

COMPUTER INFO-GALLERY

VOLUME - 3

(2014-15)



Students' Assignments as

IT Encyclopedia

PREFACE

This book is intended to make the new-comers to the Department of Computer Science (UG), who does not have the ideas regarding the basics of the Computer and its terminologies. It can also help the students from computer backdrop, to make a review regarding IT terminologies and concepts. Already Volume I and II has been launched during 2012-14.

The thought of publishing this book arises as a sparkle to make the Student's Assignments, in an organized manner. I had an idea that, if the topics given to the students to prepare their Assignments are non-repetitive, then they may do it without copying others' content. Then, I thought why not we club it together in the form of a book, which will help other students also. That is how this book got emerged. This is Volume III for the academic year 2014-15 with some other useful contents to make the students very well equipped in the foundation level.

The copy of this book will be maintained in the Department Library and also the e-content of this has been posted in our college website. I hereby deliver my heartfelt thanks to the most respected Correspondent Sir, the honorable Principal Sir, and the beloved H.O.D. (CS) Mr.P.Ramesh sir, who gave me the freedom, to conduct an activity of this kind. I thank my colleagues and my senior faculty members who have given me a moral support. I also thank my dear students for their co-operation. I hereby assure that the Department of Computer Science (UG) will always find ways for the betterment of the students.

Thanking You,



INFO- GALLERY IN-CHARGE

(R.Sundar Raj)

CONTENT

TOPIC NO.	PARTICULARS	PAGE NO.
1	ACCUMULATOR	1
2	AD HOC NETWORK	3
3	ANDROID TECHNOLOGY	5
4	APPLET	7
5	ASCII VALUES	9
6	BUS AND ITS TYPES	11
7	BIOMETRICS	13
8	BOTNET	15
9	CARD READER	17
10	CLIP ART	19
11	CURSOR	21
12	CONTROL PANEL	23
13	COPYRIGHT AND PIRACY	25
14	DEFRAGMENTATION OF HARD DISK	27
15	DOWNLOADING AND UPLOADING FILES	29
16	DUAL CORE PROCESSORS	31
17	DASH BOARD	33
18	PROM	35
19	EPROM	37
20	EEPROM	39
21	FIBER OPTIC CABLE	41
22	GATEWAY	43
23	HACKING	45
24	HUB	47
25	HYPERMEDIA	49
26	ICANN	51
27	INTEGRATED DEVELOPMENT ENVIRONMENT	53
28	IEEE FORMAT	55
29	iPAD	59
30	iPOD	61

TOPIC NO.	PARTICULARS	PAGE NO.
31	JRE (JAVA RUNTIME ENVIRONMENT)	63
32	KERNEL	65
33	LINUX OS	67
34	LOCAL HOST	69
35	LOSSY COMPRESSION	71
36	LOSSLESS COMPRESSION	73
37	MAC OS	75
38	TOUCHPAD	77
39	OPTICAL DISK DRIVE MECHANISM	79
40	VOLATILE AND NON-VOLATILE MEMORY	81
41	CLIENT SYSTEM	83
42	SERVER SYSTEM	85
43	VARIOUS IMAGE FILE FORMATS	87
44	VARIOUS AUDIO FILE FORMATS	89
45	VARIOUS VIDEO FILE FORMATS	91



BEST

WISHES

To all of your present and future innovations for
the betterment of our students and Institution.....

H.O.D

Principal

Correspondent

Assignment Contributions

Class : I B.Sc (CS) - 'A'

S.NO	NAME	TOPIC NO.
1	R.RESHMA	1
2	S.P.SANJAY KARAN	2
3	S.MANIKANDA PRABHU	3
4	N.SASIKUMAR	4
5	S.INBA	5

UNDER THE GUIDANCE OF : Ms.P.THENMOZHI

Class : I B.Sc (CS) - 'B'

S.NO	NAME	TOPIC NO.
1	T.SIVASHANKER	6
2	M.KARTHIKEYAN	7
3	B.AJITH KUMAR	8
4	S.HINDHUJA	9
5	K.LOGESHWARA RAO	10

UNDER THE GUIDANCE OF : Ms.R.SAVEETHA

Class : I B.Sc (CS) - 'C'

S.NO	NAME	TOPIC NO.
1	B.SANGEETH	11
2	K.GOWTHAM SHANKAR	12
3	P.PAVITHRA	13
4	N.MEENA PRIYA	14
5	V.DEEPAN	15

UNDER THE GUIDANCE OF : Mr.D.GOPINATH

Class : II B.Sc (CS) - 'A'

S.NO	NAME	TOPIC NO.
1	B.SATHYAA	16
2	M.SANGAVI	17
3	S. ARUN PRASATH	18
4	R.NAVEEN KUMAR	19
5	G.SHANMATHI	20

UNDER THE GUIDANCE OF : Ms.S.GOWTHAMI

Class : II B.Sc (CS) - 'B'

S.NO	NAME	TOPIC NO.
1	R.KIRUTHIKA	21
2	E.SURESH	22
3	A.NANDHINI	23
4	M.RAGAVENDRAN	24
5	K.GOMATHI	25

UNDER THE GUIDANCE OF : Ms.K.GOMATHY

Class : II B.Sc (CS) - 'C'

S.NO	NAME	TOPIC NO.
1	M.SNEHA	26
2	S.R.OMPRAKASH	27
3	G.MANIKANDAKARTHI	28
4	R.NAVEENKUMAR	29
5	K.VIGNESH	30

UNDER THE GUIDANCE OF : Mr.T.VELUMANI

Class : III B.Sc (CS) - 'A'

S.NO	NAME	TOPIC NO.
1	K.KAPILESWARAN	31
2	S.MANIBHARATHI	32
3	M.ABDUL KHADHI	33
4	C.SARAVANA KUMAR	34
5	S.BALA MURUGAN	35

UNDER THE GUIDANCE OF : Ms.R.PUSHPALATHA

Class : III B.Sc (CS) - 'B'

S.NO	NAME	TOPIC NO.
1	H.RAMAKRISHNAN	36
2	C.KARTHIK	37
3	R.JAYASHREE	38
4	N.SIVARANJANI	39
5	M.MITHRA SUPRAJA	40

UNDER THE GUIDANCE OF : Mr.A.R.KARTHEKEYAN

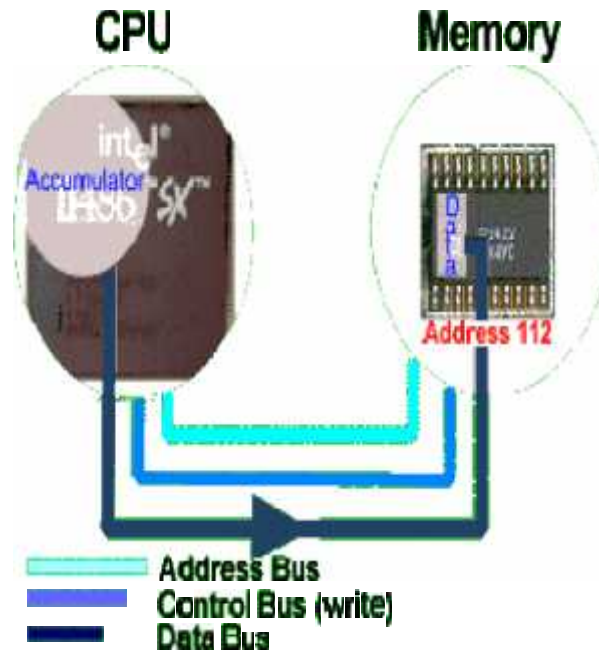
Class : III B.Sc (CS) - 'C'

S.NO	NAME	TOPIC NO.
1	S.B.SWATHI	41
2	S.Y.DEEPA	42
3	T.RAMYA	43
4	B.KIRUTHIKA	44
5	S.SOWMIYA	45

UNDER THE GUIDANCE OF : Ms.P.AKILANDESHWARI

ACCUMULATOR

An accumulator is a register for short-term, intermediate storage of arithmetic and logic data in a computer's CPU . The term "accumulator" is rarely used in reference to contemporary CPUs, having been replaced around the turn of the millennium by the term "register." In a modern computers, any register can function as an accumulator.



The most elementary use for an accumulator is adding a sequence of numbers. The numerical value in the accumulator increases as each number is added, exactly as it happens in a simple desktop calculator (but much faster, of course). Once the sum has been determined, it is written to the main memory or to another register.

The term "accumulator" is used in a wide variety of non-computing applications and activities, such as electrical engineering (an energy storage device such as a rechargeable battery or ultra capacitor), hydraulics (a mechanical energy storage device), in stock trading (a contract or agreement), and even in gambling (a parlay bet).

Accumulator Computing

In a computer's central processing unit (CPU), an accumulator is a register in which intermediate arithmetic and logic results are stored. Without a register like an accumulator, it would be necessary to write the result of each calculation .electronic computer systems were often split into two groups,those with accumulator and those without.

Just a few of the instructions are, for example (with some modern interpretation):

- Clear accumulator and add number from memory location x
- Clear accumulator and subtract number from memory location x
- Add number copied from memory location x to the contents of the accumulator
- Subtract number copied from memory location x from the contents of the accumulator
- Clear accumulator and shift contents of register into accumulate

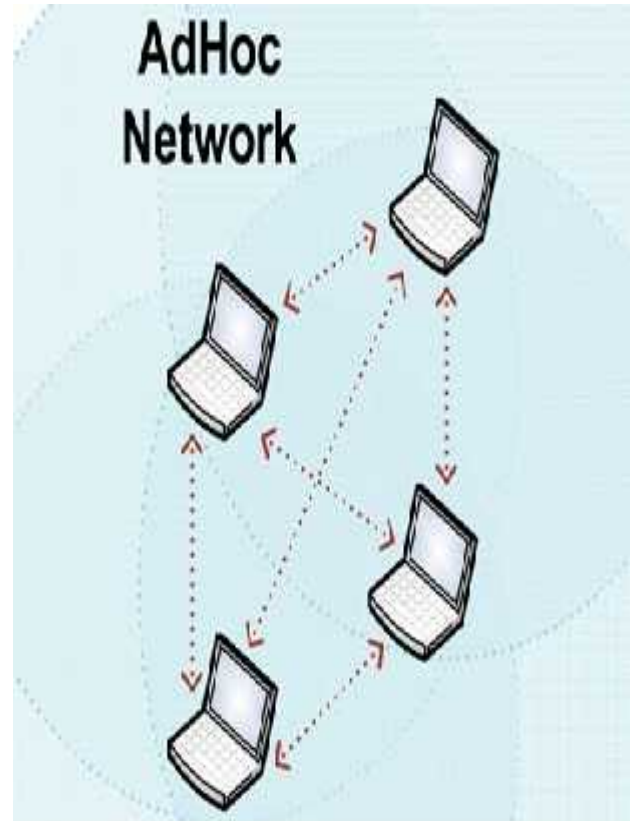
Accumulator Machines

An Accumulator Machine, also called a 1-operand machine, or a CPU with accumulator-based architecture, is a kind of CPU where, although it may have several registers, the CPU mostly stores the results of calculations in one special register, typically called "the accumulator". Almost all early computers were accumulator machines with only the high-performance "supercomputers" having multiple registers. Then as mainframe systems gave way to microcomputers, accumulator architectures were again popular with the MOS 6502 being a notable example. Many 8-bit microcontrollers still popular as of 2014, such as the PICmicro and 8051, are accumulator-based machines.

Modern CPUs are typically 2-operand or 3-operand machines. The additional operands specify which one of many general purpose registers (also called "general purpose accumulators") are used as the source and destination for calculations. These CPUs are not considered "accumulator machines".

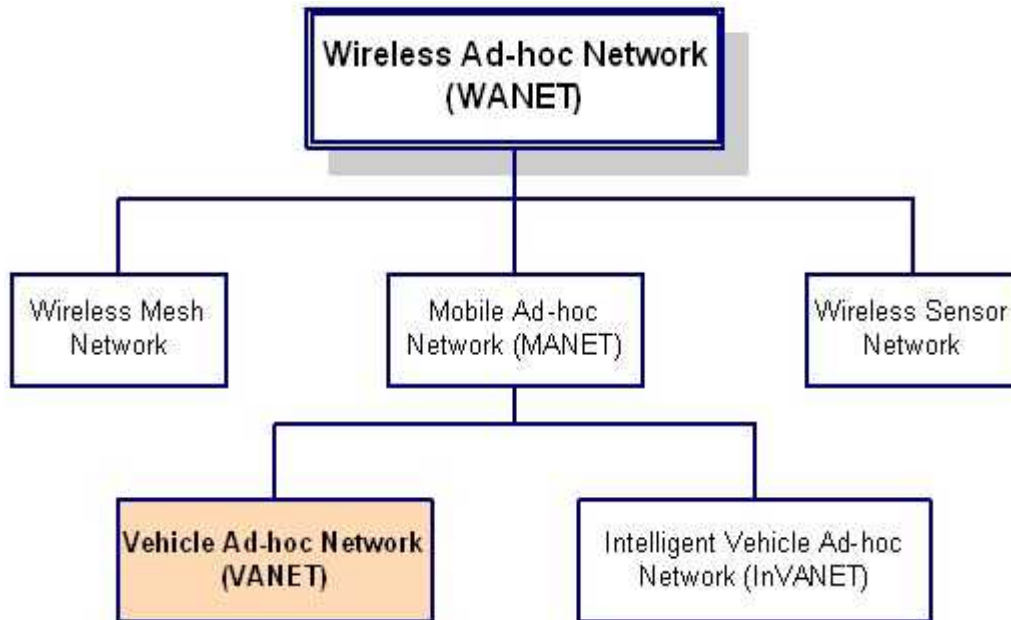
AD HOC NETWORK

An ad hoc network typically refers to any set of networks where all devices have equal status on a network and are free to associate with any other ad hoc network device in link range. Ad hoc network often refers to a mode of operation of IEEE 802.11 wireless networks.



Wireless Ad Hoc Network

A wireless ad hoc network is a decentralized type of wireless network. The network is ad hoc because it does not rely on a pre existing infrastructure, such as routers in wired networks or access points in managed wireless networks. An ad hoc network typically refers to any set of networks where all devices have equal link range.



Application

The decentralized nature of wireless ad-hoc networks makes them suitable for a variety of applications where central nodes can't be relied on and may improve the scalability of networks compared to wireless managed networks.

Technical requirements

An ad hoc network is made up of multiple “nodes” connected by “links.” Links are influenced by the node's resources (e.g., transmitter power, computing power and memory). Since links can be connected or disconnected at any time a functioning network must be able to cope.

Medium-access control

In most wireless ad hoc networks, the nodes compete for access to shared wireless medium, often resulting in collisions. Using cooperative wireless communications improves immunity to interference by having the destination node combine self-interference and other-node interference to improve decoding of the desired signal.

ANDROID TECHNOLOGY

What is Android?

Operating Systems have developed a lot in last 15 years. Starting from black and white phones to recent smart phones or mini computers, mobile OS has come far away. Especially for smart phones, Mobile OS has greatly evolved from Palm OS in 1996 to Windows pocket PC in 2000 then to Blackberry OS and Android.



One of the most widely used mobile OS these days is Android. It is a software bunch comprising not only operating system but also middleware and key applications.

Android Inc was founded in Palo Alto of California, U.S. by Andy Rubin, Rich miner, Nick sears and Chris White in 2003.

Later Android Inc. was acquired by Google in 2005. After original release there have been number of updates in the original version of Android.



Features & Specifications

Android is a powerful Operating System supporting a large number of applications in Smart Phones. These applications make life more comfortable and advanced for the users. Hardware that support Android are mainly based on ARM architecture platform. Some of the current features and specifications of android are:

Application framework	• It enables reuse and replacement of components
Dalvik virtual machine	• It is optimized for mobile device
Integrated Browser	• It is based on the open source Web kit engine
Optimized graphics	• It is powered by a custom 2D graphics library; 3D graphics based on the OpenGL ES 1.0 specification
SQLite	
Media support	
GSM Technology	
Bluetooth, EDGE, 3G, Wi-fi	
Camera, GPS, Compass etc	

Applications

- Android applications are composed of one or more application components
- Each component performs a different role in the overall application behavior, and each one can be activated individually
- The manifest file must declare all components in the application and should also declare all application requirements, such as the minimum version of Android required and any hardware configurations required
- Non-code application resources should include alternatives for different device configurations

APPLET

Java Applets is a java program that is launched from HTML and run in a web browser. Java applet can provide web applications with interactive features that cannot be provided by HTML.

A Java applet is a small application which is written in Java and delivered to users in the form of Byte code. The user launches the Java applet from a web page, and the applet is then executed within a Java Virtual Machine (JVM) in a process separate from the web browser itself. A Java applet can appear in a frame of the web page, a new application window, Sun's Applet Viewer, or a stand-alone tool for testing applets. Java applets were introduced in the first version of the Java language, which was released in 1995.



Java applets can be written in any programming language that compiles Java byte code. They are usually written in Java, but other languages such as Jython, JRuby, Pascal, Scala, or Eiffel (via SmartEiffel) may be used as well.

Applet Vs Subroutine

A larger application distinguishes its applets through several features:

- Applets execute only on the "client" platform environment of a system, as contrasted from "servlet". As such, an applet provides functionality or performance beyond the default capabilities of its container (the browser).
- The container restricts applets' capabilities.
- Applets are written in a language different from the scripting or HTML language that invokes it. The applet is written in a compiled language, whereas the scripting language of the container is an interpreted language, hence the greater performance or functionality of the applet. Unlike a "subroutine", a complete web component can be implemented as an applet.

Technologies

Java applets are executed in a sandbox by most web browsers, preventing them from accessing local data like the clipboard or file system.

The code of the applet is downloaded from a web server, after which the browser either embeds the applet into a web page or opens a new window showing the applet's user interface.

A Java applet extends the class `java.applet.Applet`, or in the case of a Swing applet, `javax.swing.JApplet`. The class which must override methods from the applet class to set up a user interface inside itself (`Applet`) is a descendant of `Panel` which is a descendant of `Container`.

As applet inherits from container, it has largely the same user interface possibilities as an ordinary Java application, including regions with user specific visualization.

ASCII VALUES

ASCII stands for American Standard Code for Information Interchange. Computers can only understand numbers, so an ASCII code is the numerical representation of a character such as 'a' or '@' or an action of some sort. ASCII was developed a long time ago and now the non-printing characters are rarely used for their original purpose.

