Information Technology

SUPER SUMMARY

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Features:

❖   Point to point discussion of the content
❖   Based on new publications issued by ICAI
❖   Covered all concepts of syllabus
❖   Very useful for last time revision
❖   As per new contents added by ICAI

Disclaimer: I am also an IPCC student not an expert. If there is any mistake in the given notes I apologize for it. This Super Summary is prepared for better understanding and for helping purpose for self-studies oriented students. Content may be adopted from various reference books and ICAI's study materials and Practice Manuals published by Board of Studies.

Rules of my Life
"Don't use anyone, but be useful for everyone."
"There is no tax on helping each other."
"If you light a lamp for somebody, it will also brighten your path."
"Happiness is a by-product of an effort to make someone else happy."

DEDICATED TO MY FRIENDS

Prepared By Bhavin Pathak

1. BASIC CONCEPTS

Unit 1: Introduction to computers

Definition of computer:	Electronic Data Processing device capable of receiving input, storing sets of instructions for solving problems and generating output with high speed and accuracy.

Five generations of computer:	*First*	1940-1956	Vacuum tube
	Second	1956-1963	Transistors and others solid state devices
	Third	1963-1971	Integrated circuits
	Forth	1971-1990	Large Scale Integrated Circuit (LSI)
	Fifth	1990-beyond	Artificial Intelligence and Parallel Data Processing (PDP)

Classification of computers	
Analog Computer	It is a form of computer that uses continuous physical phenomena such as electrical, mechanical, or hydraulic quantities to model the problem being solved.
Digital Computer	A computer that performs calculations and logical operations with quantities represented as digits, usually in the binary number system.
Hybrid Computer	A combination of computers those are capable of inputting and outputting in both digital and analog signals.
Super Computer	Largest and fastest computer used in specialized areas such as in Defence, Aircraft design, Movies, Weather research. Examples are CRAY, CDC, and PARAM 10000.
Mainframe Computer	Big general purpose computer capable of handling scientific and business applications which can support more than 10000 terminals.
Mini Computer	Perform Data Processing activities on a smaller scale and were developed for process control and system monitoring. Examples are Data General Nova, DEC, PDP-11 and IBM Series/1.
Micro Computers	Use Microprocessor as its CPU i.e. a small silicon chip on Circuit board in computer system. Examples are IBM PC, APPLE II, PS/2.
Workstations	Workstation is a high-end microcomputer designed for technical or scientific applications. It is based on the architecture of CPU called Reduced Instructions Set Computing (RISC) and are used by scientists and engineers.
Server	Provide services to other computing system called clients over a network.

Advantages of computers	Disadvantages of computers
Speed, Accuracy, Reliability, Storage, Automation, Versatility, Communication, Diligence, No Feeling, Consistency, Precision.	Programmed by human, No Intelligence, No decision making power, Emotionless, Curtail human capabilities.

Components of computer		
CPU (Central Processing Unit)	*Control unit*	Manages the resources of computer system by executing set of instructions that the CPU can perform.
	Arithmetic Logical Unit (ALU)	Arithmetic operations include addition, multiplication, subtraction and division. Logical operations include comparison such as equal to, greater than or less than.
	Features:	Clock speed, Cache, Architecture, Slot, Density, MMX.
Mother Board	*Components of motherboard*	Processor Slot, Expansion Slots and Boards, Cards, Ports and Connectors, Bus.

Storage devices	Primary storage devices:	Random Access Memory (RAM)	Volatile memory constructed with Metal-Oxide Semi Conductor Storage elements (MOS) that temporarily store dynamic data to enhance computer performance. Two types of RAM are - Dynamic and Static RAM.	
		Read Only Memory (ROM)	Perform the basic control and supervisory operation of the computer. Three types of ROM are - PROM, EPROM, and EEPROM.	
		Bubble Memory	Small magnetic bubbles formed on a thin single crystal film of synthetic garnet are used to store the data permanently.	
		Flash Memory	Non-Volatile memory, where data can be erased electrically or reprogrammed. They primarily used in memory cards, USB flash drives, and solid-state drives for general storage and transfer of data between computers and other digital products.	
		Video RAM	Used to accelerate the display of graphics on the screen	
	Secondary storage devices: Stores the data permanently in millions and billions of bytes.	Tape Device	Magnetic tape is an external storage device that can be used for making copies of audio, video, and data. It is a secondary storage device that is capable of storing and accessing data sequentially.	
			Types:	Detachable Reel Magnetic Tape and Tape Cartridge System.
		Floppy diskette	3.5 inches, 1.44 MB diskette has a total of 2880 sectors (80 tracks per side × 2 sides × 18 sectors per track).	
		Magnetic Disc	Direct access medium known as Hard Disk, is a stack of one or more metal platters that spin on one spindle like a stack of rigid diskette.	
			Operations:	Data storage consists of 3 components namely Seek Time, Rotational Time, and Data Transfer Time.
		Optical Laser Disk	Store vast amount of data using optical laser beam that writes to the recording surface by scoring macroscopic pits in disk and another laser reads the data from the light sensitive recording surface.	
			Categories:	CD-ROM Disk, WORM Disk, Magneto–Optical Disk, Digital Video Disk, Blu Ray Disc.

