MEANS LINUX's MENU.LST FILE.
GO ON FOLLOWING PATH:
/BOOT/GRUB/MENU.LST
OPEN THIS "MENU.LST" FILE IN LINUX's KWRITE EDITOR; LIKE IN WINDOWS WE OPEN THE "BOOT.INI" FILE IN NOTEPAD EDITOR.
1) SET THE PROPER TIMEOUT IN SECONDS.
2) REMOVE UNWANTED ENTRIES FROM THIS MENU.LST FILE.
3) KEEP AS MUCH AS DATA AS WE WANT.
PATTERN:
OPEN SOLARIS 2009 ROOTNOVERIFY sd00
WINDOWS XP ROOTNOVERIFY sd01
ETC...
ETC...
OPEN SOLARIS 2009 ROOTNOVERIFY
BOOTSECT.EXT / nt62 ALL / FORCE
/BOOT/GRUB/MENU.LST
OPEN THIS "MENU.LST" FILE IN KWRITE EDITOR LIKE WINDOWS NOTEPAD.
CHANGE TIMER AS PER OUR REQUIREMENTS
IN LINUX OPERATING SYSTEM, PARTITIONING OF HARDDISKS STARTS FROM A NUMBER "1" FOR EX. IF WE ARE DOING PARTITIONING IN LINUX, THEN THE NUMBER WILL LOOK LIKE, sd1, sd2, sd3, sd4, sd5, ETC. AND IF CONSIDERING "GRUB's" NUMBERING SYSTEM, sd00 MEANS hd HARDISKS 0th HARDDISK's 0tH PARTITION. (IF CONSIDERING LINUX NUMBERING, 1sT HARDDISK's FIRST PARTITION) BUT AT THE SAME TIME, AS CONSIDERING WITH "GRUB", LIKE ARRAY INDEXING, THE NUMBERING WILL SHOWS AND WILL STARTS FROM "0" AND NOT FROM "1".
MAKING PHYSICALLY PARTITIONING AS AN ACTIVE PARTITIONING
ROOTNOVERYFY: MEANING IS THAT ROOTNOVERIFY MEANS GRUB BY DEFAULT EXPECTS YOUR(YOUR MEANS THE OPERATING SYSTEM WHICH YOU ARE GOING TO INCORPORATE WHICH THE OS THOUGHT THAT THIS ROOT WILL BE AVAILABLE IN MBR) BUT ACTUALLY, ROOT WHICH WILL NOT BE AVAILABLE IN MBR, BUT RATHER IT IS IN SOME DIFFERENT PARTITION OR IN SOME OTHER PARTITION.
EVERY OPERATING SYSTEM HAS "FILE SYSTEM" AND EVRY OPERATING SYSTEM HAS "ROOT" i.e. "/".

CHAINLOADER: WHEN ONE PROGRAM BOOTS/LOADS ANOTHER PROGRAM IN A CHAIN, THEN IT IS CALLED AS CHAINLOADER.

"GRUB" IS SUCH A LOADER WHICH IS IT SELF IS A "PROGRAM", BUT ALONG WITH THIS "GRUB PROGRAM", IT ALSO LOADS SOME "OTHER BOOTLOADER PROGRAM". AND THIS IS NOTHING BUT A "CHAINLOADER".

NON LINUX OPERATING SYSTEM CAN BE CONFIGURED INSIDE "GRUB" BY USING CHAIN LOADING.
LINUX IS "BY THE POGRAMMER" "OF THE PROGRAMMER" "FOR THE PROGRAMMER"...!!!

MACINTOSH/OR HACINTOSH OPERATING SYSTEM INSTALLATION:

MACINTOSH OPERATING SYSTEM IS DESIGNED ONLY FOR APPLE HARDWARE.

MACINTOSH OPERATING SYSTEMS VERSIONS ARE: (TIGER, PUMA, JAGUAR, AND LION).