Dec	Hx	Oct	Char	Dec	Hx	Oct	Html	Chr	Dec	Hx	Oct	Html	Chr	Dec	Hx	Oct	Html	Chr
0	0	000	NUL (null)	32	20	040	 	Space	64	40	100	@	@	96	60	140	`	`
1	1	001	SOH (start of heading)	33	21	041	!	!	65	41	101	A	A	97	61	141	a	a
2	2	002	STX (start of text)	34	22	042	"	"	66	42	102	B	B	98	62	142	b	b
3	3	003	ETX (end of text)	35	23	043	#	#	67	43	103	C	C	99	63	143	c	c
4	4	004	EOT (end of transmission)	36	24	044	$	\$	68	44	104	D	D	100	64	144	d	d
5	5	005	ENQ (enquiry)	37	25	045	%	%	69	45	105	E	E	101	65	145	e	e
6	6	006	ACK (acknowledge)	38	26	046	&	&	70	46	106	F	F	102	66	146	f	f
7	7	007	BEL (bell)	39	27	047	'	'	71	47	107	G	G	103	67	147	g	g
8	8	010	BS (backspace)	40	28	050	((72	48	110	H	H	104	68	150	h	h
9	9	011	TAB (horizontal tab)	41	29	051))	73	49	111	I	I	105	69	151	i	i
10	A	012	LF (NL line feed, new line)	42	2A	052	*	*	74	4A	112	J	J	106	6A	152	j	j
11	B	013	VT (vertical tab)	43	2B	053	+	+	75	4B	113	K	K	107	6B	153	k	k
12	C	014	FF (NP form feed, new page)	44	2C	054	,	,	76	4C	114	L	L	108	6C	154	l	l
13	D	015	CR (carriage return)	45	2D	055	-	-	77	4D	115	M	M	109	6D	155	m	m
14	E	016	SO (shift out)	46	2E	056	.	.	78	4E	116	N	N	110	6E	156	n	n
15	F	017	SI (shift in)	47	2F	057	/	/	79	4F	117	O	O	111	6F	157	o	o
16	10	020	DLE (data link escape)	48	30	060	0	0	80	50	120	P	P	112	70	160	p	p
17	11	021	DC1 (device control 1)	49	31	061	1	1	81	51	121	Q	Q	113	71	161	q	q
18	12	022	DC2 (device control 2)	50	32	062	2	2	82	52	122	R	R	114	72	162	r	r
19	13	023	DC3 (device control 3)	51	33	063	3	3	83	53	123	S	S	115	73	163	s	s
20	14	024	DC4 (device control 4)	52	34	064	4	4	84	54	124	T	T	116	74	164	t	t
21	15	025	NAK (negative acknowledge)	53	35	065	5	5	85	55	125	U	U	117	75	165	u	u
22	16	026	SYN (synchronous idle)	54	36	066	6	6	86	56	126	V	V	118	76	166	v	v
23	17	027	ETB (end of trans. block)	55	37	067	7	7	87	57	127	W	W	119	77	167	w	w
24	18	030	CAN (cancel)	56	38	070	8	8	88	58	130	X	X	120	78	170	x	x
25	19	031	EM (end of medium)	57	39	071	9	9	89	59	131	Y	Y	121	79	171	y	y
26	1A	032	SUB (substitute)	58	3A	072	:	:	90	5A	132	Z	Z	122	7A	172	z	z
27	1B	033	ESC (escape)	59	3B	073	;	;	91	5B	133	[[123	7B	173	{	{
28	1C	034	FS (file separator)	60	3C	074	<	<	92	5C	134	\	\	124	7C	174	|	
29	1D	035	GS (group separator)	61	3D	075	=	=	93	5D	135]]	125	7D	175	}	}
30	1E	036	RS (record separator)	62	3E	076	>	>	94	5E	136	^	^	126	7E	176	~	~
31	1F	037	US (unit separator)	63	3F	077	?	?	95	5F	137	_	_	127	7F	177		DEL

ASCII was actually designed for use with teletypes and so the descriptions are somewhat obscure. If someone says they want your CV however in ASCII format, all this means is they want 'plain' text with no formatting such as tabs, bold or underscoring - the raw format that any computer can understand. This is usually so they can easily import the file into their own applications without issues. Notepad.exe creates ASCII text, or in MS Word you can save a file as 'text only'

128	Ç	144	É	160	á	176	☐	192	Ł	208	⊥	224	α	240	≡
129	ü	145	æ	161	í	177	☐	193	⊥	209	⊥	225	β	241	±
130	é	146	Æ	162	ó	178	☐	194	⊥	210	⊥	226	Γ	242	≥
131	â	147	ô	163	ú	179		195	⊥	211	⊥	227	π	243	≤
132	ä	148	ö	164	ñ	180	⊥	196	-	212	⊥	228	Σ	244	∫
133	à	149	ò	165	Ñ	181	⊥	197	⊥	213	⊥	229	σ	245	∫
134	â	150	û	166	•	182	⊥	198	⊥	214	⊥	230	μ	246	÷
135	ç	151	ù	167	°	183	⊥	199	⊥	215	⊥	231	τ	247	≈
136	ê	152	ÿ	168	ı	184	⊥	200	⊥	216	⊥	232	Φ	248	°
137	ë	153	Ö	169	ı	185	⊥	201	⊥	217	⊥	233	⊕	249	•
138	è	154	Ü	170	ı	186	⊥	202	⊥	218	⊥	234	Ω	250	•
139	ï	155	•	171	½	187	⊥	203	⊥	219	■	235	δ	251	√
140	î	156	£	172	¼	188	⊥	204	⊥	220	■	236	∞	252	∞
141	ı	157	¥	173		189	⊥	205	=	221	■	237	φ	253	²
142	Ä	158	£	174	«	190	⊥	206	⊥	222	■	238	ε	254	■
143	Å	159	f	175	»	191	⊥	207	⊥	223	■	239	∧	255	

It is a way to encode information. It is a 7-bit encoding (for transmission protocol reason); the first codes were for controlling the transmission (and are called control codes); the rest are "printable" character, i.e. each code "maps" for a graphics form (a glyph), like a letter, a number (not binary encoded of course), punctuation and so on. Nowadays ASCII is almost everywhere: html tags are ASCII (packed into byte-size), and a lot of computer languages intend that their "keywords" are ASCII encoded.

BUS AND ITS TYPES

Introduction

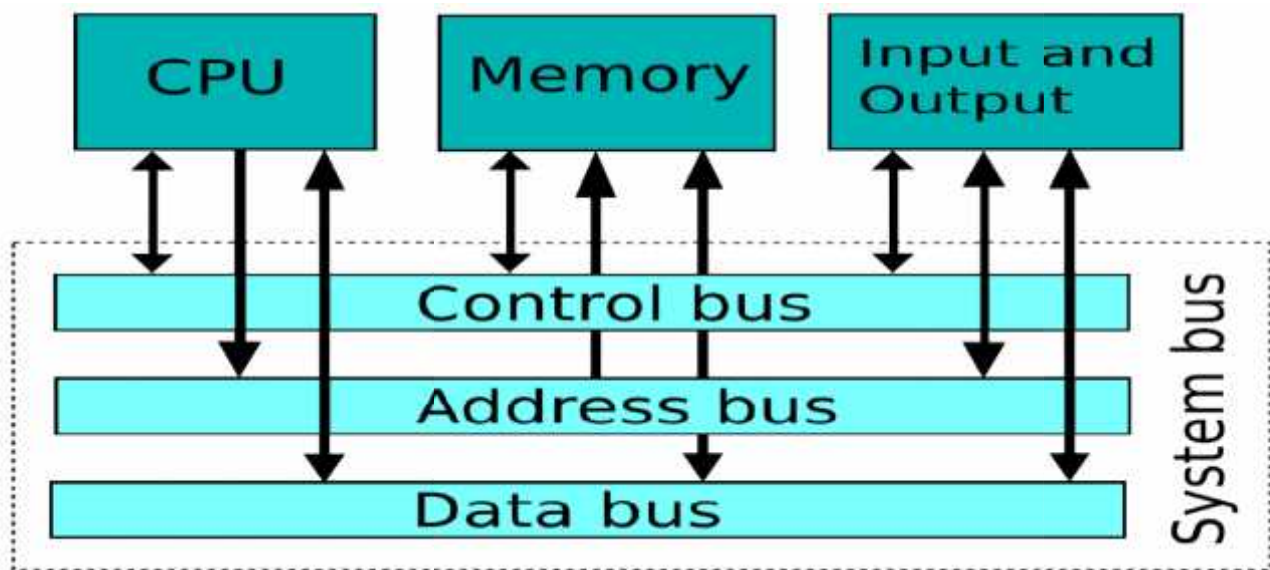
A typical computer system is composed of several components such as the Central Processing Unit (CPU), memory chips, and Input/output (I/O) devices. A bus is a common pathway or a set of wires that interconnect these various subsystems. The bus thus allows the different components to communicate with each other.

A bus, in computer language, is a channel over which information flows between units or devices. It typically has access points, or places into which a device can tap to become part of the channel. Most buses are bidirectional and devices can send or receive information.

Bus Protocols

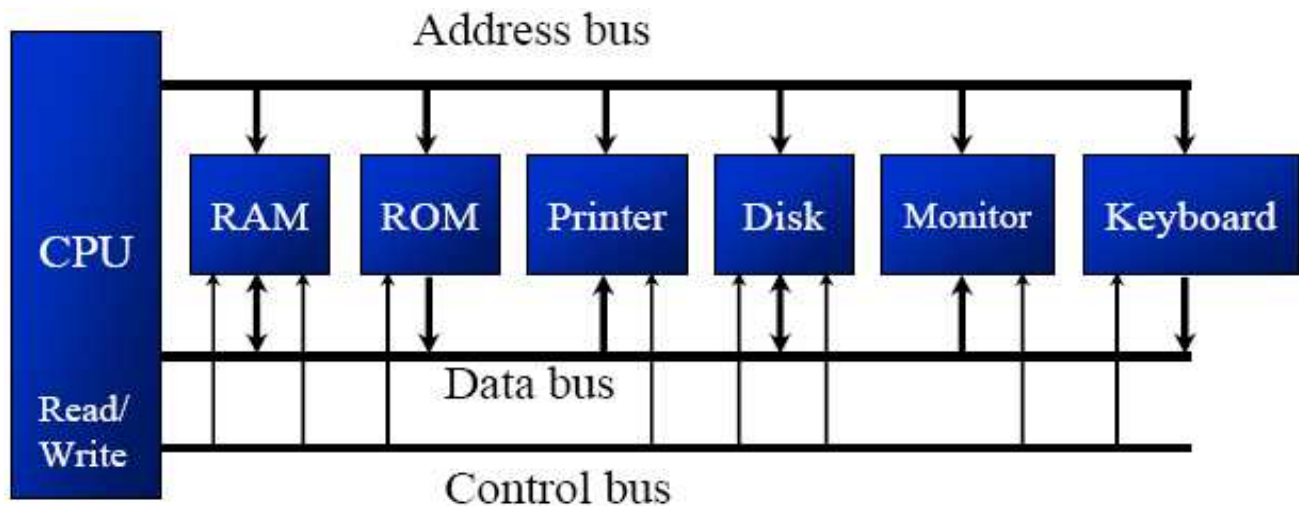
The address lines indicate the source or destination of the data on the data lines. Control lines are used to implement the bus protocol. Often there are lines to request bus control, to handle interrupts, etc. Status lines indicate the progress of the current transaction. Clock signals are used in synchronous bus systems to synchronize bus operations.

Types of Buses



Control Bus

The control bus is used by the CPU to direct and monitor the actions of the other functional areas of the computer. It is used to transmit a variety of individual signals (read, write, interrupt, acknowledge, and so forth) necessary to control and coordinate the operations of the computer. The individual signals transmitted over the control bus and their functions are covered in the appropriate functional area description.



Address Bus

The address bus consists of all the signals necessary to define any of the possible memory address locations within the computer, or for modular memories any of the possible memory address locations within a module. An address is defined as a label, symbol, or other set of characters used to designate a location or register where information is stored

Data Bus

The bidirectional data bus, sometimes called the memory bus, handles the transfer of all data and instructions between functional areas of the computer. The bi-directional data bus can only transmit in one direction at a time. The data bus is used to transfer instructions from memory to the CPU for execution. It carries data (operands) to and from the CPU and memory as required by instruction translation. The data bus is also used to transfer data between memory and the I/O section during input/output operations.

BIOMETRICS

Biometrics is an automated method of recognizing a person based on a physiological or behavioral characteristic: Physiological biometrics is based on measurements and data retrieved from direct measurement of a part of the human body. Fingerprint, iris-scan, retina-scan, hand geometry, and facial recognition are leading physiological forms of biometrics. Behavioral biometric is based on measurements and data derived from an action, and indirectly measure characteristics of the human body. Voice recognition, keystroke-scan, and signature-scan are leading behavioral forms of biometric technologies.



History of Biometrics

The earliest cataloging of fingerprints dates back to 1891 when Juan Vucetich started a collection of fingerprints of criminals in Argentina.

Current, emerging and future applications of Biometrics

India's national ID program called Aadhaar is the largest biometric database of the world. It is a biometrics-based digital identity assigned for lifetime, verifiable online instantly in public domain, at anytime, from anywhere, in a paperless way. It is designed to enable government agencies to deliver retail public service securely based on biometric data (fingerprint, iris scan and face photo), along with demographic data (name, age, gender, address, parent/spouse name, mobile phone number) of a person.



Recent advances in emerging Bio-metrics

In recent times, biometrics based on brain (electroencephalogram) and heart (electrocardiogram) signals have emerged. A research group at University of Wolverhampton, UK has shown that people have certain distinct brain and heart patterns that are specific for each individual. The advantage of such 'futuristic' technology is that it is more fraud resistant compared to conventional biometrics like fingerprints. However, such technology is generally more cumbersome and still has issues such as lower accuracy and poor reproducibility over time.

Biometric System

A biometric system is a technological system that uses information about a person (or other biological organism) to identify that person. Biometric systems rely on specific data about unique biological traits in order to work effectively. A biometric system will involve running data through algorithms for a particular result, usually related to a positive identification of a user or other individual.

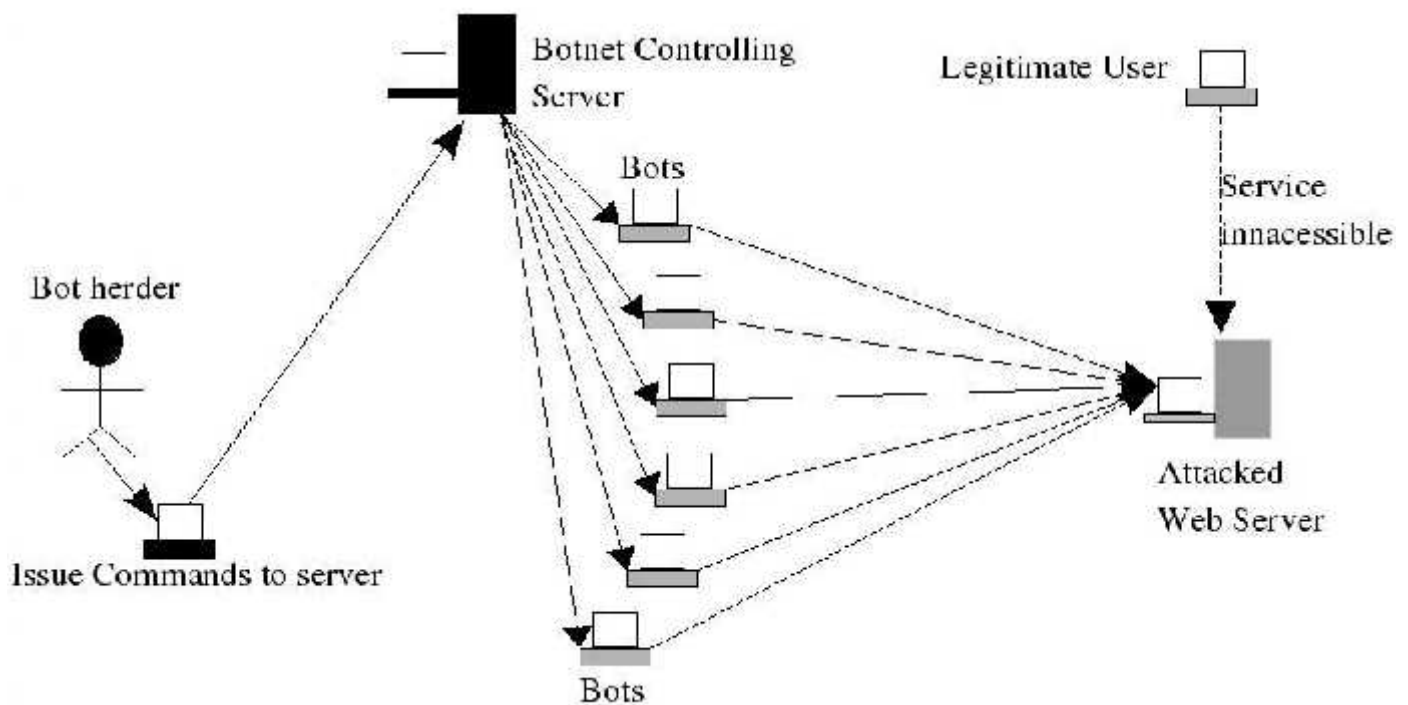


The specific nature of today's biometric systems is associated with a specific use of the term "biometrics." In general, biometrics is any use of biological data in technology. Biometric systems focusing exclusively on the identification of humans have become the major kind of biometric system in today's IT world. Governments, businesses and organizations can use biometric systems to get more information about individuals or about a populace as a whole. Many biometric systems are developed for security applications. An airport scanning device, a "bio-password" system, or an internal data gathering protocol is an example of a biometric system that uses identifying data for a security result.

BOTNET

How a Botnet works?

A Botnet is a collection of Internet-connected programs communicating with other similar programs in order to perform tasks. This can be as ordinary as keeping control of an Internet Relay Chat (IRC) channel, or it could be used to send spam email or participate in distributed denial-of-service attacks. The word Botnet is a combination of the words robot and network. The term is usually used with a negative or malicious connotation.



Legal Botnet

The term **botnet** is widely used when several IRC bots have been linked and may possibly set channel modes on other bots and users while keeping IRC channels free from unwanted users. This is where the term is originally from, since the first illegal botnets were similar to legal botnets. A common bot used to set up botnets on IRC is eggdrop.

Illegal Botnet

Botnets sometimes compromise computers whose security defenses have been breached and control conceded to a third party. Each such compromised device, known as a "bot", is created when a computer is penetrated by software from a malware (malicious software) distribution. The controller of a botnet is able to direct the activities of these compromised computers through communication channels formed by standards-based network protocols such as IRC and Hypertext Transfer Protocol

Types of Attacks

- In distributed denial-of-service attacks, multiple systems submit as many requests as possible to a single Internet computer or service, overloading it and preventing it from servicing legitimate requests. An example is an attack on a victim's phone number. The victim is bombarded with phone calls by the bots, attempting to connect to the Internet.
- Spyware is software which sends information to its creators about a user's activities – typically passwords, credit card numbers and other information that can be sold on the black market. Compromised machines that are located within a corporate network can be worth more to the bot herder, as they can often gain access to confidential corporate information. Several targeted attacks on large corporations aimed to steal sensitive information, such as the Aurora botnet.
- E-mail spam are e-mail messages disguised as messages from people, but are either advertising, annoying, or malicious.
- Fast flux is a DNS technique used by botnets to hide phishing and malware delivery sites behind an ever-changing network of compromised hosts acting as proxies.
- Scareware is software that is marketed by creating fear in users. Once installed, it can install malware and recruit the host into a botnet. For example users can be induced to buy a rogue anti-virus to regain access to their computer.