Unit 2: Input & Output Devices

Definition of Input Device:	A device that is used to feed the data or information from outside world into the computer system.		

Types of input devices:			
On-line entry	Key board, Mouse, Touch Screen, Light Pen, Track Ball, Joy Stick, Scanner, Camera, Microphone & Speech recognition, Digitizing Tablets, MIDI Devices, **Display devices**.		
	Types of display devices:	**Dumb terminal**	Provides for data entry and information exit.
		Intelligent terminal	Having built-in processing capability storage area through Microprocessor.
		Smart Terminal	Having Microprocessors and some internal storage. It has data editing capability and can consolidate input data.
		Remote Job Terminal	Groups' data into blocks for transmission to a computer from remote site.
		Keyboard Printer Terminal	Consists of a key board for sending information to the computer and a printer, for providing a copy of the input and for receiving information from the computer.
	Features:	Screen resolution, Text and Graphics, CRT Versus Flat-Panel.	
Direct data entry	Entry of data directly into the computer through machine readable source documents.		
	Types:	**Magnetic Ink Character Recognition (MICR)**	Vertical bars containing magnetisable material.
		Optional Character Reading (OCR)	Light scanning technique used to produce light dark pattern.
		Optical Mark Recognition (OMR)	Use photo-electric device, which recognizes character by absorption on the document. It is commonly used for scoring tests.
		Smart Card System	It contains a microprocessor chip and memory to store the data.
		Bar Code Reader	A light sensitive detector identifies the bar code image using laser beam.
		Image Processing	It captures an electronic image of data to be stored and shared. It includes Data Capturing, Indexing, Storage, Retrieval, and Output.

Types of output devices:			
Monitor	Monitors are video display terminal that displays the processed data, which the users can view on screen of different sizes. Two types of computer monitors are - CRT and Flat panel.		
Printers	Printers are devices that produce hard copies of information stored in computer on to the papers or on transparencies or on other media.		
	Impact Printer:	**Serial Printers**	Dot-matrix printer, Daisywheel printer.
		Line Printers	Chain Printer, Drum printer.

	Non-Impact Printer:	A printer does not strike a print head on the ribbon and form the character by chemical or electronic means. The various types of Non-impact printers are Thermal printer, Ink-Jet printer and Laser printer and Multifunctional printer.
Computer Output Microfilm		Output from a computer as microscopic images on rolls or sheet film. Also known as *microfiche*.
Speakers		The sound card translates digital sound into the electric current that is sent to the speakers for the purpose of producing output.
Graph Plotter		A device capable of tracing out graphs, designs and maps into paper.

Unit 3: Software

Definition of software:	A set of instructions, which is known as program, are combined together to perform specific task.

Types of software:		
System Software		Comprises of those programs that control and support the computer system and its data processing applications. It set of one or more programs designed to control the operation of computer system. Various types of System software are Programming Language, **Operating Systems**, Device Drivers, Utility Programs, and Language translators.
	Functions of OS:	Schedule Jobs, Manage H/W and S/W resources, Maintain system security, multiple user resource sharing, Interrupts handling, Maintain usage records.
	Types of OS:	MS/PC DOS, OS/2, Microsoft Windows(Windows 95, Windows 98, Windows NT, Windows 2000, Windows XP, Windows Server, Windows Vista, Windows 7.0), UNIX, Mac OS,LINUX, VMS
	Features of OS:	Multiprogramming, Multi-threading, Multi-tasking, Virtual Memory, Multiprocessing, Time-sharing.
	Device driver:	Small files that act as an interface between hardware in a computer system and the operating system (OS).
	Types of utility programs:	Sort utilities, Spooling software, Text editor, Disk copy program, File copy program, Disk formatting program, File deletion program, File viewing program, Debugging program, and Directory program.
	Language translators:	Compilers, Interpreter, and Assembler.
General Purpose Software/Utilities		A framework for business, scientific and personal applications. Three types of software namely Commercial, Shareware, Open Source can be categorized as General Purpose software.
	Types:	Word Processor, Spread Sheet Program, DBMS, Internet Browser, E-mail.
Application Software		It employs the capability of the computer to perform task given by the user. It ranges from Payroll software, Accounting software, Inventory control, CAD, CAM, ERP etc.
	ERP:	Integrates all data and process of organization into a single unified system that covers wide range of applications in the organization such as Manufacturing, Supply chain, Financials, CRM, HRM and Warehouse management.

	Decision support software (DSS):	Information processing system used by accountants, managers and auditors to assist them in the decision-making process.	
		Characteristics:	Supports management decision making, Solve relatively unstructured problems and provides friendly computer Interface.
		Components:	The User, One or More Databases, Planning Language, The Model Base.
	Artificial intelligence:	Software that tries to emulate aspects of human behaviour, such as reasoning, communicating, seeing and hearing.	
	Expert system:	A computerized information system that allows non-experts to make decisions comparable to those of an expert.	
		Components:	Knowledge base, Inference engine, User interferes, Explanation facility and Knowledge acquisition facility. These are used to solve complex tasks which require experience and specialized knowledge in specific subject areas.