1) MAC OS X (X STANDS FOR 10).
2) MAC OS X : 10.4 : TIGER VERSION
3) MAC OS X : 10.5 : LEOPARD VERSION
4) MAC OS X : 10.6 : SNOW LEOPARD
5) MAC OS X: 10.7: LION (LATEST VERSION OF OPERATING SYSTEM).

HACKED VERSION OF MACINTOSH IS NOTH BUT HACINTOSH.

MAC OS/OR IN OUR CASE HACINTOSH, WILL NOT INSTALL IN OUR HARDWARE SO EASILY BECAUSE IT IS ONLY MADE FOR APPLE HARDWARE. BUT THE HACHED VERSION CAN SUPPORT X86 MACHINE ALSO. SO WE WILL TRY TO INSTALL IT IN OUR HARDWARE.

FILE SYSTEM NAME IS: HFS (HIRARCHIAL FILE SYSTEM) / HFS+ (HIRARCHIAL FILE SYSTEM +)

FROM 1983, MBR IS WORKING. MEANS MBR SCHEME IS FIRST STARTED/OR INTRODUCED IN 1983.

MASTER BOOT RECORD (MBR) PARTITIONING SCHEME:

1) THE PROBLEM IN THIS MBR BOOT PARTITIONING SCHEME IS THAT, WE CAN CREATE ONLY 4 PRIMARY PARTITIONS, AND STILL IF WE WANT TO DO MORE THAN 4 PRIMARY PARTITIONS, THEN DO IT ON EXTENDED's LAGICAL PARTITION. (EXTENDED PARTITION IT SELF IS A PRIMARY PARTITION).
2) MBR SUPPORTS MAXIMUM HARDDISK's SIZE OF 2TB
3) IN MBR, PARTITIONING SCHEME IS KNOWN AS "FDISK SCHEME"
4) MBR BOOT PARTITIONING IS DESIGNED BY "MICROSOFT INCORPORATION".
5) MAC SUPPORTS "KDE DESKTOP".

EFI INTERNALLY CREATE EFI PARTITION AUTOMATICALLY.

BY LOOKING AT THESE (FIRST 2 POINTS) RESTRICTION, INTEL INCORPARATION COMPANY, NEARLY IN 2001-2002, DESIGNED A SPECIAL PARTITIONING SCHEME, SO, TILL NOW, IN PARTITIONING, BOOTING WAS DONE BY MBR, BUT IN THIS SCHEME, THE BOOTING IS DONE BY "EFI BOOT". (EXTENSIBLE FIRMWARE INTERFACE/OR INFRASTRUCTURE)

WINDOWS 7 CAN SUPPORT BOTH PARTITIONING BOOTING SCHEME, i.e. MBR BOOT PARTITION AND EFI BOOT PARTITION.

IN THIS, THE EFI (EXTENSIBLE FIRMWARE INTERFACE), PARTITIONING SCHEME IS KNOWN AS "GPT PARTITIONING SCHEME" (G: GUID P: PARTITION T: TABLE). GUID: GLOBAL UNIQUE IDENTIFIER.

MAC OPERATING SYSTEM MUST REQUIRE SATA HARDDISK.

HERE, IN THIS CASE, WE ARE GOINT TO CREATE PARTITIONS OF SATA HARDDISK IN 7 PARTITION/PARTS.

1) FOR MAC OERATING SYSTEM.
2) BACKUP RESTORE UTILITY.
3) FEDORA
4) SWAP
5) DATA
6) EFI
7)

OPTIONS: HOW YOU WANT TO DO PARTITIONING OF HARDDISK?

1) ADVANCED PARTITIONING TABLE GUID PARTITIONING TABLE
2) MBR PARTITIOING TABLE.

SELECT FIRST OPTION. I.e. GUID PARTITIOING SCHEME.

FORMAT FILE SYSTEM: JFS (JOURNELLED FILE SYSTEM).