CARD READER

A card reader is an electronic device that reads and transfers data from various portable memory storage devices or an electronic sensor that reads a magnetic strip or bar code on a credit card, membership card, etc.

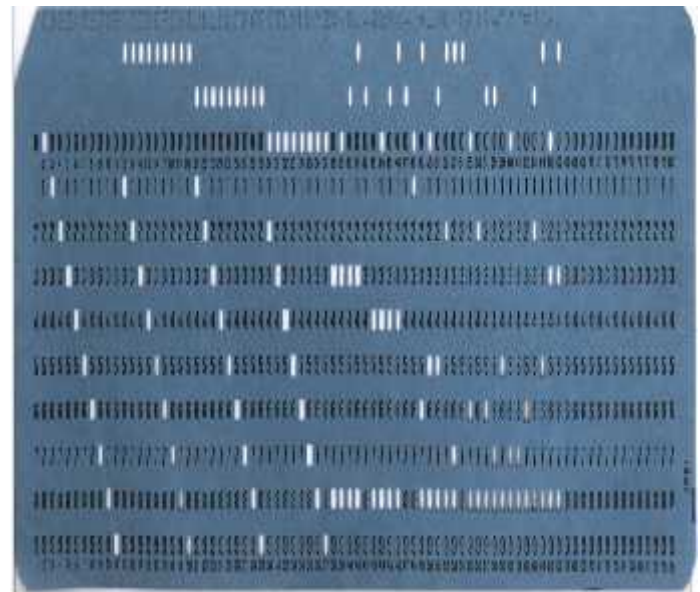
Evolution

The first were punched card readers, which read the paper or cardboard punched card that were used during the first several decades of the computer industry to store information and programs for computer systems. Punch cards also known as Hollerith cards and IBM cards are paper cards containing several punched holes that were originally punched by hand and later by computers that represents data which is invented by Herman Hollerith in early 1880s. These cards allowed companies to store information and be able to access that information by entering the card through the computer. A Punched Card Reader is used in order to read these punched cards to obtain executable computer program, source code and data. The picture shows an example of a punched card reader and a punched card.

Punched Card Reader



Punched Card



Modern Card Readers

The following pictures shows the standard modern day card readers.



Smart Card Reader

Memory Card Reader

Access Card Reader

Modern card readers are electronic devices that can read plastic cards embedded with either a barcode, magnetic strip, computer chip or another storage medium. As the data storage medium differs respective card readers are used nowadays.

Some of card readers includes Smart card reader, Memory card reader, and Access control card reader.

- A Smart card reader is used mainly to read chip cards/ smart cards, contact cards, contactless cards or Multiple compact cards.
- A Memory card reader typically have a USB interface, for accessing the data on a memory card such as a CompactFlash (CF), Secure Digital (SD) or MultiMediaCard (MMC). Most card readers also offer write capability, and together with the card, this can function as a pen drive.
- Access control card readers are used in physical security systems to read a credential that allows access through access control points, typically a locked door. An access control reader can be a magnetic stripe reader, a bar code reader, a proximity reader, or a biometric reader.

CLIP ART

Clip art, in the graphic arts, refers to pre-made images used to illustrate any medium. Today, clip art is used extensively in both personal and commercial projects, ranging from home-printed greeting cards to commercial candles. Clip art comes in many forms, both electronic and printed. However, most clip art today is created, distributed, and used in an electronic form. Since its inception, clip art has evolved to include a wide variety of content, file formats, illustration styles, and licensing restrictions. Clip art is generally composed exclusively of illustrations (created by hand or by computer software), and does not include stock photography.



Boy and Turtle clip art

History of Clip Art

The term "clipart" originated through the practice of physically cutting images from pre-existing printed works for use in other publishing projects. Before the advent of Computers in Desktop Publishing, clip art was used through a process called paste up. Many clip art images in this era qualified as line art. In this process, the clip art images are cut out by hand, then attached via adhesives to a board representing a scale size of the finished, printed work. After the addition of text and art created through phototypesetting, the finished, camera-ready pages are called mechanicals. Since the 1990s, nearly all publishers have replaced the paste up process with desktop publishing.

Bit Mapped Clip Art



Bit-mapped art-illustration

After 1986, desktop publishing generated a widespread need for pre-made, electronic images as consumers began to produce newsletters and brochures using their own computers. Electronic clip art emerged to fill the need. Early electronic clip art was simple line art or bitmap images due to the lack of sophisticated electronic illustration tools. With the introduction of the Apple Macintosh program MacPaint, consumers were provided the ability to edit and use bit-mapped clip art for the first time.

Vector based Clip Art

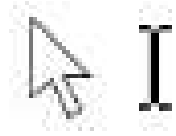


Circus vector clip art

In 1986, the first vector-based clip art disc was released by Compuset, a small desktop publishing company based in Eureka, California. The black-and-white art was painstakingly created by Rick Siegfried with MacDraw, sometimes using hundreds of simple objects combined to create complex images. It was released on a single-sided floppy disc.

CURSORS

What is cursor?



A movable indicator on a computer screen identifying the point that will be affected by input from the user.

Windows provides a set of standard cursors that are available for any application to use at any time. Each standard cursor has a corresponding default image associated with it. The user or an application can replace the default image associated with any standard cursor at any time.



About cursor

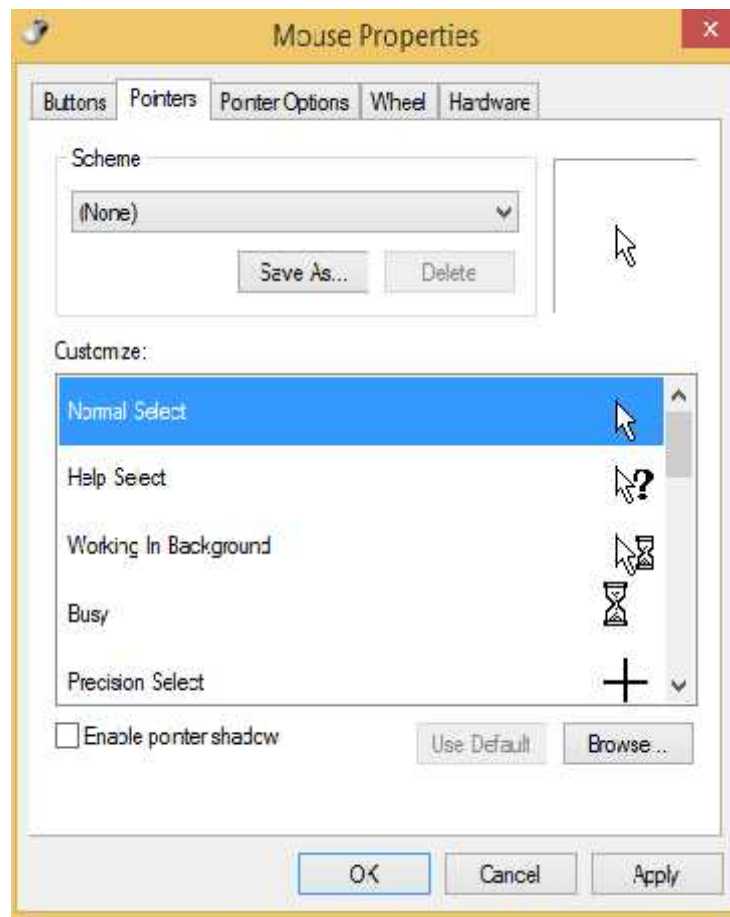
Cursors can be monochrome or color and either static or animated. The type of cursor used on a particular computer system depends on the system's display. Old displays such as VGA do not support color or animated cursors.



How to change mouse pointer or cursor?

If the users want change cursors frequently, consider using a free tool that allows them to change cursor from Windows Explorer context menu. Besides changing cursors one by one, the tool also allows exporting and importing cursor schemes.

If the user don't want to install any software, just click on Control Panel in Start menu, then double-click the Mouse icon and switch to Pointer tab. Here the user can change the cursors used by Windows in different situations to the downloaded ones.



Now a days 3D cursors are available in many websites. They are more attractive to us.

The user can download it on the websites like

<http://3d-gree-animated-cursors.softwareandgames.com>

<http://download.cnet.com/windows/cursors>

<http://www.brothersoft.com/animated-cursors-77165>

Some of the most widely used and downloaded cursors are:



CursorFX



Iconoid



ViVi Cursor



Cursor Snowflakes

CONTROL PANEL

Definition

The Control Panel is a part of the Microsoft Windows graphical user interface which allows users to view and manipulate basic system settings and controls via applets, such as adding hardware, adding and removing software, controlling user accounts, and changing accessibility options.

List of Control Panel applets

1. HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\ControlPanel\Cpls
2. HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Explorer\Control Panel\Namespace

How to open a control panel in Windows 8?

- To open PC settings Swipe in from the right edge of the screen, tap Settings, and then tap Change PC settings.



In PC settings, you can change most Windows settings, such as changing user's screen resolution, adding and removing devices, personalizing the lock screen, changing the date and time, and adding user accounts.

To open Control Panel

- Open Control Panel by swiping in from the right edge of the screen, tapping Search entering Control Panel in the search box, and then tapping or clicking Control Panel.





To open the Settings Charm

- Swipe in from the right edge of the screen, and then tap Settings.
- In the Settings charm, you'll find settings, help, and info for the app you're in, plus a few common PC settings—network connection, volume, brightness, notifications, power, and keyboard.

To search for Settings

If you're not sure where to find the settings you're looking for, you can search your PC.

1. Swipe in from the right edge of the screen, and then tap Search. Tap or click the arrow , and then tap or click Settings.
2. Enter a word or phrase in the search box. If you see the setting you're looking for in the list of search results, tap or click it to open it. To see all of the results for your search term, tap or click the Search button  to go to the search results page. Then tap or click a search result to open it.

COPY RIGHT AND PIRACY

Copy Right

Copy right is the legal protection of all forms of creative expression on any form of media. When a person created a original work that is fixed in physical medium he/she automatically owns copy right to the work. The owner has the exclusive right to the use the work in certain, specific ways. Copy right is different from trade mark. It protect the following:



- Brand name
- Mottos
- Logos
- Other source identifiers

Works which are subject to copy right

- Audiovisual work,
- Sound recording and musical compositions,
- Written works,
- Visual works,
- Video games and computer software,

Works which are not subjected to copyright



- Ideas
- Facts
- Processes.

Piracy

Piracy is the popular term for the illegal activity that is more correctly known as copy right infringement. Software piracy involves the violation of license, agreement, and occurs when you download, copy, file share, install or distribute digitized material in the form of computer software programs and entertainments media without authorization from the owner or creator.



Piracy Targets

- Audio entertainment
- Video and film
- Computer program

Types of material subject to pirating

- Optical disk
- Compact disks
- VCD
- DVD
- Camcorder
- Screeners
- Back-to-back copying
- Signal theft
- Public performance.

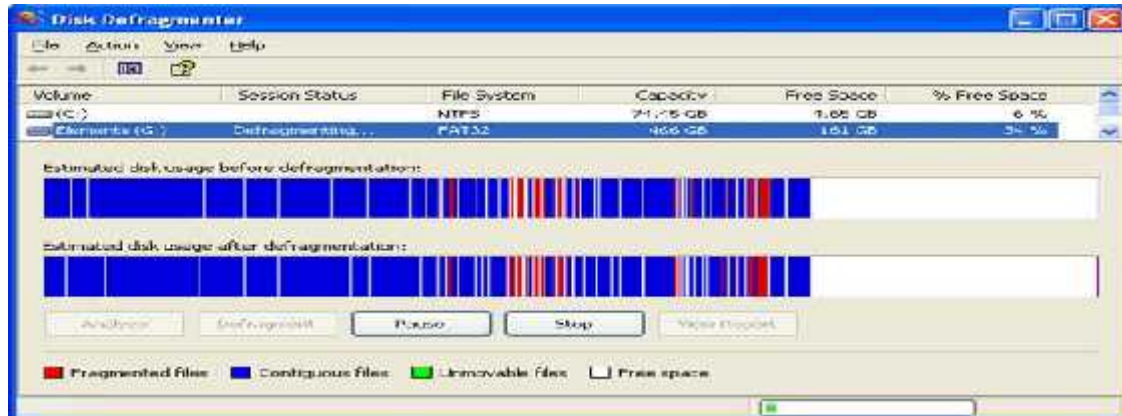
Scenarios of software piracy

- Authorized copy is used install a program to multiple computers.
- Swapping disks with others.
- Download the software from various internet sources.
- Taking advantage of upgrade offers without purchasing a legal copy.

DEFRAGMENTATION OF HARD DISK

Defragmentation is a process that reduces the amount of fragmentation. It does this by physically organizing the contents of the mass storage device used to store files into the smallest number of contiguous regions (fragments). It also attempts to create larger regions of free space using compaction to impede the return of fragmentation. Some defragmentation utilities try to keep smaller files within a single directory together, as they are often accessed in sequence.

Defrag is short for "defragment," which is a maintenance task required by hard drives. Defragmenting hard drives will also help to speed up computer performance. Most hard drives have spinning platters, with data stored in different places around that platter. When the computer writes data to the drive, it does so in "blocks" that are ordered sequentially from one side of the drive's platter to the other. Fragmentation happens when those files get split between blocks that are far away from each other. The hard drive then takes longer to read that file because the read head has to "visit" multiple spots on the platter. Defragmentation puts those blocks back in sequential order, so drive head doesn't have to run around the entire platter to read a single file.



Causes of defragmentation

Fragmentation occurs when the file system cannot or will not allocate enough contiguous space to store a complete file as a unit, but instead puts parts of it in gaps between other files. Larger files and greater numbers of files also contribute to fragmentation and consequent performance loss. Defragmentation attempts to alleviate these problems.

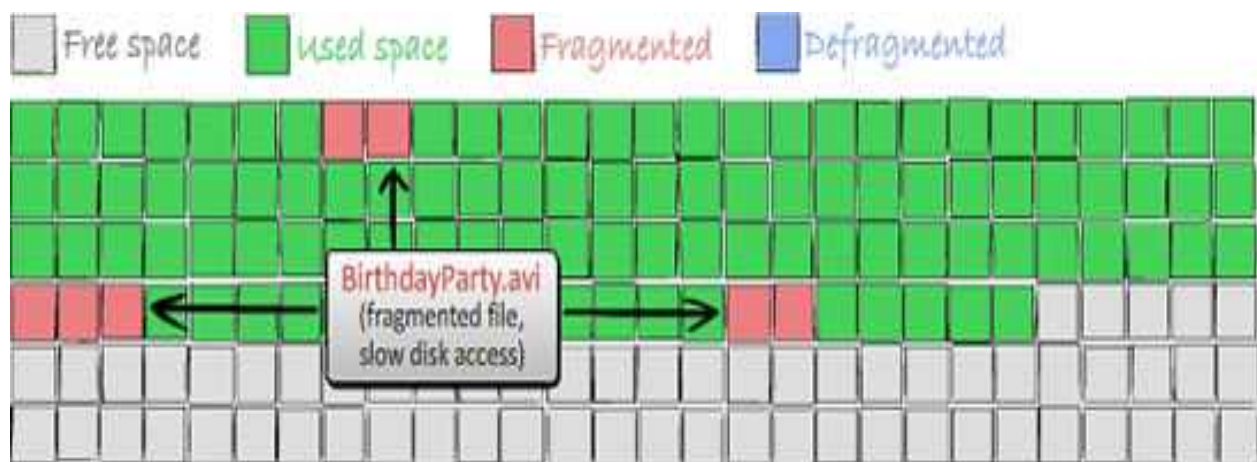
If we use a Solid-State Drive: No Defragmentation necessary

If we have a solid-state drive (SSD) in the computer, we do not need to defragment it. Solid-state drives, unlike regular hard drives, don't use a spinning platter to store data, and it doesn't take any extra time to read from different parts of the drive. So, defragmentation won't offer any performance increases (though SSDs do require their own maintenance).

What does defragging do?

To windows a file is lots of small fragments that are kept in clusters on a hard drive. Windows knows exactly where each fragment is and which is the right order for reading them.

File fragmentation occurs when clusters of free disk space get reused over and over again when we delete old files and save new ones.



Defragging is a simple process when file fragments are put together to speed up file access. File fragments are put together and quality defragmentation utilities also assemble the free space into a single block to prevent future fragmentation..

The main reason against running defragmenters are:

- ❖ If we defragment hard drive too often we will shorten its lifespan because of the work it needs to do during a defrag process.
- ❖ Files can become damaged during defragmentation (although this is rare).
- ❖ There are few performance gains to be had if we defragment our hard drive more often than necessary.

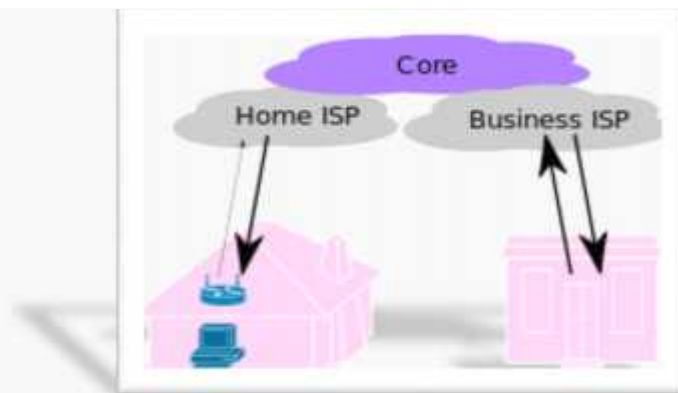
DOWNLOADING AND UPLOADING FILES

Downloading



An image/sign for downloading to a Hard Disk Drive (HDD)

In computer networks, to download means to receive data to a local system from a remote system or to initiate such a data transfer. Examples of a remote system from which a download might be performed include a web server, FTP server, email server, or other similar systems.



Download data is sent downstream to an end-user, upstream from the provider

Downloading Files

The simplest way to download files is to drag them from remote panel of WinSCP to local panel or Windows Explorer.

- Using Drag & drop (Mouse) - By select the remote files or directories
- Using Keyboard - By Commander interface

- Using File URL – By URL Address
- Automating Download- use the scripting command `get` or .NET assembly method `Session.GetFiles`

Uploading

Uploading is the transmission of a file from one computer system to another, usually larger computer system. From a network user's point-of-view, to upload a file is to send it to another computer that is set up to receive it. People who share images with others on bulletin board services (BBS) upload files to the BBS.

Transmission in the other direction is downloading -- from one, usually larger computer to another, usually smaller computer. From an Internet user's point-of-view, downloading is receiving a file from another computer.

When you send or receive an attached file with an e-mail note, this is just an attachment, not a download or an upload. In short, from the ordinary workstation or small computer user's point-of-view, to upload is to send a file and to download is to receive a file.

