

**Course on
Computer Concepts**

COURSE ON COMPUTER CONCEPTS

STRICTLY AS PER NEW DOEACC SYLLABUS

RAMESH BANGIA

B.Sc., Dip. Comp. Sc. (IIT D)

*Formerly: Incharge Computer Centre,
Hindustan Copper Limited, New Delhi*

Ex. Managing Editor: Software Today

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Preface

The new syllabus of DOE's various levels of courses, popularly called O-level, A-level, B-level and C-level is out. This syllabus has been designed keeping in mind the various developments taking place around the world in the field of computers. While keeping in mind the level of students studying the various levels, the degree of difficulties of the syllabus have been very well designed. I hope that after the new syllabus the courses would be as popular as they were before.

There had been a long struggle between Training Institutes and Government Organizations, since these organizations would not recognize the degree/diploma given by them. Students passing out from these institutions were not given jobs based upon the said diplomas/degrees. Ultimately, the Government formed a society under the Department of Electronics, called DOEACC, which conducts tests and gives grades to the students irrespective of the institutes where they have studied. It is also possible to give the test without having any proper institutional studies. This is more or less on the terms of SAT and GRE conducted by USA. The only difference is that this is not online. There are fixed dates for the exams.

The course for this has been designed for students to appear in the exams at various levels. These levels are O-level, A-level, B-level, C-level. The most popular among these is the O-level, since it is the entry level. Once you have cleared the O-level, you are eligible for a government job. Each course has been divided into various modules. Various books are available for various modules. This book is also made for you to prepare for the O-level course.

This book has been written totally in accordance with the syllabus. Each chapter has been embedded with the screen shots for you to know what to expect on the screen, while running the application. Each chapter contains examples which can be attempted to supplement the reading. At the end of the chapter, there is a thorough revision of the text read. Not to mention of the questions provided in the beginning, both in the form of objective and subjective. The book also contains Sample papers which are based on the samples provided by DOEACC society. These would help you in preparing for the exams.

Author

SYLLABUS

COURSE ON COMPUTER CONCEPTS (CCC)

Syllabus Outline

<i>S.No.</i>	<i>Topic</i>	<i>Theory</i>	<i>Tutorials</i>	<i>Practical</i>
1.	Introduction to Computer	1	1	2
2.	Introduction to Windows	2	–	6
3.	Basic DOS Commands	2	–	4
4.	Elements of Word Processing	4	2	10
5.	Spreadsheet	4	2	10
6.	Computer Communication and Internet	4	–	5
7.	WWW and Web browsers	2	–	3
8.	E-mail	2	–	2
9.	Making Small Presentations	4	–	8
Grand Total		25	5	50

DETAILED SYLLABUS

1. Introduction to Computer

What is computer: Characteristics of Computers, Basic Applications of Computer. Components of Computer System: Central Processing Unit (CPU), VDU, Keyboard and Mouse, Other Input/output Devices, Computer Memory, Concepts of Hardware and Software.

Classification of Computers.

Representation of Data/Information concepts of data processing: Definition of Information and Data, Basic Data Types, Storage of Data/Information as Files.

2. Introduction to Windows

What is an operating system and basics of Windows.

The User Interface: Using Mouse and Moving Icons on the screen, The My Computer Icon, The Recycle Bin, Status Bar, Start and Menu & Menu Selection, Running an Application, Windows Explorer Viewing of Files, Folders and Directories, Creating and Renaming of files and folders, Opening and closing of different Windows.

(IX)

Windows Setting: Control Panels, Wall paper and Screen Savers, Setting the Date and Sound, Concept of menu using Help.

Advanced Windows: Using Right Button of the Mouse, Creating Shortcuts, Basics of Windows Setup, Notepad, Windows Accessories.

3. Basic DOS Commands

Comparison of DOS and Windows.

Switching between DOS and Windows.

Basic DOS Commands: File/Directory Manipulations, Copying of Files and Disks, Delete/Undelete, Formatting a Floppy.

4. Elements of Word Processing

Word Processing Basics: An Introduction to Word Processing, Opening Word Processing Package, The menu bar, Using the Help, Using the Icons below menu bar.

Opening Documents and Closing Documents: Opening Documents, Save and Save As, Page Setup, Printing of Documents, Display/Hiding of Paragraph Marks and Inter Word Space.