"SELECT CUSTOM INSTALLATION"

THE HARDDISK's FIRST 17GB IS CALLED AS "PRIMARY GPT".

THE SAME COPY OF THIS 17GB IS CREATED IN BACKUP PARTITION WHICH IS CALLED AS "SECONDARY GPT", FOR TAKING BACKUP OF YOUR DATA AND IT IS UPDATED EVERYTIME. THAT'S THE BEUTIFY OF "GPT". SO, THEREFORE, THIS "SECONDARY GPT" TAKES YOUR ALL YOUR DATA AS A BACKUP. SO, IN CASE IF WE LOST THE DATA FROM "PRIMARY GPT", THEN WE CAN RECOVER IT EASILY.

IN GPT, YOUR HARDDISK IS TREATED AS "LBA" LOGICAL BLOCK ADDRESS.

(512 * 34)/1024
0tH LBA, 1st LBA
EVERY LBA's SIZE IS 512BYTE.
Q. HOW TO CALCULATE LBA (LOGICAL BLOCK ADDRESS)?
ANSWER: LBA = ((CYLINDER NUMBER * NUMBER OF HEADS PER CYLINDER) + HEAD NUMBER)*SECTOR PER SWAP + SECTOR NUMBER - 1
LBA 1: MBR (PROTECTIVE MBR). (THIS IS FOR BACKWORD COMPATIBILITY).
LBA 2: PRIMARY GPT HEADER. (412 + 92(1) HDD's GUID, 2) PRC-32(PRIMARY REDUNDANCY CHECK)))
LBA 2 TO LBA 33: 1 LBA CAN HAVE 4 PRIMARY PARTITIONS, SO LBA-2 TO LBA-33 CAN HAVE 32*4 PRIMARY PARTITION TABLE.
ALONG WITH THIS, WE CAN HAVE EXTENDED PARTITION ALSO IN EACH LBA. AND IN THIS EXTENDED, WE CAN CREATE AS MANY PRIMARY SECONDARY PARTITION/LOGICAL PARTITION TABLE AS WE HAVE. SO THERE IS NO LIMIT OF CREATING AS MANY NUMBERS OF PRIMARY PARTITIONS IN "GPT PARTITIONING SCHEME".
GPT SUPPORTS MAXIMUM OF 9.4 GIGABYTE (2 RAISE TO 90 BYTES) HARDDISKS WHICH IS NOT AVAILABLE IN THE WORLD TILL NOW.
BYTE, KILOBYTE, MEGABYTE, GIGABYTE, TERABYTE, PETABYTE, EXABYTE, XETABYTE, YOTABYTE, BRONTOBYTE, GEOBYTE

1) 2 RAISE TO 10 = 1KB KILOBYTE.
2) 2 RAISE TO 20 = 1MB MEGABTE.
3) 2 RAISE TO 30 = 1GB GIGABYTE.
4) 2 RAISE TO 40 = 1TB TERA BYTE.
5) 2 RAISE TO 50 = 1PT PETA BYTE.
6) 2 RAISE TO 60 = 1EB EXA BYTE.
7) 2 RAISE TO 70 = 1ZB ZETA BYTE.
8) 2 RAISE TO 80 = 1YT YOTA BYTE.
9) 2 RAISE TO 90 = 1BT BRONTO BYTE.
10) 2 RAISE TO 100 = 1GEO BYTE.

(SAFE MODE MEANS, IN THAT MODE, GRAPHICS CARD ARE NOT DETECTED BY OS).
APPLE MENU --> ABOUT BOOTMAP --> MORE INFORMATION --> GRAPHICS DISPLAY.
Q. WHY MACINTOSH/ OR HACINTOSH LOOKS SO BEUTIFUL IN SAFE MODE ALSO WITHOUT DETECTING GRAPHICS CARD.?
ANSWER: BECAUSE MACHINTOSH/OR HACINTOSH INTERNALLY BY DEFAULT HAS/OR SUPPORTS RESA (RADIO ELECTRONIC STANDARD ASSOCIATION's IN BUILT GRAPHICS CARDS FEATURES). BECAUSE OF THIS FEATURE, MACINTOSH/OR HACINTOSH LOOKS SO BEUTIFUL IN SAFE MODE ALSO.