Upload files

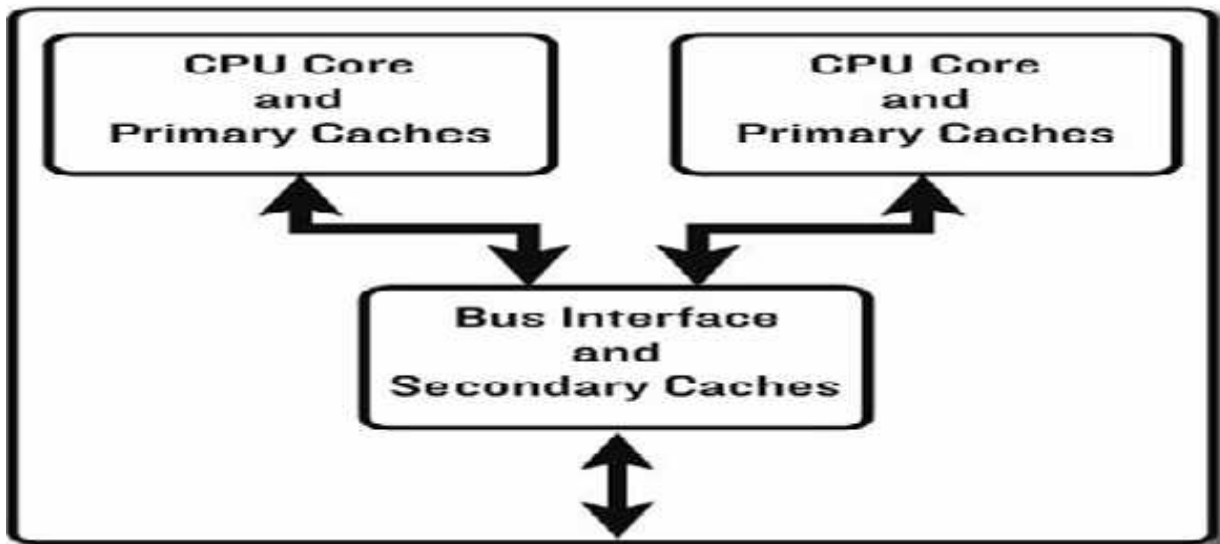
There are two ways to upload files to Google Drive:

- **Drag-and-drop files**- If you're using the latest versions of Chrome or Firefox, you can simply drag-and-drop files directly from your computer into Google Drive. You can even drag-and-drop files directly into folders or sub-folders.
- **Upload files using Google Drive**-Follow the steps below to select files to upload to Google Drive.

DUAL CORE PROCESSORS

A dual core processor for a computer is a central processing unit (CPU) that has two separate cores on the same die, each with its own cache. It essentially is two microprocessors in one. This type of CPU is widely available from many manufacturers. Other types of multi-core processors also have been developed, including quad-core processors with four cores each, hexa-core processors with six, octa-core processors with eight and many-core processors with an even larger number of cores.

Dual Core



Dual-processor, Dual-core, and Multi-core

Dual-processor (DP) systems contains two separate physical computer processors in the same chassis. In dual-processor systems, the two processors can either be located on the same motherboard or on separate boards.

Usually, the two identical processors are manufactured so they reside side-by-side on the same die, each with its own path to the system front-side bus. Multi-core is somewhat of an expansion to dual-core technology and allows for more than two separate processors.

Advantage of Dual-core Technology

A dual-core processor has many advantages especially for those looking to boost their system's multitasking computing power. Dual-core processors provide two complete execution cores instead of one, each with an independent interface to the front side bus.

Since each core has its own cache, the operating system has sufficient resources to handle intensive tasks in parallel.

Intel & AMD Dual-core Desktop Processors

The Intel Pentium Processor Extreme Edition 840 running at 3.2 GHz and Intel 955X Express Chipsets are being built into computers that are now entering the market. This is Intel's first desktop dual-core product supporting Hyper-Threading Technology.

Key Terms To Understanding Dual-core

Dual-Core

Dual-core refers to a CPU that includes two complete execution cores per physical processor.

CPU

Abbreviation of central processing unit, and pronounced as separate letters. The CPU is the brains of the computer. Sometimes referred to simply as the processor or central processor, the CPU is where most calculations take place.

Processor

Short for microprocessor or CPU.

Integrated Circuit

Another name for a chip, an integrated circuit (IC) is a small electronic device made out of a semiconductor material.

DASH BOARD

A Dash board is a visual display of the most important information needed to achieve one or more objectives; consolidated and arranged on a single screen so the information can be monitored at a glance.



History of Dash Board

Initial Failures (circa 2001-2007)

Hardware capabilities failed to achieve instant always-on data feeds. Business staff didn't understand relational data. The dashboard skillet was rare yet rapidly evolving. Companies weren't ready for the demands of dashboards. Drilling down several times to more detailed information was difficult.

Maturing (2007-2010)

As rolled into 2007, user sophistication was increasing. Hardware performance was improving. Networks were handling larger data sets. The economy was booming and innovation within dash boarding was at an all time high, demands for dashboards actually increased.

Too Much (2010 – 2011)

As companies focused on business intelligence and sorting all the information into usable chunks, dashboards took a strange turn. Dashboards were being used for all types of things that no longer fit into the original intent. It wasn't that people were pushing the concept in a good direction.

Current State (2012 – now)

Dashboards appear to be coming into balance with the overall technology needs of the business. The applications continue to mature. Most dashboard app developers have jumped into mobility. Business people are also settling down on requests to solve everything with a dashboard. There is a need for spreadsheets and reports.

Final Thoughts

Like most tools, proper use of dashboards can be beneficial and overuse damaging.

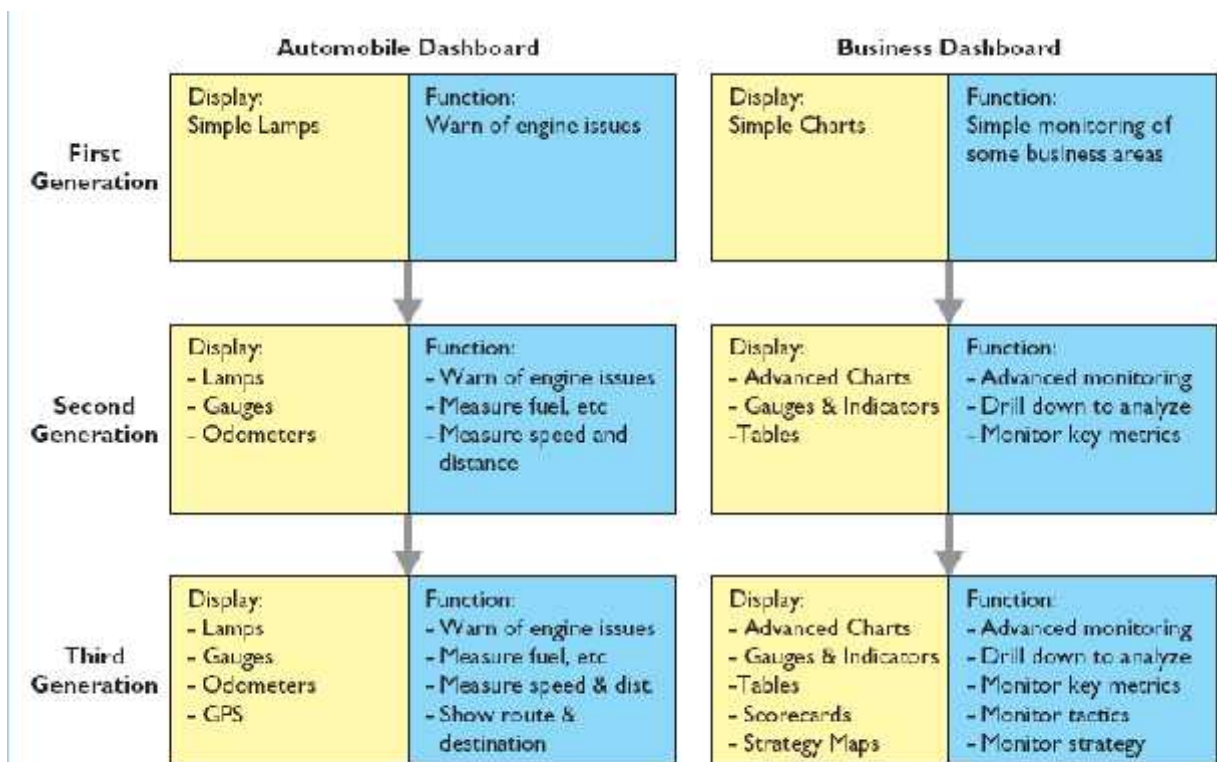
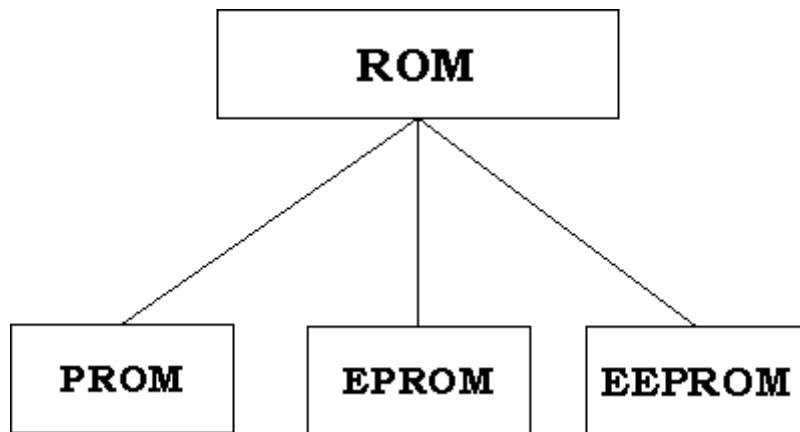


EXHIBIT 1.1 Evolution of Automobile Dashboards versus Business Dashboards

PROM

Definition

A programmable read-only memory (PROM) or field programmable read-only memory (FEPROM) or one-time programmable non-volatile memory (OTP NVM) is a form of digital memory where the setting of each bit is locked by a fuse or antifuse. They are a type of ROM (read-only memory) meaning the data in them is permanent and cannot be changed.



Invention

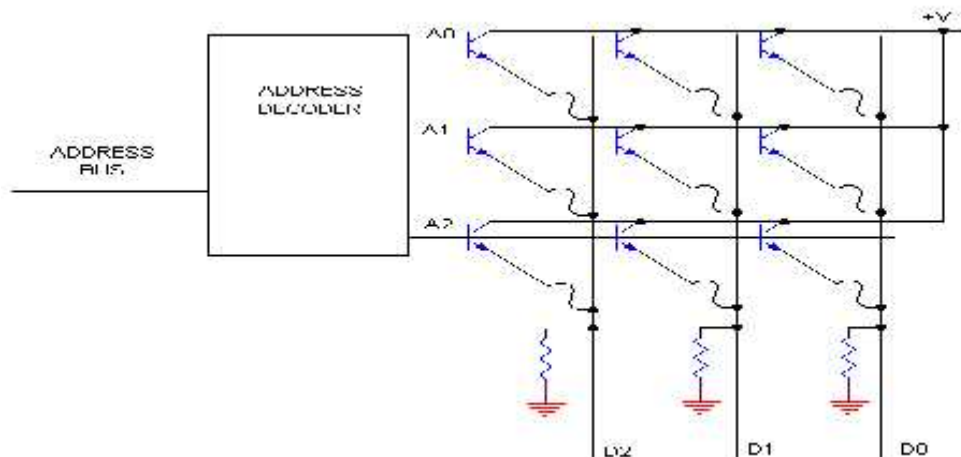
The PROM was invented in 1956 by Wen Tsing Chow, working for the Arma Division of the American Bosch Arma Corporation in Garden City, New York. The invention was conceived at the request of the United States Air Force to come up with a more flexible and secure way of storing the targeting constants in the Atlas E/F ICBM's airborne digital computer. The patent and associated technology was held under secrecy order for several years while the Atlas E/F was the main operational missile of the United States ICBM force.

The term "burn," referring to the process of programming a PROM, is also in the original patent, as one of the original implementations was to literally burn the internal whiskers of diodes with a current overload to produce a circuit discontinuity. The first PROM programming machines were also developed by Arma engineers under Mr. Chow's direction and were located in Arma's Garden City lab and Air Force Strategic Air Command (SAC) headquarters.

Programming

A typical PROM comes with all bits reading as "1". Burning a fuse bit during programming causes the bit to read as "0". The memory can be programmed just once after manufacturing by "blowing" the fuses, which is an irreversible process. Blowing a fuse opens a connection while programming an antifuse closes a connection (hence the name). While it is impossible to "unblow" the fuses, it is often possible to change the contents of the memory after initial programming by blowing additional fuses, changing some remaining "1" bits in the memory to "0"s. (Once all of the bits are "0", no further programming change is possible.)

Programmable Read-only Memory



PROM chips have a grid of columns and rows just as ordinary ROMs do. The difference is that every intersection of a column and row in a PROM chip has a fuse connecting them. A charge sent through a column will pass through the fuse in a cell to a grounded row indicating a value of 1.

Other ROMs

Two other versions of PROM have been developed that can be erased and reprogrammed. One type is called EPROM, or Erasable Programmable Read-Only Memory that can be erased by strong ultraviolet light. The other type is EEPROM, or Electrically Erasable Programmable Read-Only Memory. EEPROM can be erased with an electrical charge and is used in flash memory.

EPROM

Definition

EPROM (Erasable Programmable Read Only Memory) is Programmable Read Only Memory (Programmable ROM) that can be erased and re-used. Erasure is caused by shining an intense ultraviolet light through a window that is designed into the memory chip.

Memory Modules

Async RAM, Sync RAM, PB SRAM, VRAM, WRAM, SGRAM,ROM, PROM, EPROM, EEPROM, Flash Memory. The form factor of any memory module describes its size and pin configuration. Most computer systems have memory sockets that can accept only one form.

Memory Modules - Memory Type: EPROM

Memory Chips

Its types include: Programmable ROM :PROM, Erasable programmable ROM: EPROM. Electrically erasable programmable ROM: EEPROM.



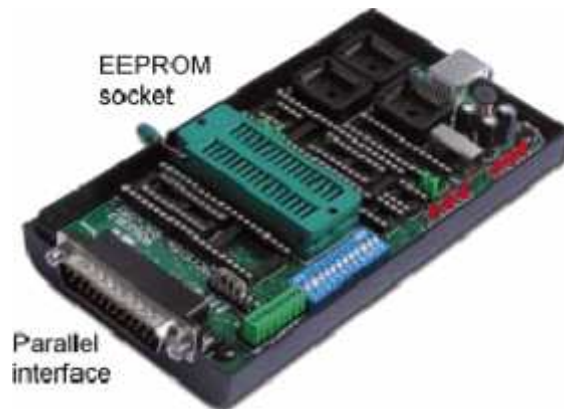
IC Package Converters and Adapters

IC package converters and adapters are electronic interconnect devices that are used to interface different types of integrated circuit (IC) sockets.

FLASH Memory Chips

Small Outline Package (SOP), Thin Small Outline Package (TSOP), and Shrink Small Outline Package (SSOP).

Related Standards: SMD 5962-08245 - MICROCIRCUIT, MEMORY, DIGITAL, 3.3 VOLT BOOT BLOCK FLASH EPROM, 2M X 32-BIT, MONOLITHIC SILICON. SMD 5962-97609



An EEPROM programmer

IC Sockets and Headers

IC sockets and headers are board-mounted female connectors that serve as carriers for integrated circuit (IC) chips

Packing Hooks and Extractors

Packing hooks, also referred to as packing pullers, are tools used to extract used packing material from pumps and valves

PCMCIA Memory Cards

SRAM is not. Read-only memory (ROM) retains its contents even when the computer is turned off. ROM types for PCMCIA memory cards include one-time programmable read-only memory (OTP-RPM), erasable programmable read-only memory (EPROM), and electrically.

Motion Controllers

Motion controllers range from simple linear controllers to complex, user-programmable modules that act as controllers within complex integrated multi-axis motion systems.

EEPROM

Definition

EEPROM stands for Electrically Erasable Programmable Read-Only Memory and is a type of non-volatile memory used in computers and other electronic devices to store small amounts of data that must be saved when power is removed, e.g., calibration tables or device configuration.



History of EEPROM

The EEPROM is a modification of the EPROM and was designed by George Perlegos. Its development began in 1978 while Perlegos were still employed by Intel. However the archetypal EEPROM still had to be taken out of the computer or electronic device of which it was part if any reprogramming.

EEPROM Structure

The EEPROM chip is physically similar to the EPROM chip. It is also composed of cells with two transistors. Unlike the EPROM chip, however, the EEPROM chip's oxide layer is much thinner. In EEPROM chips, the insulating layer is only around 1 nanometer thick whereas in EPROM chips, the oxide layer is around 3 nanometers thick.

Functions of EEPROM:

There are different types of electrical interfaces to EEPROM devices. Main categories of these interface types are:

- Serial bus
- Parallel bus

Related types

Flash memory is a later form of EEPROM. In the industry, there is a convention to reserve the term EEPROM to byte-wise erasable memories compared to block-wise erasable flash memories.

EEPROM occupies more die area than flash memory for the same capacity, because each cell usually needs a read, a write, and an erase transistor, while flash memory erase circuits are shared by large blocks of cells (often 512×8).

Newer non-volatile memory technologies such as Ferbam and MRAM are slowly replacing EEPROMs in some applications, but are expected to remain a small fraction of the EEPROM market for the foreseeable future.



(ST M24C02 EEPROM)



(Series AMIC R29040)

EEPROMS can generally handle $\sim 100,000$ - $1,000,000$ writes per cell. Flash is generally rated to $\sim 1,000$ - $100,000$ writes (it varies heavily depending on the type of flash).

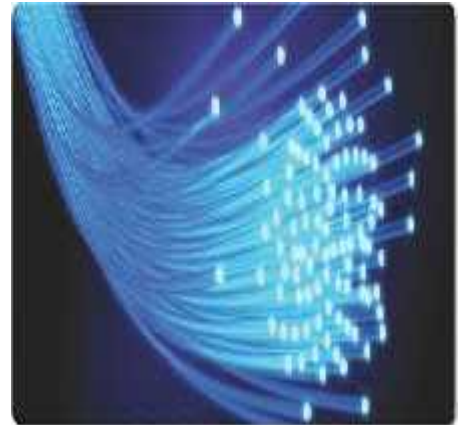
Another advantage EEPROM has over flash is that flash generally has to be erased in blocks, so if your write patterns involve sequential single-byte writes, you will use many more write cycles on the flash memory than you would with the equivalent EEPROM, as EEPROM memory can generally be erased on a per-byte basis, rather than the per-block erase cycle flash uses.

FIBER OPTIC CABLE

An optical fiber (or) Fiber optic cable is a cable containing one or more optical fibers that are used to carry light.

The optical fiber elements are typically individually coated with plastic layers and contained in a protective tube suitable for the environment where the cable will be deployed.

Different types of cable are used for different applications, for example long distance telecommunication, or providing a high-speed data connection between different parts of a building.