FUN PAGE: *Steve Jobs*

Apple CEO Steve Jobs, the man behind the first personal computer, died Wednesday at 56 after a long battle with cancer. The innovative genius revolutionized the technical world with the iMac, iTunes, iPod and iPhone. Apple guru Steve Jobs was born in San Francisco and was adopted by Paul and Clara Jobs. The Jobs family later adopted a daughter, Patti. Steve Jobs' biological father, Abdulfattah John Jandali, was of Syrian descent, and his biological mother, Joanne Schieble (later Simpson), was of German ancestry. Jandai is a political science professor and Schieble a language pathologist. Steve never met his biological dad - who had previously expressed a desire to see his genius son.

Jobs' relationship with Bay Area painter Chrisann Brennan yielded his first daughter, Lisa Brennan-Jobs, born in 1978. Steve initially denied he was the father, claiming he was sterile. The Apple CEO later acknowledged Lisa as his daughter, even naming the Lisa computer (the "Apple III") after his first-born.

(24-02-1955 to 05-10-2011)
Steve Jobs with iPhone 4S

2. DATA STORAGE, RETRIEVAL AND DATA BASE MANAGEMENT SYSTEMS

Number system:	Represent the numbers, alphabets and the special characters which are converted into 0s and 1s, so that computer can understand to do the task.
Types & its operations:	Decimal number system, Binary number system, Decimal-binary conversion, Binary-decimal conversion, Binary Coded Decimal code, ASCII code, EBCEDIC code, Unicode.

Data Types and Index Fields:	Integer Number, Single and Double precision, Logical, Character, String, Memo data, Currency Field, Date Field, Integer Field, Text Field.

Data Processing:	A series of actions or operations that converts data into useful information.
Data Storage Hierarchy:	Character, Field, Record, File, Database.

File Organization:			
Commonly used file organizations	**Serial:**		Records are arranged one after another, in no particular order.
	Sequential:		Records are arranged one after another in an ascending or descending order determined by the key field of the records.
	Direct access:	*Direct sequential access:*	Self direct addressing, Index sequential addressing method.
		Random:	Address generation method, Indexed random method.
Best File Organization's factors	File volatility, File activity, File interrogation, File size.		

Database Management System (DBMS)	A set of software programs that controls the organization, storage, management, and retrieval of data in a database.
Management Problem of File Processing:	❖ Data duplication, ❖ Lack of data integration, ❖ Data dependence, ❖ Data Integrity and Security.
Benefits of DBMS:	❖ Reduce data redundancy and Inconsistency, ❖ Enhance data Integrity, ❖ Provide logical and physical data independence, ❖ Provide application data independence, ❖ Reduce complexity, ❖ Provide faster data accessibility and improved data sharing, ❖ Increased productivity, Low cost of developing and maintaining system.

Definition of database:	A collection of data designed to be used by different people or a collection of interrelated data stored together with controlled redundancy to serve one or more applications in an optional fashion.
3(Three) levels of Database Architecture	❖ External or User view, ❖ Conceptual or Global view, ❖ Physical or Internal view.
Data Independence	Logical and Physical Data independence.
Parts of DBMS	Data, Hardware, Software, Users- Application Programmer, End User, Database

	Administrator, Database Designer.
Record relationship	❖ One-to-One, ❖ Many-to-One, ❖ One-to-Many ❖ Many-to-Many.

Structure of database	
Hierarchical Database Structure	Records are logically organized into a hierarchy of relationships that implements one-to-one and one-to-may relationships.
Network Database Structure	Views all records in sets and each set is composed of an owner record and one or more member records that implements one-to-one, one-to-many and many-to-many record structure.
Relational Database Structure	A relational database allows the definition of data structures, storage and retrieval operations and integrity constraints to be organized in a table structure. A table is a collection of records and each record in a table contains the same fields. The database is structured into a series of two-dimensional tables known as relation.

	Key	Defines uniqueness with one or more columns whose combined values are unique among all occurrences in a given table.
	Types	Candidate Key, Primary Key, Alternate Key, Secondary Key, Referential Integrity (Foreign Key).

Other database model:	Distributed database, E-R database, Object-oriented database, Client-server database, Knowledge database.
Types of database:	❖ Operational Database ❖ External Database ❖ Management Database ❖ Text Database ❖ Information Warehouse Database ❖ Image Database ❖ End-user Database

Components of databases:	
DLL *(Data Link Layer)*	Defines the conceptual schema providing a link between the logical and physical structure of database.
DML *(Data Manipulation Language)*	Enables the user and application program to be independent of the physical data structures using manipulation techniques like deletion, modification, insertion of data or records.