INSTALLATION OF FEDORA CORE 11

ANACONDA IS "RED HARDWARE DETECTION PROGRAM"(HARDWARE PROBIMG PROGRAM/HARDWARE DETECTION PROGRAM).
YAKK BELONGS TO SuSE. (HARDWARE PROBING PROGRAM/HARDWARE DETECTION PROGRAM) AS WELL AS HARDWARE CONFIGURATION PROGRAM.
LINUX's BEST KERNEL/PROGRAMMER IS WRIITEN BY: PETER AMVI: IN RED HAT OPERATING SYSTEM.
WHEN BRITISH WERE HERE IN INDIA, THEN AT TIME, AT THAT TIME, INDIA'S CAPITAL WAS KOLKATA. SO FROM THERE, THE TIME INDIA's WAS CONSIDERED AS TIME OF KOLKATA. NOW A DAYS ALSO THIS TIMING IS FOLLOWS USING "NTP" I.e. NETWORK TIME PROTOCOL. (THIS IS CONSIDERED IN "KOLKATA").
sdA1, sdA2, sdA3
IN LINUX
FAT16 IS CONSIDERED AS FAT. AND
FAT32 IS CONSIDERED AS VFAT i.e. VERBOS FAT
FORMAT AS "SWAP"
INSTALL BOOTLOADER ON /DEV/sdB4
IF WHOLE HDD (i.e. ONLY sd/OR hd THEN PLEASE SELECT NO BECAUSE IT IS MBR).
UNIX IS NOT LINUX, BUT LINUX IS UNIX. AND "LILO" IS BOOTLOADER OF LINUX.
LILO BOOTLOADER'S DISADVANTAGES

1)LILO IS DIFFICULT/LOW SUPPORT FOR GRAPHICAL BECAUSE FONT IS NOT SUPPORTED
2)IT IS COMMAND BASED LOADER AND NOT A GUI BASED LOADER.
3)LILO FOLLOWS THE TRADITIONAL PARTITIONING SCHEME AND NOT THE CURRENT PARTITIONING SCHEME i.e. GPT.

4)THIS BOOTLOADER IS NOT CONFIGURABLE.

SO THEREFORE, "GRUB" IS THE ONLY BOOTLOADER AVAILABLE WHICH SUPPORTS BOTH MBR AND GPT PARTITIONING SCHEME.

SO ALWAYS USE "GRUB" BOOTLOADER FOR LINUX OPERATING SYSTEM.

THEN ALSO ANY ONE WANTS TO USE LILO, THEN JUST GO WITH/USE "ELILO" i.e. "ENHANCED LILO" BOOTLOADER WHICH SUPPORTS ALL THESE THREE FEATURES MENTIONED ABOVE.

WINDOWS UBANTU INSTALLER (WBI) AND VIRTUAL MACHINE BASED UBANTU INSTALLER ARE DIFFERENT WITH EACH OTHER. BOTH ARE VIRTUAL MACHINE BASED INSTALLER BUT THE MAJOR DIFFERENCE BETWEEN THEM IS THAT THE CONFIGURABLE VIRTUAL MACHINE BASED INSTALLER AND BY DEFAULT VIRTUAL BASED MACHINE.

IN WINDOWS MOUNTING IS DONE AUTOMATICALLY.

COMMAND NAME IS: MOUNTVOL: I.e.MEANS MOUNT VOLUME

MOUNT -T “SOURCE”“DESTINATION” (-T STANDS FOR FILE SYSTEM TYPE)

/DEV/MOUNT