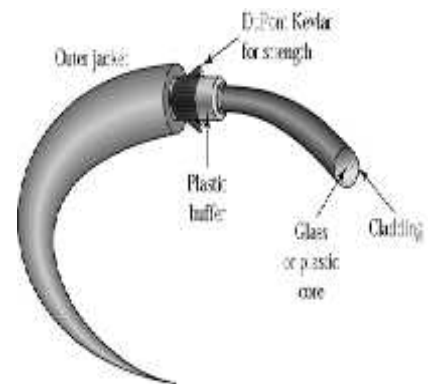


Design

Optical fiber consists of a core and a cladding layer, selected for total internal reflection due to the difference in the refractive index between the two.

In practical fibers, the cladding is usually coated with a layer of acrylate polymer or polyimide. This coating protects the fiber from damage but does not contribute to its optical waveguide properties.

Individual coated fibers (or fibers formed into ribbons or bundles) then have a tough resin buffer layer and/or core tube(s) extruded around them to form the cable core.



Several layers of protective sheathing, depending on the application, are added to form the cable. Rigid fiber assemblies sometimes put light-absorbing ("dark") glass between the fibers, to prevent light that leaks out of one fiber from entering another. This reduces cross-talk between the fibers, or reduces flare in fiber bundle imaging applications.



Types

OFC: Optical fiber, conductive

OFN: Optical fiber, nonconductive

OFCG: Optical fiber, conductive, general use

OFNG: Optical fiber, nonconductive, general use

OFCP: Optical fiber, conductive, plenum

OFNP: Optical fiber, nonconductive, plenum

OFRC: Optical fiber, conductive, riser

OFNR: Optical fiber, nonconductive, riser

OPGW: Optical fiber composite overhead ground wire

ADSS: All-Dielectric Self-Supporting

Jacket Material

The jacket material is application specific. The material determines the mechanical robustness, aging due to UV radiation, oil resistance, etc. Nowadays PVC is being replaced by halogen free alternatives, mainly driven by more stringent regulations.

Fiber Material

There are two main types of material used for optical fibers. These are glass and plastic. They offer widely different characteristics and therefore fibers made from the two different substances find uses in very different applications.

Multi-fiber cables

Individual fibers in a multi-fiber cable are often distinguished from one another by color-coded jackets or buffers on each fiber. The identification scheme used by Corning Cable Systems is based on EIA/TIA-598, "Optical Fiber Cable Color Coding



GATEWAY

- Gateway is a router or a proxy server that routes between networks
- Gateway Rule - Gateway should belong to same subnet to which your PC belongs
- In a communications network, a network node equipped for interfacing with another network that uses different protocols.
- A gateway may contain devices such as protocol translators, impedance matching devices, rate converters, fault isolators, or signal translators as necessary to provide system interoperability. It also requires the establishment of mutually acceptable administrative procedures between both networks.



History

Gateway was founded on September 5, 1985, on a farm outside Sioux City, Iowa, by Ted Wait and Mike Hammond. Originally called Gateway 2000, it was one of the first widely successful direct sales PC companies, utilizing a sales model copied from Dell, and playing up its Iowa roots with low-tech advertisements proclaiming "Computers from Iowa?" Gateway built brand recognition in part by shipping computers in spotted boxes patterned after Holstein cow markings. In 1989, Gateway moved its corporate offices and production facilities to North Sioux City, South Dakota.

In line with the Holstein cow mascot, Gateway opened a chain of farm-styled retail stores called Gateway Country Stores, mostly in suburban areas across the United States. It dropped the "2000" from its name on October 31, 1998.

Messaging Security Gateway

Messaging Security Gateway is our product for bigger companies with their own IT resources who wish to manage email security centrally with advanced enterprise level tools.



Product editions

CICS Transaction Gateway Desktop Edition:

Provides low-cost, single-user access to CICS, including all the function of CICS Universal Client V7.1 with the addition of the latest operating system and compiler support.

CICS Transaction Gateway for Multiplatform's:

Delivers scalable, multi-user access to CICS TS for z/OS, CICS TS for VSE, TXSeries, and CICS TS for less-demanding environments.

CICS Transaction Gateway for z/OS:

Provides highly-scalable, multi-user access to CICS Transaction Server for z/OS.

Hacker

In the computer security context, a hacker is someone who seeks and exploits weaknesses in a computer system or computer network. Hackers may be motivated by a multitude of reasons, such as profit, protest, challenge or enjoyment.

Classifications

White hat

A white hat hacker breaks security for non-malicious reasons, perhaps to test their own security system or while working for a security company which makes security software. The term "white hat" in Internet slang refers to an ethical hacker.

Black hat

A "black hat" hacker is a hacker who "violates computer security for little reason beyond maliciousness or for personal gain". Black hat hackers break into secure networks to destroy, modify, or steal data; or to make the network unusable for those who are authorized to use the network.

Grey hat

A grey hat hacker is a combination of a black hat and a white hat hacker. A grey hat hacker may surf the Internet and hack into a computer system for the sole purpose of notifying the administrator that their system has a security defect, for example. They may then offer to correct the defect for a fee.

Blue hat

A blue hat hacker is someone outside computer security consulting firms who is used to bug-test a system prior to its launch, looking for exploits so they can be closed. Microsoft also uses the term Blue Hat to represent a series of security briefing events.

HUB

A common connection point for devices in a network. Hubs are commonly used to connect segments of a LAN. A hub contains multiple ports. When a packet arrives at one port, it is copied to the other ports so that all segments of the LAN can see all packets.



What Hubs do?

Hubs and switches serve as a central connection for all of your network equipment and handles a data type known as frames. Frames carry your data. When a frame is received, it is amplified and then transmitted on to the port of the destination PC. In a hub, a frame is passed along or "broadcast" to every one of its ports. It doesn't matter that the frame is only destined for one port.

The hub has no way of distinguishing which port a frame should be sent to. Passing it along to every port ensures that it will reach its intended destination. This places a lot of traffic on the network and can lead to poor network response times.

Passive, Intelligent and Switching Hubs

- A passive hub serves simply as a conduit for the data, enabling it to go from one device (or segment) to another.
- So-called intelligent hubs include additional features that enable an administrator to monitor the traffic passing through the hub and to configure each port in the hub. Intelligent hubs are also called manageable hubs.
- A third type of hub, called a switching hub, actually reads the destination address of each packet and then forwards the packet to the correct port.

Ethernet Hub

An Ethernet hub, active hub, network hub, repeater hub, multiport repeater or hub is a device for connecting multiple Ethernet devices together and making them act as a single network segment.



It has multiple input/output (I/O) ports, in which a signal introduced at the input of any port appears at the output of every port except the original incoming. A hub works at the physical layer (layer 1) of the OSI model. Repeater hubs also participate in collision detection, forwarding a jam signal to all ports if it detects a collision.

In addition to standard 8P8C ("RJ45") ports, some hubs may also come with a BNC and/or Attachment Unit Interface (AUI) connector to allow connection to legacy 10BASE2 or 10BASE5 network segments. Hubs are now largely obsolete, having been replaced by network switches except in very old installations or specialized applications.

HYPERMEDIA

What is Hypermedia?

Hypermedia is an extension of the term hypertext. It is a nonlinear medium of information which includes graphics, audio, video, plain text and hyperlinks. This contrasts with the broader term multimedia, which may include non-interactive linear presentations as well as hypermedia.

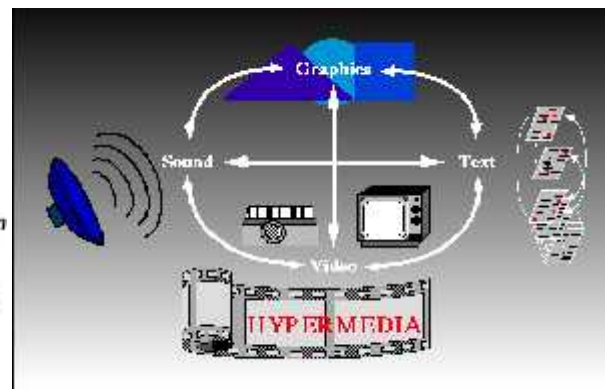
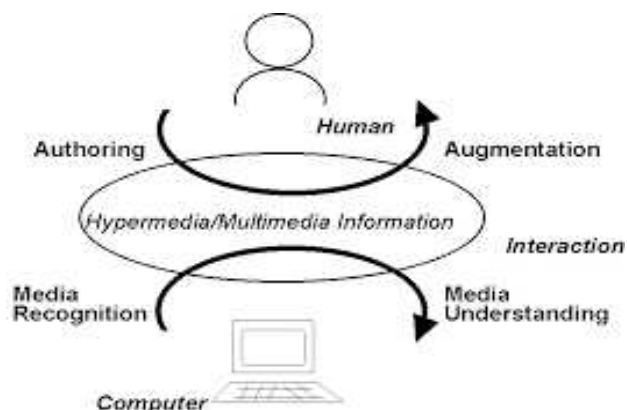


Introduction:

Hypermedia is a style of building systems for organizing, structuring and accessing information around a network of multimedia nodes connected together by links (Conclin, 1987). The general Structure of hypermedia allowed hypermedia to be applied to a wide variety of task domains. Hypermedia can distinguish in two generations (Halasz, 1988). They are as follows,

First generation:

Hypertext systems were mainframe based text-only systems for augmenting the performance of information processing environments, storing the whole world's literature or for supporting traditional writing and reading.



Second Generation Systems

Transition from hypertext to hypermedia took place with the Second Generation Systems. These systems were quite similar in concept with first generation hypertext systems, but they were workstation and PC based, with more sophisticated graphics interfaces and support to other forms of information such as graphic

Uses

Multimedia development software such as Adobe Flash, Adobe Director, Macromedia Authorware, and MatchWare Mediator may be used to create stand-alone hypermedia applications, with emphasis on entertainment content.



Applications

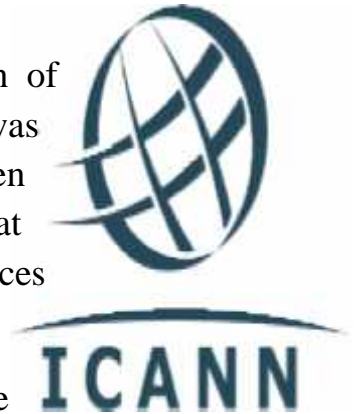
Hypermedia applications may be developed on embedded devices for the mobile and the digital signage industries using the Scalable Vector Graphics (SVG) specification from W3C (World Wide Web Consortium). Software applications such as Ikivo Animator and Inkscape simplify the development of hypermedia content based on SVG. Embedded devices such as iPhone natively support SVG specifications and may be used to create mobile and distributed hypermedia applications.

ICANN

ICANN stands for INTERNET CORPORATION FOR ASSIGNED NAMES AND NUMBERS is a nonprofit organization that is responsible for the coordination of maintenance and methodology of several databases of unique identifiers related to the namespaces of the Internet, and ensuring the network's stable and secure operation.

History:

Before the establishment of ICANN, the IANA function of administering registries of Internet protocol identifiers was performed by Jon, a Computer Science researcher who had been involved in the creation of ARPANET, first at UCLA and then at the University of Southern California's Information Sciences Institute (ISI).



In 1997 he testified before Congress that this had come about as a "side task" to this research work. The Information Sciences Institute was funded by the U.S. Department of Defense, as was SRI International's Network Information Center, which also performed some assigned name functions.

Structure:

At present ICANN is formally organized as a non-profit corporation "for charitable and public purposes" under the California Nonprofit Public Benefit Corporation Law.

It is managed by a 16-member Board of Directors composed of eight members selected by a nominating committee on which all the constituencies of ICANN are represented; six representatives of its Supporting Organizations, sub-groups that deal with specific sections of the policies under ICANN's purview; At-Large seat filled by an At-Large Organization; and the President / CEO, appointed by the Board.

Democratic input:

The Memorandum of Understanding that set up the relationship between ICANN and the U.S. government, ICANN was given a mandate requiring that it operate "in a bottom up, consensus driven." However, the attempts that ICANN have made to set up an organizational structure that would allow wide input from the global Internet community did not produce results amenable to the current Board.

As a result, the At-Large constituency and direct election of board members by the global Internet community were soon abandoned. ICANN holds periodic public meetings rotated between continents for the purpose of encouraging global participation in its processes. Resolutions of the ICANN Board, preliminary reports, and minutes of the meetings, are published on the ICANN website, sometimes in real time.

However there are criticisms from ICANN constituencies including the Noncommercial Users Constituency (NCUC) and the At-Large Advisory Committee (ALAC) that there is not enough public disclosure and that too many discussions and decisions take place out of sight of the public

Activities:

One task that ICANN was asked to do was to address the issue of domain name ownership resolution for generic top-level domains. ICANN's attempt at such a policy was drafted in close cooperation with the World Intellectual Property Organization (WIPO), and the result has now become known as the Uniform Dispute Resolution Policy (UDRP). This policy essentially attempts to provide a mechanism for rapid, cheap and reasonable resolution of domain name conflicts, avoiding the traditional court system for disputes by allowing cases to be brought to one of a set of bodies that arbitrate domain name disputes. According to ICANN policy, a domain registrant must agree to be bound by the UDRP—they cannot get a domain name without agreeing to this.

A look at the UDRP decision patterns has led some to conclude that compulsory domain name arbitration is less likely to give a fair hearing to domain name owners asserting defenses under the First Amendment and other laws, compared to the federal courts of appeal in particular.

Criticism:

Since its creation, ICANN has been the subject of criticism and controversy. In 2000, professor Michael of the University of Miami School of Law argued that ICANN's relationship with the U.S. Department of Commerce is illegal, in violation of either the Constitution or federal statutes. In 2009, the new Affirmation of Commitments agreement between ICANN and the U.S. Department of Commerce, that aimed to create international oversight, ran into criticism.

INTEGRATED DEVELOPMENT ENVIRONMENT

An integrated development environment (IDE) is a programming environment that has been packaged as an application program, typically consisting of a code editor, a compiler, a debugger, and a graphical user interface (GUI) builder. The IDE may be a standalone application or may be included as part of one or more existing and compatible applications. The BASIC programming language, for example, can be used within Microsoft Office applications, which makes it possible to write a WordBasic program within the Microsoft Word application. IDEs provide a user-friendly framework for many modern programming languages, such as Visual Basic, Java, and PowerBuilder. IDEs for developing HTML applications are among the most commonly used.

Popular IDEs

Programing language	IDE
Java	Eclipse, Netbeans
HTML	Dream Weaver, Home Site, Front Page
.NET	Visual Studio
Python	Ninja – IDE, Wing IDE, KDevelop
Android	AIDE

Example for Html Application using IDE: **DREAMWEAVER**

Features

Ease and efficiency of use

This software has not only been designed with advanced level users in mind but also for beginners. Simple and complex websites can be designed using a point and click method.

The ability to view html pages during the design process

Users of Dream Weaver have the ability to select different views when creating web pages. A 'code view' shows only the html code for the page. A 'design view' gives an indication of how the html page will appear in a browser.

'A split view', as the name implies, allows you to see the code view and design view at the same time. Both views updated automatically.

The ability to create consistent looking web pages

This software includes templates for web pages to assist in the design process. Template files can be created by the user or alternatively, ready prepared templates are available. This feature makes it possible for beginners to design web pages as the workload is reduced.

Managing and updating websites effectively

Website designers can make changes to the design of a website simply by editing the Dream Weaver template files. This eliminates the need to alter each page manually because Dream Weaver can automatically update the pages created using a template. This saves much time and effort.

Customizable software

Users of Dream Weaver can customise the look of the software to match their requirements. Menus, tabs, commands, fonts and code colouring can all be adjusted to personal preference.

This can effectively streamline the web design process. Having reviewed some of the evidence for the case in favour of undertaking Dream Weaver training, it only remains for you to make the final verdict.

IEEE FORMAT

Abstract

Abstract is to be in fully-justified italicized text, at the top of the left-hand column as it is here, below the Author information. Use the word “Abstract” as the title, in 12-point Times, boldface type, centered relative to the column initially capitalized. The abstract is to be in 10-point, single-spaced type, and may be up to 3 in. (7.62 cm) long. Leave two blank lines after the abstract, and then begin the main text. All Manuscripts must be in English.

1. Introduction:

These guidelines include complete descriptions of the fonts, spacing, and related information for producing your proceedings manuscripts.

Please Note that your paper should normally be limited to **six** pages. A maximum of two additional pages can be used subject to a charge of as per the pages.

2. Formatting your paper:

All printed material, including text, illustrations, and charts, must be kept within a print area of 6-7/8 inches (17.5 cm) wide by 8-7/8 inches (22.54 cm) high. Do not write or print anything outside the Print area. All text must be in a two-column format. Columns are to be 3-1/4 inches (8.25 cm) wide, with a 5/16 inch (0.8 cm) space between them. Text must be fully justified.

3. Main Title:

The main title (on the first page) should begin 1-3/8 inches (3.49 cm) from the top edge of the Page, centered, and in Times 14-point, boldface type. Capitalize the first letter of nouns, pronouns, verbs, Adjectives, and adverbs; do not capitalize articles, coordinate conjunctions, or prepositions (unless the title begins with such a word). Leave two blank lines after the title.

4. Author name(s) and affiliation(s):

Author names and affiliations are to be centered beneath the title and printed in Times 12-point, Non-boldface type. Multiple authors may be shown in a two- or three-column format, with their affiliations below their respective names. Affiliations are centered below each author name, italicized, not Bold. Include e-mail addresses if possible. Follow the author information by two blank lines before main text.

5. Second and following pages:

The second and following pages should begin 1.0 inch (2.54 cm) from the top edge. On all pages, the bottom margin should be 1-1/8 inches (2.86 cm) from the bottom edge of the page for 8.5 x 11-inch paper; for A4 paper, approximately 1-5/8 inches (4.13 cm) from the bottom edge of the page.

6. Type-style and fonts:

Wherever Times is specified, Times Roman, or New Times Roman may be used. If neither is available on your word processor, please use the font closest in appearance to Times that you have access to. Please avoid using bit-mapped fonts if possible. True-Type 1 fonts are preferred.

7. Main text:

Type your main text in 10-point Times, single-spaced. Do **not** use double-spacing. All paragraphs should be indented 1 pica (approximately 1/6- or 0.17-inch or 0.422 cm).

Be sure your text is fully Justified—that is, flush left and flush right. Please do not place any additional blank lines between Paragraphs.

Figure and table captions should be 10-point Helvetica (or a similar sans-serif font), Boldface. Callouts should be 9-point Helvetica, non-boldface. Initially capitalize only the first word of

Each figure caption and table title. Figures and tables must be numbered separately. For example: “Figure1. Database contexts”, “Table 1. Input data”. Figure captions are to be below the figures. Table titles are to be centered above the tables.

8. First-order headings:

For example, “1. Introduction”, should be Times 12-point boldface, initially capitalized, flush Left, with one blank line before, and one blank line after. Use a period (“.”) after the heading number, not a colon.

9. Second-order headings:

As in this heading, they should be Times 11-point boldface, initially capitalized, flush left, with one blank line before and one after.

10. Third-order headings:

Third-order headings, as in this paragraph, are discouraged. However, if you must use them, use 10-point Times, boldface, initially capitalized, flush left, and preceded by one blank line, followed by a period and your text on the same line.