Structure of DBMS:	❖ DDL Compiler ❖ Disk Manager ❖ Data Manager ❖ Query Manager ❖ File Manager ❖ Data Dictionary

Types of database:	❖ Operational Database ❖ External Database ❖ Management Database ❖ Text Database ❖ Information Warehouse Database ❖ Image Database ❖ End-user Database

Structured Query Language *(SQL)***:**	A query language is a set of commands to create, update and access data from a database allowing users to raise adhoc queries/questions interactively without the help of programmers. It is a computer programming language used to manipulate information in Relational Database Management Systems (RDBMS).

Documentation and Program Library:	It provides a method to understand the various issues related with software development that include details related to system study, system development, system testing, system operational , preventive maintenance and details

	associated with further modification aspects of the software.
Program Library Management System Software:	❖ Functional capabilities ❖ Update capabilities ❖ Integrity capabilities ❖ Reporting capabilities ❖ Uses capabilities ❖ Interface capabilities.
User Interface Design elements:	❖ Source documents ❖ Query languages ❖ Hard copy ❖ Graphic display ❖ Screen layout ❖ Voice output ❖ Inquiry screen ❖ Screen layout ❖ Command languages ❖ Icons.

Backups and Recovery:	Utility program used to make a copy of the contents of database files and log files. Recovery is a sequence of tasks performed to restore a database to some point-in-time.
Types of log:	❖ Transaction Log ❖ Mirror Log.
Types of Backup:	❖ Online backup ❖ Live backup ❖ Offline backup ❖ Full and Incremental backup.

Database warehouse	Repository of an organization's electronically stored data which facilities reporting and supporting data analysis.
Development stages of Data Warehouse:	❖ Offline operational databases, ❖ Real time data warehouse ❖ Offline data warehouse ❖ Integrated data warehouse.
Component of Data Warehouse:	❖ Data Sources ❖ Reporting ❖ Data Transformation ❖ Metadata ❖ Data Warehouse ❖ Operations.

Data Mining:	Analysis of data and picking out relevant information from database. Also responsible for finding the patterns by identifying the underlying rules and features in the data.
Development stages of Data Mining:	1. Selection 4. Data Mining 2. Pre-processing 5. Interpretation 3. Transformation 6. Evaluation.

3. COMPUTER NETWORKS AND NETWORK SECURITY

Definition of Computer Network:	A network is a set of devices (also known as nodes, terminals or stations) interconnected by communication links. A computer network is collection of computers and terminal devices connected together by a communication system.
Scope of Network:	❖ File sharing ❖ Shared databases ❖ Print sharing ❖ Fault tolerance ❖ E-mail ❖ Internet access and security ❖ Fax sharing ❖ Communication and collaboration ❖ Remote Access ❖ Organization
Benefits of using network:	❖ Improve communication ❖ Improve efficiency ❖ Reduce costs ❖ Reduce errors

Classification of Network

Function Based:	❖ Data Network	❖ Voice Network	❖ Multimedia Network
Area Coverage Based:	**LAN** *(Local Area Network)*	A high speed data transfer network that supports 1 MBPS to 30 Mbps or more.	
	MAN *(Metropolitan Area Network)*	Based on Fiber Optic transmission technology that supports 10 Mbps transferring of data.	
	WAN *(Wide Area Network)*	Uses long distance telephone services and satellite = transmission. It operates at lower link speeds of about 1 Mbps.	
	Network Models:	❖ Client Server Model	❖ Peer-to-peer *(torrent)* Model
Forwarding Based:	❖ Switch Network	❖ Shared Network	❖ Hybrid Network
Ownership Based:	❖ Public Network ❖ Virtual Private Network ❖ Private Network ❖ Leased Network.		
Media Based:	❖ Wired Network ❖ Wireless Network.		

Components of Network

Sender / Receiver:	A host computer at both ends which send and receive the data.
Communication Interface Devices:	❖ Network Interface Cards ❖ Modem ❖ Switches and Routers ❖ Multiplexer ❖ Hubs ❖ Front-end communication processors ❖ Bridges ❖ Repeaters and Gateways ❖ Protocol converters ❖ Remote access devices.
Communication Channel:	❖ Guided Media (Twisted Pair cable, Coaxial cable and Optical Fiber cable) ❖ Unguided Media (Wireless transmission).
Communication Software Functions:	❖ Access control ❖ Error detection and control, ❖ Network management ❖ Data security. ❖ Data and file transmission

Definition of Network Topology:	Geometrical arrangement of computer resources, remote devices, and communication facilities to share the information. The four *types* of network topology are:

Star Topology:	Communication channel controlled by Centralized System.
Bus Topology:	Single network cable connected with node via communication line.
Ring Topology:	Direct point-to-point link between two neighbouring nodes with unidirectional mode.
Mesh Topology	Random connection of nodes using communication links.

Data Transmission Techniques:	Transferring of data on a communication channel between sender and receiver determines by transmission techniques which include direction of exchanges of data, no. of bits sent and synchronization between the transmitter and receiver.
Serial versus Parallel transmission:	Single path of data transmission serially versus multiple path of data transmission simultaneously.
Synchronous versus Asynchronous transmission:	Data transmission based on regular versus irregular time interval.
Transmission modes:	Simplex, Half-duplex and Full-duplex connection.
Transmission Techniques:	Circuit switching, Message switching, Packet switching.