Moving Around in a Document: Scrolling the Document, Scrolling by line/paragraph, Fast Scrolling and Moving Pages.

Using a Document/Help Wizard

Text Creation and Manipulation: Paragraph and Tab Setting, Text Selection, Cut, Copy, and Paste, Font and Size selection, Bold, Italics, and Underline, Alignment of Text: Center, Left, Right, and Justify.

Formatting the Text: Changing font, Size and Colour, Paragraph indenting, Bullets and Numbering, Use of Tab and Tab setting, Changing case

Handling Multiple Documents: Opening and closing of Multiple documents, Cut, Copy and Paste across the documents, Saving of Clipboards.

Table Manipulation: Concept of table: Rows, Columns, and Cells, Draw table, Changing cell Width and Height, Alignment of Text in Cell, Copying of Cell, Delete/Insertion of Row and Columns, Borders for Table.

Printing: Printing, Print Preview, Print a Selected Page.

5. Spreadsheet

Elements of Electronics Spreadsheet: Application/usage of Electronic Spreadsheet, Opening of Spreadsheet, The menu bar, Creation of cells and addressing of cells, Cell inputting.

Manipulation of cells: Enter text numbers and dates, Creation of tables, Cell Height and Widths, Copying of Cells.

Providing Formulas: Using basic functions/formalism a cell, Sum function, Average, Percentage, Other basic functions.

(X)

Spreadsheet for Small accountings: Maintaining invoices/budgets, Totalling of various transactions, Maintaining daily and monthly sales reports.

6. Computer Communication and Internet

Basic of Computer Networks: LAN, WAN.

Internet: Concept of Internet, Application of Internet.

Service on Internet: WWW and web-sites, Electronic mails, Communication on Internet.

7. WWW and Web Browsers

Web Browsing software: Internet Explorer, Netscape Communicator.

Surfing the Internet: Giving the URL address, Search, Moving around in a web-site, Printing or saving portion of web pages, Down loading.

Chatting on Internet.

8. E-mail

Basic of electronic mail: What is an Electronic mail, E-mail addressing, Mailbox: Inbox and outbox.

Using E-mails: Viewing an E-mail, Sending an E-mail, Saving mails, Sending same mail to various users.

Document handling: Sending soft copy as attachment, Enclose to e-mail, Sending a Portion of document as e-mail.

9. Making Small Presentations

Basics: Difference between presentation and document, Using PowerPoint, Opening a PowerPoint Presentation, Using Wizard for creating a presentation.

Creation of Presentation: Title, Text Creation, Fonts and Sizes, Bullets and indenting, Moving to Next Slide.

Preparation of Slides: Selection of type of Slides, Importing text from word documents, Moving to next Slide, The Slide Manager.

Providing aesthetics: Slide Designs, Background and Text colours, Making your own slide format, Footnotes and slide numbering.

Slide Manipulation and Slide Show.

Presenting of the Slides: Using the Slide Show, Printing the Slides and Handouts, Slide sorter, Title sorter.

1.1 WHAT IS COMPUTER?

The word computer has been derived from two words, mainly, Compute and Calculator. A computer is a device used for performing calculations automatically. Most of us use computers either at work or home. We can use computers for creating office documents or formatting presentations and at home we can use it for checking our e-mails, playing games, or browse Internet for local news updates.

1.1.1 Characteristics of Computers

A computer is made of different parts which when looked at from any user angle will give a different definition. We should just remember that a computer:

1. Cannot think
2. It has vast capabilities of calculations like addition, subtraction, etc. and
3. It is totally under the control of the user.

So, we can say that a computer is a machine, totally at the command of the user, which can perform operations at a much higher speed than a human being.

There is nothing magical about a computer. It is actually a friendly machine which is totally at your command. Do you remember the story Aladdin and the Magic Lamp? Just like the Genie of the magic lamp, a computer will obey your command. If you make a mistake in giving commands to the computer, it will carry out these commands giving wrong results.

1.1.2 Basic Applications of Computer

There are lots of uses of computers. In fact, in our everyday life it is used in almost every step. Some of the places where it is used are listed below. I have listed them alphabetically.

Airlines booking: Now you can book your ticket for a flight leaving New York while sitting in Meerut. All the airlines are interconnected through computers. The same goes for Railways but it is restricted to individual countries only.