11. Printing your paper:

Print your properly-formatted text on high-quality, 8.5 x 11-inch white printer paper. A4 paper is also acceptable, but please leaves the extra 0.5 inch (1.27 cm) at the BOTTOM of the page. If the last page of your paper is only partially filled; arrange the columns so that they are evenly balanced if possible, rather than having one long column.

12. Page numbering:

Number your pages lightly, in pencil, on the upper right-hand corners of the BACKS of the pages (For example, 1/6, 2/6; or 1 of 6, 2 of 6; and so forth). Please do NOT write on the fronts of the pages, or on the lower halves of the backs of the pages. Do not automatically paginate your pages. Note that Un-numbered pages that get out of order can be very difficult to put back in order!

13. Illustrations, graphs, and photographs:

All graphics should be centered. Your artwork must be in place in the article (preferably printed as part of the text rather than pasted up). If you are using photographs and is able to have halftones made at a print shop, use a 100- or 110-line screen. If you must use photos, they must be pasted onto your Manuscript.

Use rubber cement to affix the halftones or photos in place. Black and white, clear, glossy finish Photos are preferable to color. Supply the best quality photographs and illustrations possible. Penciled lines and very fine lines do not reproduce well. Remember, the quality of the book cannot be better than the originals provided. Do not use tape on your pages!

Page Layout.

Your paper must use a page size corresponding to A4 which are 210mm (8.27") wide and 297mm (11.69") long. The Margins must be set as follows:

- Top = 19mm (0.75")
- Bottom = 43mm (1.69")
- Left = Right = 14.32mm (0.56")

Your paper must be in two column format with a space of 4.22mm (0.17") between columns.

TABLE 1
FONT SIZES FOR PAPERS

FONT SIZE	APPEARANCE (IN TIMES NEW ROMAN (OR) TIMES)		
	REGULAR	BOLD	ITALIC
8	Table caption (in small caps), figure caption, reference item		Reference item (partial)
9	Hour email address (in courier), cell in table	Abstract body	Abstract heading (also in bold)
10	Level -1 heading (in small caps), paragraph		Level-2 heading, Level-3 heading, Author affiliation
11	Author name		
24	Title		

iPAD

iPad is an iOS-based line of tablet computers designed and marketed by Apple Inc. The first iPad was released on April 3, 2010; the most recent iPad models, the iPad Air 2 and iPad Mini 3, were revealed on October 16, 2014 and were available for pre-order on October 17. The user interface is built around the device's multi-touch screen, including a virtual keyboard. The iPad includes built-in Wi-Fi and cellular connectivity on select models. As of June, 2014, there have been over 200 million iPads sold since its release in 2010.



History

Apple co-founder Steve Jobs said in a 1983 speech that Apple's first tablet computer was the NewtonMessagePad 100, introduced in 1993, powered by an ARM6 processor core developed by ARM, Ltd., a 1990 spinout of Acorn Computers in which Apple invested. Apple also developed a prototype PowerBook Duo-based tablet, the PenLite, but decided not to sell it in order to avoid hurting MessagePad sales. Apple released several more Newton-based PDAs; the final one, the MessagePad 2100, was discontinued in 1998.

Hardware

Screen and Input

The iPad's (first two generations) touchscreen display is a 1,024 by 768 pixel, 7.75×5.82 in (197×148 mm) liquid-crystal display (diagonal 9.7 in (246.4 mm)), with fingerprint- and scratch-resistant glass. Steve Jobs said a 7-inch screen would be "too small to express the software" and that 10 inches was the minimum for a tablet screen. Like the iPhone, the iPad is designed to be controlled by bare fingers; normal, non-conductive gloves and styli do not work, although there are special gloves and capacitive styli designed for this use.

Storage



The iPad model with data connectivity, unlike the Wi-Fi model, has a black plastic piece on the underside which allows cellular signals to pass through it.

The iPad was released with three capacity options for storage: 16, 32, or 64 GB of internal flash memory. On January 29, 2013, Apple announced a 128 GB model of the fourth generation iPad, which was released on February 5. All data is stored on the internal flash memory, with no option to expand storage. Apple sells a "camera connection kit" with an SD card reader, but it can only be used to transfer photos and videos.

iPOD

The **iPod** is a line of portable media players and multi-purpose pocket computers designed and marketed by Apple Inc. iTunes is a media player, media library, and mobile device management application. The most recent iPod redesigns were announced on September 12, 2012. There are three current versions of the iPod: the ultra-compact iPod Shuffle, the compact iPod Nano and the touch screen iPod Touch.



History:

Though the iPod was released in 2001, its price and Mac-only compatibility caused sales to be relatively slow until 2004. The iPod line came from Apple's "digital hub" category, when the company began creating software for the growing market of personal digital devices. Digital cameras, camcorders and organizers had well-established mainstream markets, but the company found existing digital music players "big and clunky or small and useless" with user interfaces that were "unbelievably awful," so Apple decided to develop its own.

Audio:

The third-generation iPod had a weak bass response, as shown in audio tests. The combination of the undersized DC-blocking capacitors and the typical low-impedance of most consumer headphones form a high-pass filter, which attenuates the low-frequency bass output. Similar capacitors were used in the fourth-generation iPods. The problem is reduced when using high-impedance headphones and is completely masked when driving high-impedance (line level) loads, such as an external headphone amplifier.

The first-generation iPod Shuffle uses a dual-transistor output stage rather than a single capacitor-coupled output, and does not exhibit reduced bass response for any load. For all iPods released in 2006 and earlier, some equalizer (EQ) sound settings would distort the bass sound far too easily, even on undemanding songs. This would happen for EQ settings like R&B, Rock, Acoustic, and Bass Booster. From the fifth-

generation iPod on, Apple introduced a user-configurable volume limit in response to concerns about hearing loss. Users report that in the sixth-generation iPod, the maximum volume output level is limited to 100 dB in EU markets. Apple previously had to remove iPods from shelves in France for exceeding this legal limit.

Connectivity



Ipod Ear Buds



Software:

The iPod line can play several audio file formats including MP3, AAC/M4A, Protected AAC, AIFF, WAV, Audible audio book, and Apple Lossless. The iPod photo introduced the ability to display JPEG, BMP, GIF, TIFF, and PNG image file formats. Fifth and sixth generation iPod Classics, as well as third generation iPod Nanos, can additionally play MPEG-4 (H.264/MPEG-4 AVC) and QuickTime video formats, with restrictions on video dimensions, encoding techniques and data-rates.

Originally, iPod software only worked with Mac OS; iPod software for Microsoft Windows was launched with the second generation model. Unlike most other media players, Apple does not support Microsoft's WMA audio format—but a converter for WMA files without Digital Rights Management (DRM) is provided with the Windows version of iTunes. MIDI files also cannot be played, but can be converted to audio files using the "Advanced" menu in iTunes.

Interface:

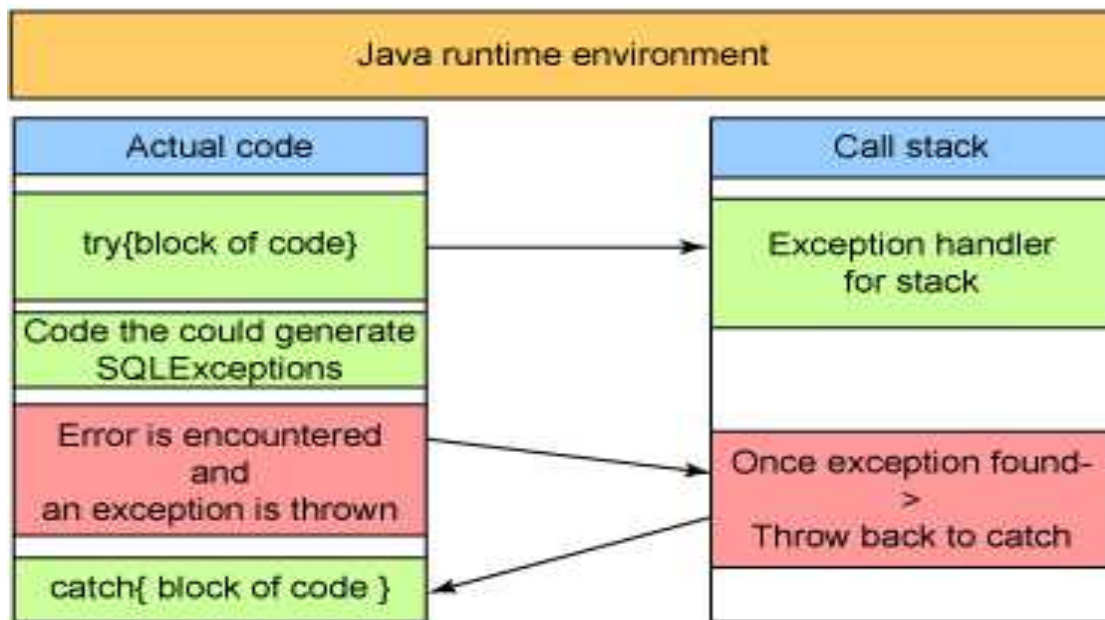


iPods with color displays use anti-aliased graphics and text, with sliding animations. All iPods (except the 3rd-generation iPod Shuffle, the 6th & 7th generation iPod Nano, and iPod Touch) have five buttons and the later generations have the buttons integrated into the click wheel – an innovation that gives an uncluttered, minimalist interface.

JRE (JAVA RUNTIME ENVIRONMENT)

The Java Runtime Environment (JRE) provides the libraries, the Java Virtual Machine, and other components to run applets and applications written in the Java programming language. In addition, two key deployment technologies are part of the JRE: Java Plug-in, which enables applets to run in popular browsers; and Java Web Start, which deploys standalone applications over a network.

The Java Runtime Environment (JRE), also known as Java Runtime, is part of the Java Development Kit (JDK), a set of programming tools for developing Java applications. The Java Runtime Environment provides the minimum requirements for executing a Java application; it consists of the Java Virtual Machine (JVM), core classes, and supporting files.



Java Development Kit is the Official Development Kit for the Java Programming Language

Programming in any computer language simply requires a text editor and knowledge of syntax, as well as a clear idea of what the user is trying to create. The user then needs a compiler to run as an interpreter to translate your code into something understandable.

Java is one of the most popular coding languages out there, and Java Development Kit (or **JDK**) is its official development package.

Currently, Java Development Kit is also one of the most popular development environments in which to code Java.

It includes graphical IDE (like Eclipse), which requires separate installation. In addition to the Java Virtual Machine that is essential to perform certain Java-based program types, Java Development Kit has a wide range of tools such as `java c`, the Java byte code compiler, `java p`, `disassemble class`, and `jdb`, which is a debugger. The user will find them in Java Development Kit's subdirectory `bin`.

Unfortunately, Coding novices might find this kit a bit over their heads, although there are some demos and example codes provided within the kit itself.

JDK Contents

The JDK has as its primary components a collection of programming tools, including:

- `appletviewer` – this tool can be used to run and debug Java applets without a web browser
- `apt` – the annotation-processing tool
- `extcheck` – a utility which can detect JAR-file conflicts
- `jabswitch` – the Java Access Bridge. Exposes assistive technologies on Microsoft Windows systems.
- `java` – the loader for Java applications. This tool is an interpreter and can interpret the class files generated by the `javac` compiler. Now a single launcher is used for both development and deployment.

The JDK also comes with a complete Java Runtime Environment, usually called a private runtime, due to the fact that it is separated from the "regular" JRE and has extra contents.

It consists of a Java Virtual Machine and all of the class libraries present in the production environment, as well as additional libraries only useful to developers, such as the internationalization libraries and the IDL libraries. Copies of the JDK also include a wide selection of example programs demonstrating the use of almost all portions of the Java API.

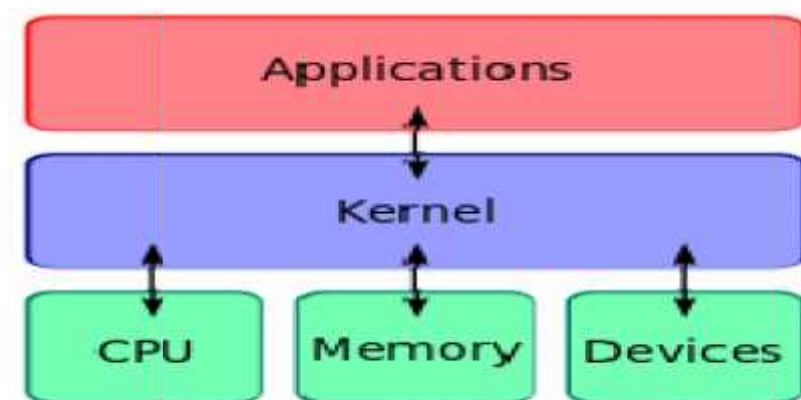
KERNEL

A **kernel** is the central part of an operating system. It manages the tasks of the computer and the hardware - most notably memory and CPU time.

There are two types of kernels:

- A microkernel, which only contains basic functionality;
- A monolithic kernel, which contains many drivers.

A computer user never interacts directly with the kernel. It runs behind the scenes and cannot be seen, except for the text logs that it prints.



The Role of the Kernel

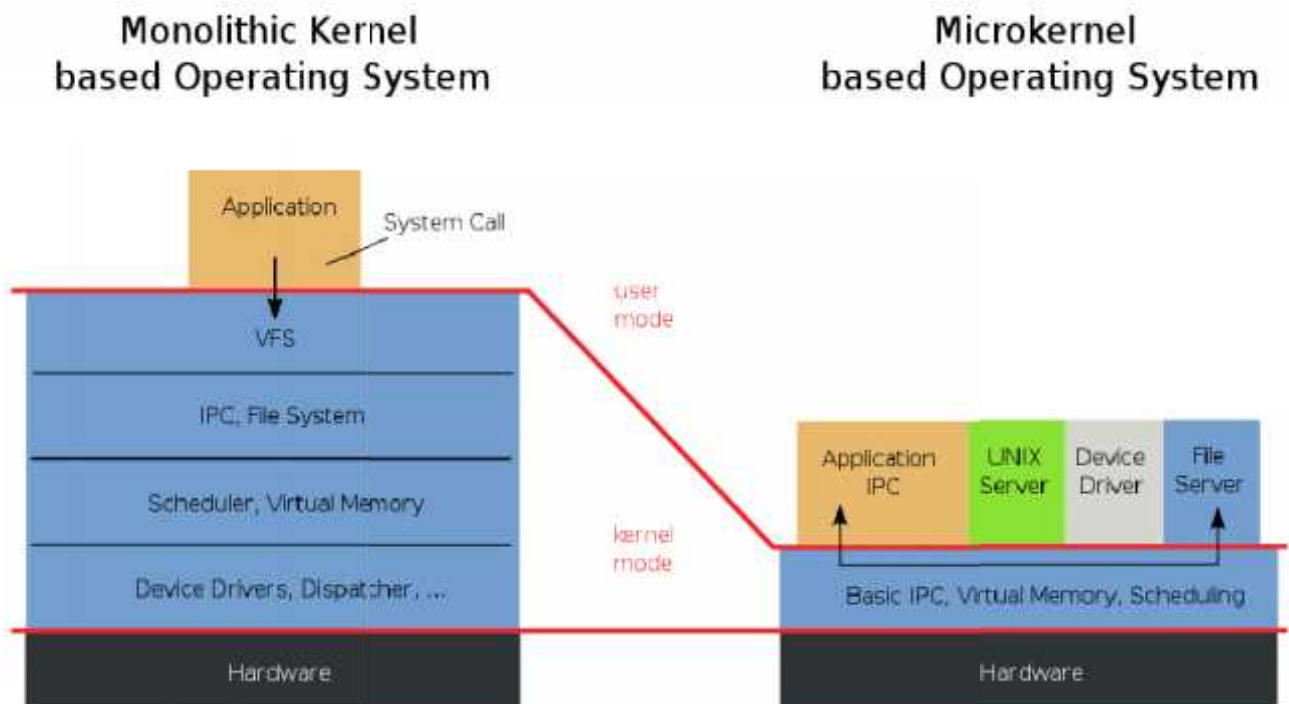
The kernel is the most fundamental part of an operating system. It can be thought of as the program which controls all other programs on the computer. It is responsible for the creation and destruction of memory space which allows software to run.

It provides services so that programs can request the use of the network driver, the disk or any other piece of hardware (the kernel forwards that request to special programs called drivers which control the hardware), manages the file system and sets interrupts for the CPU to enable multitasking.

Many kernels are also responsible for ensuring that faulty programs do not interfere with the operation of others, by denying access to memory that has not been allocated to them and restricting the amount of CPU time they can consume.

Micro and Monolithic Kernels

Operating systems commonly use Monolithic kernels. In Linux for example, drivers are often implemented as part of a kernel (specifically Loadable Kernel Modules). When a device is needed, its extension is loaded and 'joined' onto the kernel - in other words making the kernel larger. Monolithic kernels are problematic in that if one of these device drivers is faulty (such as if a beta graphics driver is downloaded) then because it is part of the kernel it often overrides the mechanisms put in place to deal with faulty programs. This can mean that the kernel - and thus the entire computer - can cease to function. If there are too many devices, the kernel can also run out of memory - causing a system crash or making the computer very slow.



Microkernel are a way of solving this problem. In a microkernel operating system, the kernel deals only with critical activities - such as controlling the memory and CPU - and nothing else. Drivers and other functions that monolithic kernels would normally do within the kernel are moved outside the kernel, where they are under control. Instead of being an uncontrollable part of the kernel the beta driver is therefore no more unlikely to cause a crash as a beta web browser - that is, if a driver goes wrong it can simply be restarted by the kernel. Unfortunately, creating microkernel based operating systems is very difficult and there are no operating systems like these that are commonly used. Minix is a microkernel operating system.

LINUX OS

Linux less frequently used is a Unix-like and mostly POSIX-compliant computer operating system assembled under the model of free and open-source software development and distribution. The defining component of Linux is the Linux kernel an operating system kernel first released on 5 October 1991 by Linus Torvalds. The Free Software Foundation uses the name GNU/Linux, which has led to some controversy.



Linux was originally developed as a free operating system for Intel x86-based personal computers, but has since been ported to more computer hardware platforms than any other operating system. It is the leading operating system on servers and other big iron systems such as mainframe computers and supercomputers, but is used on only around 1% of desktop computers.



Linux also runs on embedded systems, which are devices whose operating system is typically built into the firmware and is highly tailored to the system; this includes mobile phones, tablet computers, network routers, facility automation controls, televisions and video game consoles. Android, the most widely used operating system for tablets and smart phones, is built on top of the Linux kernel.

Developer	Community
Written in	Various (Notably C and Assembly)
OS family	Unix-like
Working state	Current
Source model	Mainly open source, closed source also available
Initial release	1991; 23 years ago
Latest release	3.18 (7 December 2014)
Marketing target	Personal computers, mobile devices, embedded devices, servers, mainframes, supercomputers
Available in	Multilingual
Platforms	Alpha, ARC, ARM,AVR32, Black fin, C6x,ETRAX CRIS, FR-V,H8/300, Hexagon,Itanium, M32R, m68k,META, Microblaze,MIPS, MN103,OpenRISC, PA-RISC,PowerPC, SuperH,SPARC
Kernel type	Monolithic (Linux kernel)
Default user interface	Many
License	GNU GPL and other free and open source licenses; " <i>Linux</i> " trademark is owned by Linus Torvalds and administered by the Linux Mark Institute

LOCALHOST

A Localhost is, put plainly, the standard hostname given to the address assigned to the loopback network interface. Translated into an IP address, a Localhost is always designated as 127.0.0.1. This may be overwhelming, so let's look at what these things mean.