Transmission Protocols:	Protocols are set of rules for communication between computers ensuring timings, sequencing, and error checking for data transmission.		
Protocol Definition:	❖ Syntax	❖ Semantics	❖ Timing
Open System Interconnection (OSI) Model:	❖ Application layer ❖ Presentation layer ❖ Session layer ❖ Transport layer		❖ Network layer ❖ Data link layer ❖ Presentation layer
Transmission Control Protocol / Internet Protocol (TCP/IP):	❖ Application layer ❖ Transport layer		❖ Internet layer ❖ Network Interface layer.

Definition of Local Area Network:	A data transmission system intended to link computers and associated devices with in a restricted geographical area. It is useful for sharing resources like files, printers or other applications.		
Benefits:	❖ Security ❖ Inexpensive workstation ❖ Distributed processing ❖ E-mailing and message broadcasting		❖ Organizational benefits ❖ Data management benefits, ❖ Software cost and up-gradation
Requirements:	❖ Compatibility ❖ Internetworking		❖ Growth path and modularity ❖ System reliability and maintenance.
Components:	❖ File server ❖ Network operating system ❖ Workstations		❖ Network ❖ Interface Card (NIC) ❖ Network cabling.
Wireless LAN:	It is a flexible data communication systems that uses radio frequency(RF) technology to transmit and receive data over the air with minimizing the need for wired connections.		

Client/Server Technology:	A computing technology in which the hardware and software components are distributed across a network to accept the request sent by the client machine to the server machine for processing of data.

Limitation of the traditional computing models:	❖ Mainframe architecture ❖ Personal computers ❖ File sharing architecture
Component of C/S technology:	❖ Client ❖ Fat-client or Fat-server, ❖ Server ❖ Network ❖ Middleware
Virtual Private Network (VPN):	A network that uses a public network (usually the Internet) to connect remote sites or users together with "virtual" connections routed through the Internet from the company's private network to the remote site or employee. Two types of VPNs are: ❖ Virtual Private Dial-up Network (VPDN) ❖ Site-to-site VPN
Integrated Services Digital Network (ISDN):	System of digital phone connections to allow simultaneous voice and data transmission across the world. Two *types* of ISDN services are:
Basic Rate Interface (BRI):	BRI consists of two 64 Kbps B channels and one 16 Kbps D channel suitable for individual users.
Primary Rate Interface (PRI)	PRI consists of 23 B channels and one 64 Kbps D channel for users with higher capacity requirements.
Types of Servers:	❖ Database Servers ❖ Print Servers ❖ Application Servers ❖ Transaction Servers. *(Web Information Server, Component Server, Active Application Server)*
Types of Internet Server:	❖ File Server ❖ Web Server ❖ Chat Server ❖ Mail Server ❖ FTP Server ❖ Caching Server ❖ Gopher Server ❖ News Server ❖ Proxy Server
Network Tier Architecture:	A tier is a distinct part of hardware or software. It comprises:
Single tier system:	Single computer that contains a database and a front end to access the database.
Two tier system:	Client at front-end and server at back-end.
Three tier system:	Provides process management with business logic and rules.
N-tier system:	An application is executed by more than one distinct software agent.
Definition of Data Centre:	Centralized repository for the storage, management and dissemination of data and information with high security, fault-resistant facilities, hosting customer equipment that connects to telecommunication networks. Two *types* of data centres are: (1) Private and (2) Public Data Centre. ❖ Tier 1 data centre can tolerate upto 28.8 hours of downtime per year. ❖ Tier 4 data centre can tolerate upto 0.4 hours of downtime per year.
Value added services by Data Centre:	❖ Database monitoring ❖ Intrusion detection system ❖ Web monitoring ❖ Storage on demand. ❖ Backup and restore

Features of Data Centres:	❖ Size ❖ Data Security ❖ Availability of Data	❖ Electrical and power systems ❖ Security.
Management challenges in Data Centre:	❖ Maintain skill staff and high infrastructure ❖ Maximization uptime and performance ❖ Technology selection ❖ Resource balancing.	
Disaster recovery sites:	❖ Cold site ❖ Warm site ❖ Hot site.	
Business Continuity Planning (BCP):	A BCP is a logistical plan for how an organization will recover and restore partially or completely interrupted critical functions within a predetermined time after a disaster or extended disruption.	
	Life Cycle of BCP:	Analysis → Solution design → Implementation Testing and organization acceptance → Maintenance.

Network Security:	Ensure safeguarding of assets and maintain the data integrity within the system.
Need of Security:	Safeguard assets, ensure and maintain the data integrity.
Level of Security:	❖ Prepare project plan ❖ Exposure analysis ❖ Assets identification ❖ Control adjustment ❖ Assets valuation ❖ Report generation ❖ Threats identification ❖ Threats probability of occurrence assessment
IDS Components:	❖ Network Intrusion Detection ❖ Hybrid Intrusion Detection ❖ Host-based Intrusion Detection ❖ Network-Node Intrusion Detection.
Threats and Vulnerabilities:	❖ Fire ❖ Intrusion ❖ Water ❖ Viruses and Worms ❖ Energy variations ❖ Misuse of software ❖ Pollution ❖ Hackers.
Techniques of Network security:	Firewall.