Banks: Computers in Banks have made it possible that you can get your account information while sitting at home or on your mobile phone. For this your bank must be an e-bank, which most of them are. ATMs are another computer applications of banks.

Business: For most of the companies, all the work relating to accounts is now done on computers, for accuracy and speed. You can even have your correspondence on it.

Cartoons: There are various programs available in computers which allow you to create animations. By learning about them you can become an expert animator. You may even make a movie of your own.

Cinema: Now a days most of the film editing is done by computers. You can add and delete film clips at a snap using computers. In fact, some movies are totally made using computers. Films like Toy Story are made using computers.

Defence: America has used the computers in defence for the fullest with pin pointing the position of enemy targets. Most of the missiles these days are computer controlled.

DTP: It has revolutionized how composing for printing used to be done. Now every book for printing is composed on computer since it is very easy to edit and read on screen.

Education: Computers can help in teaching too. In fact this book on computers was created using computers. Most of the schools now use computers for accounting, students record management, papers preparation and even results compilation.

Home: At home it has become an additional entertainment media. You can use it for playing games, watching movies, listening to songs, writing letters, creating your own database of friends, etc., the options are unlimited.

Library: Maintaining the records in library manually used to be a very cumbersome method. Computers have dramatically changed the way the cataloging is done in libraries.

Medicine: Lots of research in medicine is done using computers. Doctors now a days can see the complete inside of the human beings using the computers.

Space Technology: All the movements of the satellites are controlled using computers.

Weather: Using computers and satellites you can predict the weather for the next few days. In fact, the biggest computer in India is with the Meteorological Department of India, at New Delhi.

1.2 COMPONENTS OF COMPUTER SYSTEM

Though the first fully operational electronic computer was introduced to the world in 1946, however the historian assumes the starting of a computer age from 1951, when first commercial computer UNIVAC was introduced. The remarkable thing about the computer age is that so much has happened in so much short time. We have leapfrogged four generations of technology in about 50 years - a span of time whose events are within the memories of many people today. The first three computer generations are pinned to three technological developments:

1. vacuum tube
2. transistor and
3. integrated circuit

Each has drastically changed the nature and size of computers. We define the timing of each generation according to the beginning of commercial delivery of the hardware technology. Defining subsequent generations has become more complicated because the entire industry has become more complicated.

1.2.1 Central Processing Unit (CPU)

It is actually the main brain of the computer system. It is here that the whole processing takes place. It consists of 4 main units:

- Primary Storage
- Arithmetic Logic Unit
- Control Unit
- Output Unit

Let us read about them one by one.

1.2.1.1 Primary Storage Unit

This is main storage area, which is also called the main memory area. Its main functions are listed below:

1. Holding the data in its memory till it is required to be processed.
2. Holding the result of the processed data.
3. Holding program instructions which are required for processing.

1.2.1.2 Arithmetic Logic Unit

This is used for the most of the logical processing, for example, for calculations or comparisons. The arithmetic operations like +, -, *, and / are performed here. The logical operations like <, >, =, <=, >=, and <> are also performed here. In most of the arithmetical operations the result is in numerical form while in the case of logical operations the result can be YES/NO or TRUE/FALSE.

1.2.1.3 Control Unit

This unit controls the flow and manipulation of data and information. It also controls the flow of data from input devices to memory and from memory to output devices.

1.2.1.4 Output Unit

The output unit consists of the output devices attached to the computer. These devices take machine-coded output results from the processor and convert them into a form that can be understood by the user.

1.2.2 VDU, Keyboard and Mouse

1.2.2.1 Video Display Units

There would be no What You See Is What You Get (WYSIWYG) on PCs, if there were no monitors or displays on which to see what you get. The PC must produce outputs that can be handled by the senses of humans and so far, technology is limited to sight and sound. Given a choice, most of us still prefer sight over sound. You can accomplish a lot on a PC without sound, but not much would get done without the ability to see what you are working on.

The two general categories of PC visual presentation are the monitor and the display. A monitor has a CRT (cathode ray tube) and looks something like a traditional television set (without the controls, of course). On the other hand, a display is a flat-panel device that can be attached to a portable PC or hung on the wall. A monitor is largely desk or table-bound, but a display can get up and move about. A flat-panel display is really an adaptation of the monitor, but because it uses different technology, they are treated as two different components.