Hostname is the term for the label that is assigned to any device connected to a computer network and is used to identify the device across the web. A hostname usually consists of a single word or phrase and can be followed by a Domain Name System domain at the end. That is, a website. Used this way, the hostname is called a domain name. An example of using a hostname this way would be: `hostname.domain`. In short, hostname is the nickname that is given to a device connected to a computer network.

A loopback network interface sounds complicated, but is in actuality very simple. It is a virtual interface used for system management; such an interface exists but not in a real sense; it is simulated by the computer. This interface is assigned a special address that can be accessed by management over the network but lacks ties to any real device connected to the network.

Applications can also use this virtual interface to send and receive packets (pieces of data) through, as opposed to using a real interface.

Back to a localhost; it is also a registered domain name. This means it is a registered name on the Internet, specifically the web, that is specially reserved for a singular purpose as a localhost, to prevent confusion.

"Localhost" refers to the local computer that a program is running on. For example, if you are running a Web browser on your computer, your computer is considered to be the "localhost." While this does not need to be specified when using a single computer, the localhost does need to be defined when running programs from multiple computers.

For example, a network administrator might use his local machine to start a Web server on one system and use a remote access program on another. These programs would run from computers other than the localhost.

So why use a localhost?

Not only does it make connecting to local servers, such as in a Local Area Network, extremely efficient by routing traffic through the address, allowing a direct route to any service on the server, as opposed to specifying a specific route for each service. Services being programs, games, documents, databases and whatnot. But it also makes it easier to access via the web, thanks to being a dedicated, registered domain name.

Computer networking can be a confusing and baffling practice, based on how much we know. Armed with this knowledge, our work can be easier and our home computing can be more robust and easy to use.

LOSSY COMPRESSION

Introduction

Lossy compression is the class of data encoding methods that uses inexact approximations for representing the content that has been encoded. It is mostly used to compress multimedia data (audio, video). It is required for text and data files, such as blank records and text articles.

These compression techniques are used to reduce the amount of data to store, handle and transmit represented content.

Transform Coding

Some forms of lossy compression can be thought of as an application of transform coding in the case of multimedia data;

Perceptual coding

It transforms the raw data to a domain that accurately reflects the information content. Equalization of audio is most naturally expressed in the frequency domain rather than raw time domain.

It removes data from the original file; the resulting file takes up much less disk space than original. For example, a JPEG image may reduce an image size by more than 80%.

Information Loss

Lossy compression formats suffer from generation loss: repeatedly compressing and decompressing the file will cause it to progressively lose quality.

There are two basic schemes in Lossy compression:

- ★ Lossy transform codecs
- ★ Lossy predictive codecs

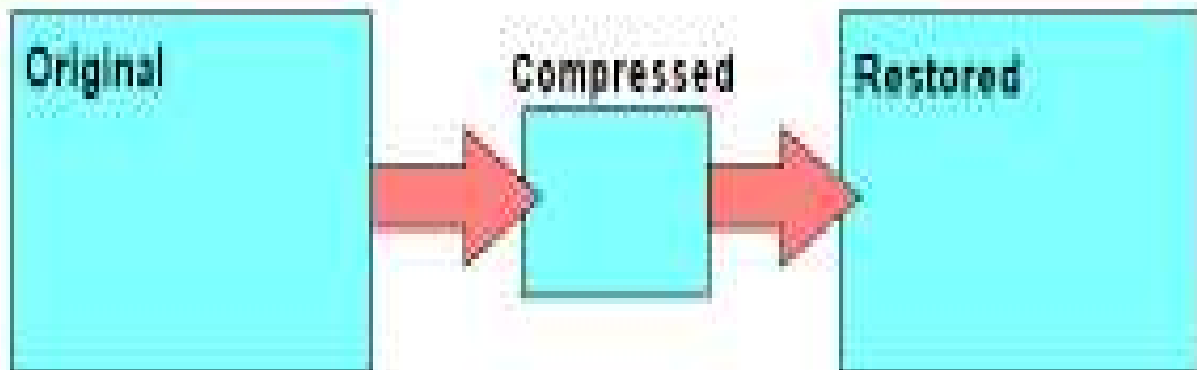
In lossy transform codecs, samples of pictures or sound are taken and converted into small segments, transformed into a new basis space whereas in lossy predictive codecs, previous or subsequent decoded data is used to predict the current sound sample or image form.

Lossy Versus Lossless

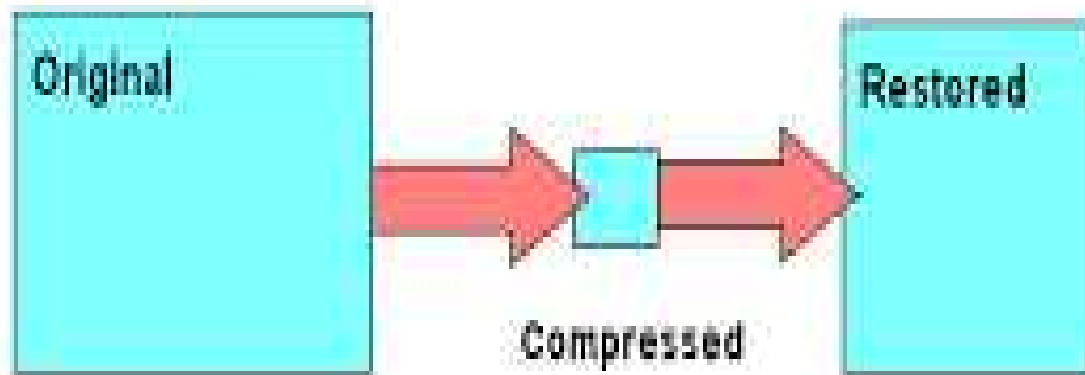
The advantage of lossy compression: In some cases, it can produce much smaller compressed file than any lossless method, while still meeting requirements of the application.

Lossy methods are most often used for compressing sound, images or videos. This is because these types of data are intended for human interpretation. Ideally lossy compression is transparent and compression ratio is always far superior to that of the audio and image.

LOSSLESS



LOSSY



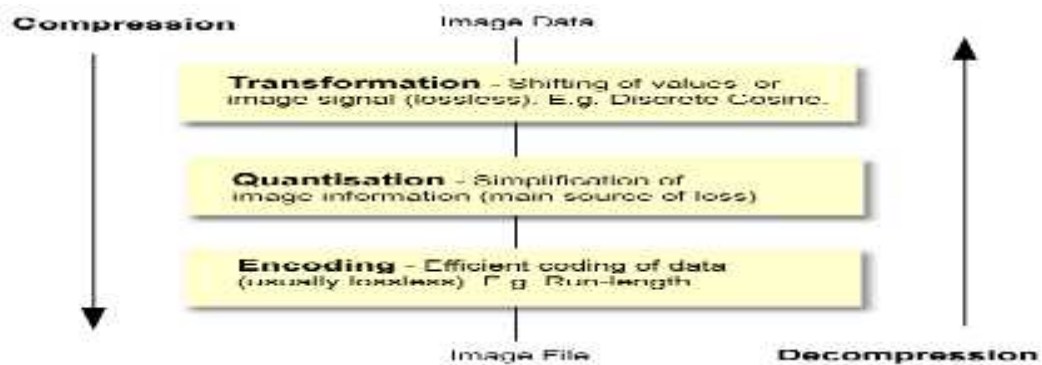
Editing of lossy files

Editing of lossy compressed files without degradation of quality is possible. Editing which reduces the file size as if it had been compressed to a greater degree is also possible. Editing allows the image to be cropped, rotated, flipped and flopped or converted to gray scales.

In JPEG, if unwanted information is destroyed, the quality of the remaining portion is unchanged. Meta data such as ID3tags, vorbis comments can usually be modified or removed without modifying the underlying data.

LOSSLESS COMPRESSION

Lossless data compression is a class of data compression algorithms that allows the original data to be perfectly reconstructed from the compressed data. By contrast, lossy data compression permits reconstruction only of an approximation of the original data, though this usually improves compression rates (and therefore reduces file sizes). Lossless data compression is used in many applications. For example, it is used in the ZIP file format and in the GNU tool gzip. It is also often used as a component within lossy data compression technologies (e.g. lossless mid/side joint stereo preprocessing by the LAME MP3 encoder and other lossy audio encoders).



Lossless compression techniques

Most lossless compression programs do two things in sequence: the first step generates a statistical model for the input data, and the second step uses this model to map input data to bit sequences in such a way that "probable" (e.g. frequently encountered) data will produce shorter output than "improbable" data.

There are two primary ways of constructing statistical models: in a static model, the data is analyzed and a model is constructed, then this model is stored with the compressed data.

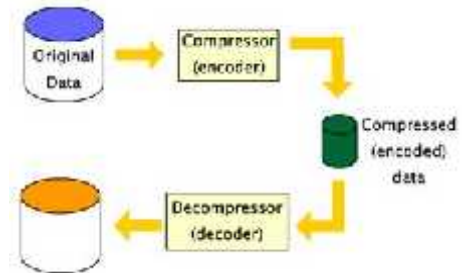
This approach is simple and modular, but has the disadvantage that the model itself can be expensive to store, and also that it forces using a single model for all data being compressed, and so performs poorly on files that contain heterogeneous data. Adaptive models dynamically update the model as the data is compressed.

Both the encoder and decoder begin with a trivial model, yielding poor compression of initial data, but as they learn more about the data, performance improves.

Lossless compression methods

Some of the most common lossless compression algorithms are listed below.

General purpose



- Run-length encoding (RLE) – a simple scheme that provides good compression of data containing lots of runs of the same value.
- Statistical Lempel Ziv – a combination of statistical method and dictionary-based method; better compression ratio than using single method.

Cryptography

Cryptosystems often compress data (the "plaintext") before encryption for added security. When properly implemented, compression greatly increases the unicity distance by removing patterns that might facilitate cryptanalysis. However, many ordinary lossless compression algorithms produce headers, wrappers, tables, or other predictable output that might instead make cryptanalysis easier. Thus, cryptosystems must utilize compression algorithms whose output does not contain these predictable patterns.

Genetics

Genetics compression is done using both conventional compression algorithms and specific algorithms adapted to genetic data. In 2012, a team of scientists from Johns Hopkins University published the first genetic compression algorithm that does not rely on external genetic databases for compression. HAPZIPPER was tailored for HapMap data and achieves over 20-fold compression (95% reduction in file size), providing 2- to 4-fold better compression and in much faster time than the leading general-purpose compression utilities.

Executables

Self-extracting executables contain a compressed application and a decompressor. When executed, the decompressor transparently decompresses and runs the original application. This is especially often used in demo coding, where competitions are held for demos with strict size limits, as small as 1k. This type of compression is not strictly limited to binary executables, but can also be applied to scripts, such as JavaScript.

MAC OS

Introduction

Mac OS is a series of graphical user interface-based operating systems developed by Apple Inc. for their Macintosh line of computer systems.

The original operating system was first introduced in 1984 as being integral to the original Macintosh, and referred to as the "System". Referred to by its major revision starting with "System 6 and "System 7", Apple rebranded version 7.6 as "Mac OS" as part of their Macintosh clone program in 1996. The Macintosh, specifically its system software, is credited with having popularized the early graphical user interface concept.



Macintosh operating systems have been released in two major series. Up to major revision 9, from 1984 to 2000, it is historically known as Classic Mac OS. Major revision 10, from 2001 to present, is branded OS X (originally referred to as Mac OS X). Major revisions to the Macintosh OS are now issued as point revisions, such that, for example, 10.2 is substantially different from 10.5. Both series share a general interface design, and there has been some overlap with shared application frameworks and virtual machine technology for compatibility; but the two series also have deeply different architectures.

Design Concept

Apple's original concept for the Macintosh deliberately sought to minimize the user's conceptual awareness of the operating system. Tasks which required more operating system knowledge on other systems would be accomplished by mouse gestures and graphic controls on a Macintosh.

This would differentiate it from then current systems, such as MS-DOS, which used a command line interface consisting of tersely-abbreviated textual commands.

The core of the system software was held on floppy disk or hard drive in some later models such as the Mac se, with updates originally provided on floppy disk, freely copyable at Apple dealers. The user's involvement in an upgrade of the operating system was also minimized to running an installer, or replacing system files using the file manager. This simplicity meant that the early releases lacked any access controls, in effect giving its single user root privileges at all times.

Versions

Early versions of Mac OS were compatible only with Motorola 68000-family Macintoshes. As Apple introduced computers with PowerPC hardware, the OS was ported to support this architecture. Mac OS 8.1 was the last version that could run on a "68K" processor (the 68040). OS X, which has superseded the "Classic" Mac OS, is compatible with only PowerPC processors from version 10.0 ("Cheetah") to version 10.3 ("Panther"). Both PowerPC and Intel processors are supported in version 10.4 ("Tiger", Intel only supported after an update) and version 10.5 ("Leopard"). 10.6 and later versions support only Intel processors.



The early Macintosh operating system initially consisted of two pieces of software, called "System" and "Finder", each with its own version number. System 7.5.1 was the first to include the Mac OS logo (a variation on the original Happy Mac startup icon), and Mac OS 7.6 was the first to be named "Mac OS".

TOUCHPAD

Introduction

A **touchpad** or **trackpad** is a pointing device featuring a tactile sensor, a specialized surface that can translate the motion and position of a user's fingers to a relative position on the operating system that is outputted to the screen.



Touchpads are a common feature of laptop computers, and are also used as a substitute for a mouse where desk space is scarce. Because they vary in size, they can also be found on personal digital assistants (PDAs) and some portable media players. Wireless touchpads such as Apple's MagiCTrackpad are also available as detached accessories.

Operation and Function

Touchpads operate in one of several ways, including capacitive sensing and conductance sensing. The most common technology used as of 2010 entails sensing the capacitive virtual ground effect of a finger, or the capacitance between sensors. Capacitance-based touchpads will not sense the tip of a pencil or other similar implement. Gloved fingers may also be problematic.

While touchpads, like touchscreens, are able to sense absolute position, resolution is limited by their size. For common use as a pointer device, the dragging motion of a finger is translated into a finer, relative motion of the cursor on the output to the display on the operating system, analogous to the handling of a mouse that is lifted and put back on a surface. Hardware buttons equivalent to a standard mouse's left and right buttons are positioned below, above, or beside the touchpad.

Some touchpads and associated device driver software may interpret tapping the pad as a click, and a tap followed by a continuous pointing motion (a "click-and-a-half") can indicate dragging. Tactile touchpads allow for clicking and dragging by incorporating button functionality into the surface of the touchpad itself. To select, one presses down on the touchpad instead of a physical button.



To drag, instead performing the "click-and-a-half" technique, one presses down while on the object, drags without releasing pressure and lets go when done. Touchpad drivers can also allow the use of multiple fingers to facilitate the other mouse buttons (commonly two-finger tapping for the center button)

History

By 1982 Apollo desktop computers were equipped with a touchpad on the right side of the keyboard. Introduced a year later, the Gavilan SC included a touchpad above its keyboard.

A touchpad was first developed for Psion's MC 200/400/600/WORD Series in 1989. Cirque introduced the first widely available touchpad, branded as GlidePoint, in 1994. Apple Inc introduced touchpads to the modern laptop in the PowerBook series in 1994, using Cirque's GlidePoint technology. later PowerBooks and MacBooks would use Apple-developed trackpads.

Another early adopter of the GlidePoint pointing device was Sharp. Later, Synaptics introduced their touchpad into the marketplace Epson was an early adopter of this product



Use in Devices

Touchpads are primarily used in self-contained portable laptop computers and do not require a flat surface near the machine. The touchpad is close to the keyboard, and only very short finger movements are required to move the cursor across the display screen; while advantageous, this also makes it possible for a user's palm or wrist to move the mouse cursor accidentally while typing. Touchpad functionality is available for desktop computers in keyboards with built-in touchpads.

Laptops today feature multitouch touchpads that can sense in some cases up to five fingers simultaneously, providing more options for input, such as the ability to bring up the context menu by tapping two fingers, dragging two fingers for scrolling, or gestures for zoom in/out or rotate.

OPTICAL DISK DRIVE MECHANISM

Introduction

In computing, an optical disc drive (ODD) is a disk drive that uses laser light or electromagnetic waves within or near the visible light spectrum as part of the process of reading or writing data to or from optical discs. Some drives can only read from discs, but recent drives are commonly both readers and recorders, also called burners or writers. Compact discs, DVDs, and Blu-ray discs are common types of optical media which can be read and recorded by such drives. Optical drive is the generic name; drives are usually described as "CD" "DVD", or "Blu-ray", followed by "drive", "writer", etc.

Optical disc drives are an integral part of stand-alone consumer appliances such as CD players, DVD players and DVD recorders. They are also very commonly used in computers to read software and consumer media distributed on disc, and to record discs for archival and data exchange purposes. Floppy disk drives, with capacity of 1.44 MB, have been made obsolete: optical media are cheap and have vastly higher capacity to handle the large files used since the days of floppy discs, and the vast majority of computers and much consumer entertainment hardware have optical writers. USB flash drives, high-capacity, small, and inexpensive, are suitable where read/write capability is required.



History

The first laser disc, demonstrated in 1972, was the Laservision 12-inch video disc. The video signal was stored as an analog format like a video cassette. The first digitally recorded optical disc was a 5-inch audio compact disc (CD) in a read-only format created by Philips and Sony in 1975. Five years later, the same two companies introduced a digital storage solution for computers using this same CD size called a CD-ROM. Not until 1987 did Sony demonstrate the erasable and rewritable 5.25-inch optical drive.

Key Components

Laser and Optics

The most important part of an optical disc drive is an optical path, placed in a pickup head (PUH), usually consisting of semiconductor laser, a lens for guiding the laser beam, and photodiodes detecting the light reflection from disc's surface.

Initially, CD lasers with a wavelength of 780 nm were used, being within infrared range. For DVDs, the wavelength was reduced to 650 nm (red color), and the wavelength for Blu-ray Disc was reduced to 405 nm (violet color).

Two main servomechanisms are used, the first one to maintain a correct distance between lens and disc, and ensure the laser beam is focused on a small laser spot on the disc. The second servo moves a head along the disc's radius, keeping the beam on a groove, a continuous spiral data path.