FUN PAGE: Mark Zuckerberg

Mark Elliot Zuckerberg is an American computer programmer and Internet entrepreneur. He is best known for co-creating the social networking site Facebook, of which he is chief executive and president. It was co-founded as a private company in 2004 by Zuckerberg and classmates Dustin Moskovitz, Eduardo Saverin and Chris Hughes while they were students at Harvard University. In 2010, Zuckerberg was named Time magazine's Person of the Year. As of 2011, his personal wealth was estimated to be $17.5 billion. 'Princely', 'Slayer' and 'Zuck'. These all are the various nicknames by which Mark Zuckerberg is often called by. Mark Zuckerberg also has a successful Hollywood film, 'The Social Network' dedicated to him which maps the birth and rise of Facebook. Mark says Money and fame isn't important for him. Mark Zuckerberg rejected a $1 billion offer to buy Facebook.

(14-5-1984)

4. INTERNET AND OTHER TECHNOLOGY

History of Internet:	Advanced Research Project Agency (ARPA) of Department of Defense, U.S. developed a network named ARPANET in 1970 to share information between networks.
What is Internet?	A network of computers that offers access to information through e-mail, bulletin boards, chatting, and information retrieval services that can access files, directories and database around the world.
World Wide Web (WWW):	A network of computers which communicates with each other using standard is called HTTP (Hyper Text Transfer Protocol) , A protocol which provides access to large amount of information located on many different servers. Web Page and Web Browser are elements of WWW.
Uniform Resource Locators (URL):	A Text string used to address and access individual web pages and Internet resources.
Applications of Internet:	◈ Communication ◈ Data retrieval ◈ Data publishing
Business use of Internet:	◈ Reach a worldwide audience ◈ Create corporate image ◈ Provide product information ◈ Recruitment and staffing services ◈ Save costs ◈ Provide useful services ◈ Replace phone banks ◈ Online services ◈ Provide easy access to customer ◈ Eliminate the middle man ◈ Reduce the burden of customer service ◈ Online ecommerce etc.
Types of Internet Connections:	◈ Analog/Dial-up Connection ◈ VDSL Connection ◈ ISDN Connection ◈ Cable Connection ◈ B-ISDN Connection ◈ T-1 Lines Connection ◈ DSL Connection ◈ Bonded T-1 Connection ◈ ADSL Connection ◈ T-3 Lines Connection ◈ SDSL Connection ◈ Satellite Connection

Components of Internet:			
Electronic Mail (e-mail):	A technique in which messages or documents is sent to another person using Internet.		
	Advantages:	◈ Easy ◈ Inexpensive ◈ Secure and ◈ Fast ◈ Easy to Filter Reliable.	
	Features:	◈ Composing ◈ Printing ◈ Transfer of ◈ Replying ◈ Editing data files ◈ Address book ◈ Forwarding ◈ Greeting cards	
Web Casting or Push Technology:	Allows users to passively receive broadcast information rather than actively search the web for information. For example, Internet news service.		

Intranet:	An information system that facilitates communication within the organization, among widely dispersed departments, divisions, and regional locations.
Benefits:	◈ Workforce productivity ◈ Cost-effective ◈ Time ◈ Promote Common corporate culture ◈ Communication ◈ Web publishing ◈ Enhance collaboration ◈ Business Operations and Management ◈ Cross-platform capability

Extranet:	An extension of an Intranet which is accessible to outside companies or individuals with or without an Intranet. It is a collaborative Internet connection with other companies and business partners.
Benefits	❖ Exchange large volumes of data ❖ Share product catalogs ❖ Collaborate with other companies ❖ Develop and use training programs ❖ Access services by one company ❖ Share news of common interest.

Internet Protocol Suite:	A set of communication protocol that implements the protocol stack on which the Internet and most commercial networks run. Layers of TCP/IP are Application Layer, Transport Layer, Network Layer, and Link Layer.

E-Commerce:	A process of doing business electronically which involves the automation of a variety of business-to-business and business-to-consumer transactions through reliable and secure connection.
Working of E-Commerce:	1. Order Placed 4. Order Fulfilled 2. Authorization Request 5. Settlement Request 3. Authorization Response 6. Settlement Deposited.
Internet's dramatic impact on the scope of business networking applications:	❖ Universality ❖ Reliability ❖ Reach ❖ Cost ❖ Performance ❖ Momentum

Types of E-commerce:	
Business-to-Business (B2B):	Exchange of services, information and/or products from one business to another that takes the form of automated processes between trading partners.
Business-to-Consumer (B2C):	Exchange of services, information and/or products from a business to consumer, as opposed to between one business and another. Two types of B2C e-Commerce are Direct Seller and Online Intermediaries.
Consumer-to-Business (C2B):	Exchange of services with business vendors by posting their project work with set budget online. The consumer reviews all the bids and selects the company for further processing.
Consumer-to-Consumer (C2C):	An Internet-facilitated form of commerce between consumer of the product.