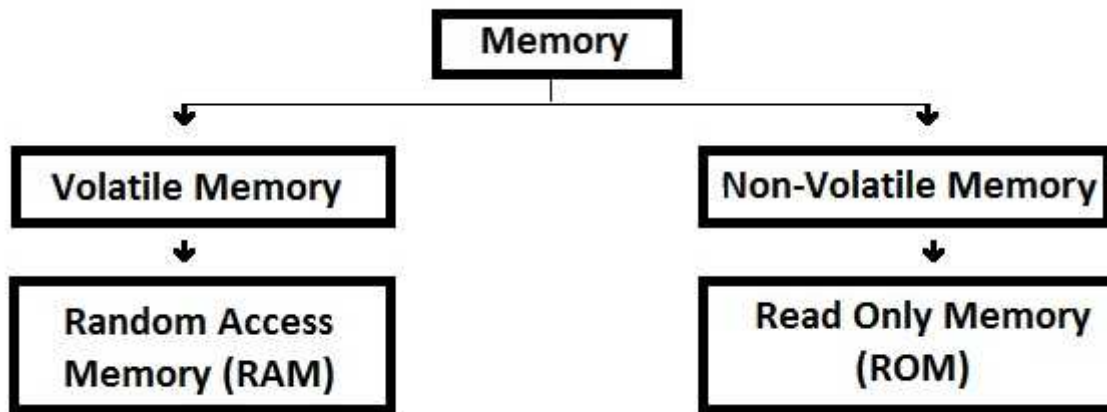
On read only media (ROM), during the manufacturing process the groove, made of pits, is pressed on a flat surface, called land. Because the depth of the pits is approximately one-quarter to one-sixth of the laser's wavelength, the reflected beam's phase is shifted in relation to the incoming reading beam, causing mutual destructive interference and reducing the reflected beam's intensity. This is detected by photodiodes that output electrical signals.



For rewritable CD-RW, DVD-RW, DVD+RW, DVD-RAM, or BD-RE media, the laser is used to melt a crystalline metal alloy in the recording layer of the disc. Depending on the amount of power applied, the substance may be allowed to melt back (change the phase back) into crystalline form or left in an amorphous form, enabling marks of varying reflectivity to be created.

Double-sided media may be used, but they are not easily accessed with a standard drive, as they must be physically turned over to access the data on the other side.

VOLATILE AND NON-VOLATILE MEMORY



Volatile Memory

Volatile memory is computer storage that only maintains its data while the device is powered.

Most RAM (random access memory) used for primary storage in personal computers is volatile memory. RAM is much faster to read from and write to than the other kinds of storage in a computer, such as the hard disk or removable media. However, the data in RAM stays there only while the computer is running; when the computer is shut off, RAM loses its data.

Volatile memory contrasts with non-volatile memory, which does not lose content when power is lost. Non-volatile memory has a continuous source of power and does not need to have its memory content periodically refreshed.

Non-Volatile Memory

Non-volatile memory NVM or **non-volatile storage** is computer memory that can get back stored information even when not powered. Examples of non-volatile memory include read-only memory, flash memory, ferroelectric RAM (F-RAM), most types of magnetic computer storage device, optical discs, and early computer storage methods such as paper tape and punched cards.

Non-volatile memory is typically used for the task of secondary storage, or long-term persistent storage. The most widely used form of primary storage today is a volatile form of random access memory (RAM), meaning that when the computer is shut down, anything contained in RAM is lost.

However, most forms of non-volatile memory have limitations that make them unsuitable for use as primary storage. Typically, non-volatile memory either costs more or has a poorer performance than volatile random access memory.

Uses of Volatile and Non Volatile Memory

Random Access Memory (RAM) is a typical example of Volatile Memory. The data in it will be cleared as soon as you shut down your PC and that is the reason why it will take some time to load operating system after you start your PC during which applications will be loaded onto RAM.



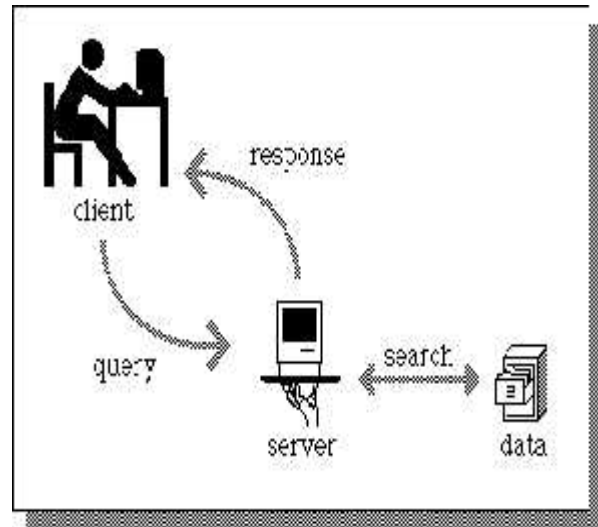
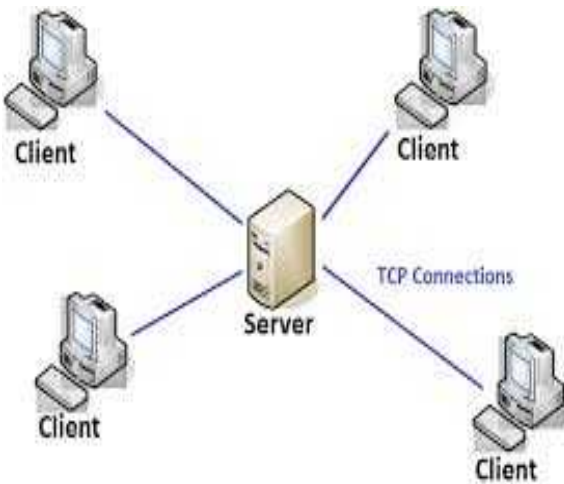
Hard Drive is a typical example of Non Volatile Memory. It will take some time to access the data in a hard drive and it also will take some time to write data into it but can be retrieved back even if the power supply to it is interrupted.

Difference of Volatile and Non-Volatile Memory

VOLATILE MEMORY	NON-VOLATILE MEMORY
<p>The data is lost on reboot. This is the ram memory. Random-access-memory.</p> <p>The user will lost all of your data when your electricity go out. Ram is volatile memory. When you shutdown your computer. Information that haven't saved is destroyed.</p>	<p>The data is saved to a hard drive or flash drive, or it could be a hard coded chip. This is ROM memory.</p> <p>Read-only-memory.All data that stored in this type of memory will retain when you shutdown your computer. Rom is of type nonvolatile memory.</p>

CLIENT SYSTEM

An early use of the word client occurs in “Separating Data from Function in a Distributed File System”.



- A client-server model of computing is a distributed application structure that partitions tasks or workloads between the providers of a resource or service, called servers, and service requesters, called clients.
- Often clients and servers communicate over a computer network on separate hardware, but both client and server may reside in the same system
- A client does not share any of its resources, but requests a server's content or service function. Client therefore initiate communication sessions with servers which await incoming requests.
- Example of computer applications that use the client-server model are Email, Network printing and the World Wide Web(WWW).

Client-Server roles:

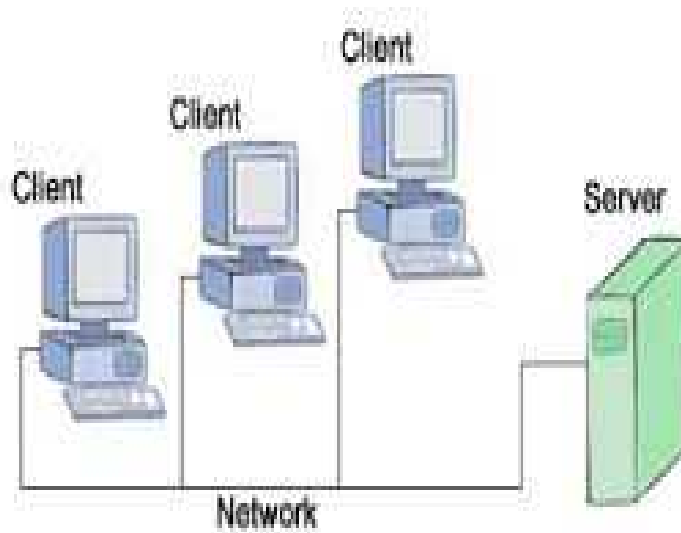
- The client-server characteristic describes the relationship of cooperating programs in an application. The server component provides a function or service to one or many clients, which initiate requests for such service.
- Whether a computer is a client, a server, or both, is determined by the nature of the application that requires the service functions.
- **For example:** A single computer can run web server and file server software at the same time to serve different data to clients making different kinds of

requests. Client software can also communicate with server software within the same computer.

- Communication between servers, such as to synchronize data, is sometimes called inter-server or server-to-server communication.

Client-Server communication:

- Clients and servers exchange message in a request-response messaging pattern: The client sends a request, and the server returns a response. This exchange of message is an example of interprocess communication.
- To communicate, the computers must have a common language, and they must follow rules so that both the client and the server know what to expect.
- The language and rules of communication are defined in a communications protocol. All client-server protocols operate in the application layer.



Example of Client-Server model:

When a bank customer access online banking services with a web browser (the client) the client initiates a request to the bank's web server. The customer's login credentials may be stored in a database, and the web server accesses the database server as a client.

An application server interprets the returned data by applying the bank's business logic, and output to the web server. Finally the web server returns the result to the client web browser for display.

SERVER SYSTEM

A server is a running instance of application software capable of accepting requests from the client and giving responses accordingly. Servers can run on any computer including dedicated computers, which individually are also often referred to as the server. The advantage of running servers on a dedicated computer is security.

Servers operate within client-server architecture. Servers are computer programs running to serve the requests of other programs, the client. Typical computing servers are database server, file server, mail server, print server, web server, gaming server and application server. An alternative model, peer-to-peer networking enables all computers to act as a server.

Usage of Server System:

Computerised process that shares a resource to one or more client processes is a server. To illustrate this, take the common example of file sharing. While the existence of files on a machine does not classify it as a server, the mechanism that shares these files to clients by the operating system is the server.

Servers became common in the early 1990s as businesses increasingly began using personal computers to provide services formerly hosted on large mainframes or minicomputer.

Early file servers housed multiple Cd- Rom drives, which were used to host large database applications. Hardware requirement for servers vary, depending on the server application. Absolute CPU speed is not quite as critical to a server as it is to a desktop machine .Server duties to provide service to many users over a network lead to different requirements such as fast network connections and high I/O throughout.

Since servers are usually accessed over a network, they may run in headless mode without a monitor or input device. Processes that are not needed for the server's function are not used. Many servers do not have a graphical user interface (GUI) as it is unnecessary and consumes resources that could be allocated elsewhere. Similarly, audio and USB interfaces may be omitted.

Windows and Mac OS X server operating systems are deployed on a minority of servers, as are other proprietary mainframes operating systems, a The dominant operating systems among servers are UNIX-like open source distributions, such as those based on Linux and free BSD.



Types:

- **Database server** provides database services to other computer programs or computers
- **Fax server** provides fax services for clients
- **File server** provides remote access to file.
- **Name server** or DNS
- **Proxy server** acts as an intermediary for requests from clients seeking resources from other servers.



Difference between Client Server and Server System:

Server

1. In client-server environment, the server computer acts as the “brains” of the business.
2. Generally, applications and data files are stored on the server computer.
3. For example, an employee can access company’s data files stored on the server, from his/her client computer.
4. Apart from the storage medium, the server also acts as a processing power source.

Client

1. In client- server architecture, the client acts a smaller computer that is used by the employees of the organization in order to perform their day to day activities.
2. The employee uses the client computer in order to access the data files or applications stored on the server machine.
3. The best example of client- server architecture is WWW or World Wide Web.
4. Apart from using the applications and data files, the client machine can also utilize the processing power of the server.

VARIOUS IMAGE FILE FORMATS

Image file formats are standardized means of organizing and storing digital images. Image files are composed of digital data in one of these formats that can be rasterized for use on a computer display or printer. An image file format may store data in uncompressed, compressed, or vector formats. Once rasterized, an image becomes a grid of pixels, each of which has a number of bits to designate its color equal to the color depth of the device displaying it.

Types of Images

Photo Image:

Photo images have continuous tones, meaning that adjacent pixels often have very similar colors, for example, a blue sky might have many shades of blue in it. Normally this is 24-bit RGB color, or 8-bit grayscale, and a typical color photo may contain perhaps a hundred thousand RGB colors, out of the possible set of 16 million colors in 24-bit RGB color.

Graphics Image:

Graphic images are normally not continuous tone (gradients are possible in graphics, but are seen less often). Graphics are drawings, not photos, and they use relatively few colors, maybe only two or three, often less than 16 colors in the entire image.



Major Graphic File Formats

Raster formats

JPEG/JFIF, JPEG 2000 Exif, TIFF, RIF, GIF, BMP, PNG, PPM, PGM, PBM, and PNM, WEBP, HDR raster formats, BPG, Other raster formats

Vector formats

CGM, Gerber format (RS-274X), SVG, Other 2D vector formats, 3D vector formats

Compound formats

EPS (Encapsulated PostScript), PDF (Portable Document Format), PostScript, a page description language with strong graphics capabilities, PICT (Classic Macintosh QuickDraw file), SWF (Shockwave Flash), XAML User interface language using vector graphics for images



Original file



.tiff



.bmp



.jpg



.gif



.png

Stereo formats

MPO The Multi Picture Object (.mpo) format consists of multiple JPEG images (Camera & Imaging Products Association) (CIPA). PNS The PNG Stereo (.pns) format consists of a side-by-side image based on PNG (Portable Network Graphics). JPS The JPEG Stereo (.jps) format consists of a side-by-side image format based on JPEG.

VARIOUS AUDIO FILE FORMATS

An audio file format is a file format for storing digital audio data on a computer system. The bit layout of the audio data (excluding metadata) is called the audio coding format and can be uncompressed, or compressed to reduce the file size, often using lossy compression. The data can be a raw bit stream in an audio coding format, but it is usually embedded in a container format or an audio data format with defined storage layer.



- Uncompressed audio formats, such as WAV, AIFF, AU or raw header-less PCM
- Formats with lossless compression, such as FLAC, Monkey's Audio (filename extension .ape), WavPack (filename extension .wv), TTA, ATRAC Advanced Lossless, Apple Lossless (filename extension .m4a), MPEG-4 SLS, MPEG-4 ALS, MPEG-4 DST, Windows Media Audio Lossless (WMA Lossless), and Shorten (SHN).

List of Audio File Formats

FILE EXTENSION	CREATION COMPANY	DESCRIPTION
<u>.3gp</u>		Multimedia container format can contain proprietary formats as <u>AMR</u> , <u>AMR-WB</u> or <u>AMR-WB+</u> , but also some open formats
<u>.aiff</u>	<u>Apple</u>	Standard audio file format used by Apple. It could be considered the Apple equivalent of <u>wav</u> .
<u>.amr</u>		AMR-NB audio, used primarily for speech.
<u>.au</u>	<u>Sun Microsystems</u>	The standard audio file format used by <u>Sun</u> , <u>Unix</u> and <u>Java</u> . The audio in au files can be <u>PCM</u> or compressed with the <u>μ-law</u> , <u>a-law</u> or <u>G729</u> codecs.
<u>.dvf</u>	<u>Sony</u>	Sony proprietary format for compressed voice files; commonly used by Sony dictation recorders.
<u>.flac</u>		File format for the Free Lossless Audio Codec, a lossless compression codec.
<u>.gsm</u>		Designed for telephony use in Europe, gsm is a very practical format for telephone quality voice. It makes a good compromise between file size and

FILE EXTENSION	CREATION COMPANY	DESCRIPTION
		quality. Note that wav files can also be encoded with the gsm codec.
<u>.mmf</u>	<u>Samsung</u>	A Samsung audio format that is used in ringtones.
<u>.mp3</u>		MPEG Layer III Audio. Is the most common sound file format used today.
<u>.mpc</u>		Musepack or MPC (formerly known as MPEGplus, MPEG+ or MP+) is an open source lossy audio codec, specifically optimized for <u>transparent</u> compression of stereo audio at bitrates of 160–180 kbit/s.
<u>.msv</u>	<u>Sony</u>	A Sony proprietary format for Memory Stick compressed voice files.
<u>.ra, .rm</u>	<u>RealNetworks</u>	A <u>RealAudio</u> format designed for streaming audio over the Internet. The .ra format allows files to be stored in a self-contained fashion on a computer, with all of the audio data contained inside the file itself.
<u>.raw</u>		A raw file can contain audio in any format but is usually used with PCM audio data. It is rarely used except for technical tests.
<u>.sln</u>		Signed Linear PCM format used by <u>Asterisk</u> . Prior to v.10 the standard formats were 16-bit Signed Linear PCM sampled at 8kHz and at 16kHz. With v.10 many more sampling rates were added.
<u>.tta</u>		The True Audio, real-time lossless audio codec.
<u>.vox</u>		The vox format most commonly uses the Dialogic <u>ADPCM</u> (Adaptive Differential Pulse Code Modulation) codec. Similar to other ADPCM formats, it compresses to 4-bits. Vox format files are similar to wave files except that the vox files contain no information about the file itself so the codec sample rate and number of channels must first be specified in order to play a vox file.
<u>.wav</u>		Standard audio file container format used mainly in <u>Windows</u> PCs. Commonly used for storing uncompressed (PCM), CD-quality sound files, which means that they can be large in size—around 10 MB per minute. Wave files can also contain data encoded with a variety of (lossy) codecs to reduce the file size (for example the GSM or MP3 formats). Wav files use a <u>RIFF</u> structure.
<u>.wma</u>	<u>Microsoft</u>	Windows Media Audio format, created by Microsoft. Designed with <u>Digital Rights Management</u> (DRM) abilities for copy protection.

VARIOUS VIDEO FILE FORMATS

A video file format is a file format for storing digital video data on a computer system. A video file normally consists of a container format (e.g. Matroska) containing video data in a video coding format (e.g. VP9) alongside audio data in an audio coding format (e.g. Opus).

The coded video and audio inside a video file container (i.e. not headers, footers and metadata) is called the essence. A program (or hardware) which can decode video or audio is called a codec.



Types of video file formats

The some of the popular types of video file formats used over the Internet.



.AVI (Audio Video Interlaced)

.AVI files comply with a standard developed by Microsoft and are a very popular video file format.

AVI files are mainly used for editing, as they are compatible with almost any application.

Most popular video players can open .AVI files without any issue, and an .AVI file can be coded using a variety of codecs.



.FLV (Flash Video Format)

A Flash video file format is the most popular video sharing file format used over the Internet. Almost all browsers are compatible with .FLV.

Most online video games are also done in a Flash video format.



.WMV (Windows Media Video)

The tiniest video files over the Internet are mostly .WMV files. Their file size after compression is very small, which results in poor quality. The .WMV files are used for streaming as well as downloading content over the Internet.



.MOV (Apple Quick Time Movie)

.MOV is a popular video format among MAC users. .MOV files are of high quality and usually big in size. .MOV files can still be opened with a variety of players available on PC.



.MPEG (Motions Picture Experts Group)

The Motion Picture Experts Group is an international group that was created to develop standards for audio and video file formats.

MPEG-4(.MP4)

The quality of a video coded using .MP4 is very high and the file size relatively small. .MP4 standard is becoming more popular than .FLV for online video sharing, as it compatible with both online and mobile browsers and also supported by the new HTML5.





*We express our sincere gratitude
for all those who have helped us, for
the successful launch of this book,
which is our new attempt*