CRM:	The methodologies, technology and capabilities that help an enterprise to manage customer relationship in a better way through the introduction of reliable systems, processes and procedures. Three types of application architecture of CRM are-
Operational:	❖ Sales force automation (SFA) ❖ Customer service and support (CSS), ❖ Enterprise marketing automation (EMA)
Analytical:	Analysis of data to segment customers or to identify potential to enhance client relationship. Types of operations are Acquisition, Retention, Information, and Modification.
Collaborative:	Benefits are Efficient productive customer interactions, Web collaboration to reduce service cost, Enabling multi-channel personal customer interaction, Interaction at the transaction level.

Functions of CRM:	◈ Scalability ◈ Assignment, ◈ Multiple communication channels ◈ Database ◈ Workflow ◈ Customer privacy considerations
Supply Chain Management (SCM):	A process of planning, implementing, and controlling the operations of the supply chain with the purpose to satisfy customer requirements as efficiently as possible.
Potential Growth area of SCM:	◈ Fulfillment ◈ Revenue & Profit ◈ Logistics ◈ Costs ◈ Production ◈ Co-operation.
Problems in SCM:	◈ Distribution Network Configuration ◈ Information ◈ Inventory Management ◈ Distribution Strategy
SCM Activities:	◈ Strategic ◈ Tactical ◈ Operational
The Bullwhip Effect:	Observed phenomenon in forecast-driven distribution channels. Forecasts are based on statistics and are rarely perfectly accurate.
Electronic Data Interchange (EDI):	Electronic exchange of business documents in a standard and universally accepted format between trading partners which includes invoices, purchase orders, and shipping notices in a standard, machine process able data format.
Advantages:	◈ Issue and receive orders faster ◈ Reduce letters and memos ◈ Make sales more easily ◈ Decrease enquiries ◈ Get paid sooner ◈ Make bulk updates of catalogues ◈ Minimize capital tied up in inventory and parts listings
EDI process:	Translation of data into standard format → Transmission over communication lines → Re-transmission of data
EFT:	Stands for Electronic Fund Transfer that represents the way the business can receive direct deposit of all payments from the financial institution to the company's bank account. EFT can be performed using 4 methods. They are: Automated Teller Machines (ATMs), Point-of-Sale (POS) Transaction, Preauthorized Transfers, Telephone Transfers.
Types of E-payment:	◈ Credit Cards ◈ Joint Electronic Transaction ◈ Transaction using third party verification ◈ Electronic Cheques ◈ Smart Cards ◈ Secured Electronic Transaction (SET) ◈ Electronic purses.
Risk and Security Consideration:	◈ Reliability ◈ Ease of use ◈ Scalability ◈ Payment methods
General Management Concern:	◈ Loss of paper audit trail ◈ Potential legal liability, record ◈ Business continuity retention and retrievability ◈ Exposure of data to third parties ◈ Segregation of duties
Information and systems security tools:	◈ Firewalls ◈ Message authentication ◈ Encryption ◈ Site blocking.

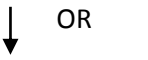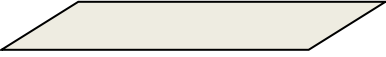| Mobile Commerce:	Buying and selling of goods and services through wireless handheld devices such as Cellular Telephone and Personal Digital Assistants (PDAs) known as next generation e-commerce. M-commerce enables users to access the Internet without need to find a place to plug in which is based on technology called Wireless Application Protocol (WAP).
Bluetooth: [Logo: Bluetooth]	Telecommunication Industry specification that describes how mobile phones, computers, and Personal Digital Assistants (PDAs) can be easily interconnected using a short-range wireless connection. A data can be exchanged at a rate of 1 Mbps to 2 Mbps.
Wireless Fidelity [Wi-Fi]: [Logo: Wi-Fi]	A technology of Wireless Local Area Network (WLAN) based on IEEE 802.11 specifications to be used for mobile computing devices, such as laptops, in LANs, in Internet, VOIP, gaming and basic connectivity of consumer electronics such as televisions and DVD Players.
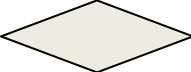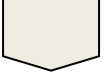
FUN PAGE: Google

Google is a mathematical term 1 followed by one hundred zeroes. The term was coined by Milton Sirotta, nephew of American mathematician Edward Kasne. Google started in January, 1996 as a research project at Stanford University, by Ph.D. candidates Larry Page and Sergey Brin when they were 24 years old and 23 years old respectively. Google receives daily search requests from all over the world, including Antarctica. The infamous "I'm feeling lucky" button is nearly never used. However, in trials it was found that removing it would somehow reduce the Google experience. Users wanted it kept. It was a comfort button. Due to the sparseness of the homepage, in early user tests they noted people just sitting looking at the screen. After a minute of nothingness, the tester intervened and asked 'Whats up?' to which they replied "We are waiting for the rest of it". To solve that particular problem the Google Copyright message was inserted to act as a crude end of page marker. Google has the largest network of translators in the world. Employees are encouraged to use 20% of their time working on their own projects. Google News & Google+ are both examples of projects that grew from this working model.

[Logo: Google (1998)]

[Logo: Google (2011)]

Founded on: 4-9-1998
Founders: Sergey Brin & Larry Page

5. INTRODUCTION OF FLOWCHART

Process of Programming:	Set of instructions used in processing of data performed by the computer is called program. The various phases of Computer Programming are-
Program analysis:	Determines the Input, Output and Processing of data.
	Algorithm: An effective method for solving a problem expressed as a finite sequence of instructions.
Program designing:	Determines the function to be performed using flow chart and file layout.
Program coding:	Conversion of logic of the program outlined in the flowchart which describes program statement or instruction by using rules concerning format and syntax.
Program debugging:	A process of finding errors in program and ratifying them using diagnostic routine.
Program documentation:	Includes Program specification, Program descriptions, Test data, Operational manual and finally, Maintenance documentation.
Program maintenance:	Modification, Re-writing and restructuring of program, based on requirements of business data processing application subjected to the continued changes in near future.

Flow Chart:	A diagram that shows sequence of steps to solve a particular problem. It is a logical flow of step which shows sequence of operations of a program by using symbols and interconnecting lines.
Types:	1. System outlines chart 3. Run flow chart 2. System flowchart 4. Program flowchart
Benefits:	❖ Quicker grasp of relationships ❖ Efficient coding ❖ Effective analysis ❖ Orderly check out of problem ❖ Communication ❖ Efficient program maintenance. ❖ Documentation
Limitations:	❖ Complex logic ❖ Link between conditions and actions ❖ Modification ❖ Reproduction ❖ Standardization ❖ Loss of technical details ❖ Lack of transformation between one level of design to another level of design

Program Flowchart:	Concerned with logical/arithmetic operations on data within CPU and the flow of data between the CPU and Input/output peripherals.
Arithmetical and logical operation:	❖ Addition ❖ Division ❖ Printing ❖ Subtraction ❖ Transfer ❖ Feed ❖ Multiplication ❖ Comparison

Start/end	
Instruction flow line	OR
Input/output	
Process	
Decision	
On-page connector	
Off-page connector	
Print	
Display	
Online storage/floppy disc	
Magnetic tape / sequential access storage	

FUN PAGE: Wikipedia

Wikipedia was launched in January 2001 by Jimmy Wales and Larry Sanger. Sanger coined the name Wikipedia, which is a portmanteau of wiki (a technology for creating collaborative websites, from the Hawaiian word wiki, meaning 'quick') and encyclopedia. Wikipedia's official theme song is "Hotel Wikipedia". The Eagles' 1976 hit Hotel California has been co-opted as the official theme song for Wikipedia, from a list of a number of songs described as W.O.R, or "Wikipedia-oriented rock". The least popular, but still active, alternate-language Wikipedia is Cheyenne. Wikipedia has had more than 1 billion edits, across 17.6 million articles, from 27 million users.

[Logo: Wikipedia]
Launched on: *15-1-2001*
Founded by: Jimmy Wales
Larry Sanger

6. DECISION TABLE

Decision Table:	A precise yet compact way to model complicated logic which defines the possible contingencies that may be considered within the program and the appropriate course of action for each contingency.
Four parts of Decision Table:	◈ Condition stub ◈ Condition entries ◈ Action stub ◈ Action entries *Condition being tested* | *Condition statements* | *Condition entries* *Possible action to take* | *Action statements* | *Action entries*
Steps to create a Decision Table	1. List all causes in the decision table 2. Calculate the number of possible combinations 3. Fill Columns with all possible combinations 4. Reduce test combinations 5. Check covered combinations 6. Add effects to the table.

Types of Decision Table	**Limited Entry Tables:**	The condition and action statements are complete. The condition and action entries merely define whether or not a condition exists or an action should be taken. Y : Condition exists N : Condition does not exist — : Condition/Action does not apply X : Execute the action statement
	Extended Entry Table:	Condition and action statements are not complete, but are completed by the condition and action entries. Condition and action entries not necessarily be defined as Y, W and X.
	Mixed Entry Table:	It combines both the limited and extended entry forms.

ABOUT ME: Bhavin Pathak
I am Bhavin Pathak. Made for friends and to live for them and ever-ready to help CA friends and my friends! I am also CA-IPCC student at Ahmedabad, Gujarat. I am studying in Arihant Institute Pvt. Ltd for CA. I got 131 marks in my CA-CPT and in HSC I got 75%. I am a straightforward guy willing to live peaceful life. I am least money minded & materialistic but quality performance (within my limitation of knowledge) at professional level. My motto of life is that "success or failure itself is the best motivator to further succeed" so far in my case (though Lord says that one should feel indifferent between success & failure). I believe that "Living for others is more joyful rather than living for ourselves." **Rules of My Life:** "Don't use anyone, but be useful for everyone." "There is no tax on helping each other." "If you light a lamp for somebody, it will also brighten your path." "Happiness is a by-product of an effort to make someone else happy."

ALL THE BEST