The PC Monitor: With personal computer technology advancing as fast as it is, it is hard to believe that any part of a PC could be considered an investment. However, the PC monitor is the only part of the personal computer that actually holds its value and has some durability. A good quality monitor will last for years through several generations of the PC systems.

Video Cards: In general, the video card processes the graphics data produced by software running on the PC and prepares it for use by the monitor for converting it from digital data to an analog signal. The video card also sends out the data needed by the monitor to refresh the image or renew it as it changes.



Video cards, graphics cards and accelerator cards are all names for the adapter card inside the PC that is responsible for generating the signals that tell the monitor what to display. The relationship between the video card and the monitor should be carefully matched. These two devices must be compatible in terms of the signal used to communicate to the monitor, the type of connector used to connect them together, the video display standards they support and their speed.

Dumb Terminal: It has been named as such since it is really dumb. It has no memory or processing unit, just a keyboard and the monitor. It takes everything else from the computer with which it is attached.

Smart Terminal: If you add microprocessor to dumb terminal, then it becomes a smart terminal. But, it still relies upon the main computer for programming and other jobs.

1.2.2.2 Keyboard

One look at it and you would be reminded of the old typewriter keypad. Well yes, the placing of alpha keys is exactly the same. This is called the QWERTY type of keyboard. This has been done specially keeping in mind the migration of people from typewriter to keyboard. It is the most important part of the computer. I am yet to see a computer without it. It is there in each computer. There are some software available in the market which teach you how to master the keyboard, but the old asdf method of typing would be sufficient. If one does not have speed for typing, it is ok but, the placement of keys is very important before you sit down on a computer.



Let us see how the various keys are placed on the keyboard.

Keyboard Keys: Most keyboard layouts are still a variation of the key layout of a typewriter, at least for the alphabetic, numerical and special character keys. Keyboards are available for various languages other than English too, but, for our purposes we would stick to the English one. There are mostly **101 keys** on the keyboard. The important keys are as follows:

Alpha Keys: Alphabet keys are marked from **[A]** to **[Z]**. As in typewriter, you can use **[SHIFT]** to make them capital, i.e., ABCDE, etc. So if you press a b c d e etc., with **[SHIFT]** key already pressed, you will get A B C D E etc. Similar results can be obtained by putting CAPS LOCK key ON. For typing capital A, you press **[SHIFT]** key and then while keeping **[SHIFT]** key pressed, press the “a” key. Otherwise for typing a, you don’t need to press the **[SHIFT]** key, just press the a key.

Numeric Keys: The numeric keys (with the characters 0 to 9) are located on the computer’s keyboard at two places. You can see them in the top row above the alpha keys (as in a typewriter). A second set of these keys is provided on the right-hand side of the keyboard. The numeric keys in the top row can be used straightaway to type in numeric characters. By simultaneously holding down the Shift key (as in a typewriter), you can also type in special upper characters like ! % \$ *, etc. However, to type numeric characters by using the keys on the right side, you will need to press the Num Lock key ON.

Function Keys: These keys are marked **[F1]** to **[F12]**. These keys are used for specific purposes as defined in the computer (a computer program is a set of instructions given to a computer to perform a specific task) which you may be using. For example, in BASIC programming (BASIC is a computer language used for writing programs) **[F3]** will load the program, **[F1]** will list the program after loading and **[F2]** will run the program.

Arrow Keys: On 101 keys keyboard these are placed at two places. The first is called the cursor pad which works independently. The other is the numeric-cum-cursor pad. It is similar to the one on the 84 key keyboard. When the Num Lock key is not in the ON position, pressing the key of the numeric keypad moves the cursor in the direction shown on each key. Otherwise, this portion is used to enter numbers.

1.2.2.3 Mouse

These days even the mouse has become very important part of computer. It has become integral part of computer since Windows has become the operating system for computers. It is in fact a pointing device. With this you can point at any place on the monitor and start the typing after clicking from that point. All Windows-based programs use mouse, making working with computers easier as you are not required to type commands.

Types of Mouse

There are three basic types of Mouse

1. Mechanical Mouse
2. Optomechanical Mouse
3. Optical Mouse



Mechanical Mouse: A mechanical mouse has a rubber or metal ball on its underside that can roll in all directions. Mechanical sensors within the mouse detect the direction of the rolling ball and make a movement of the screen pointer accordingly.

Optomechanical Mouse: Optomechanical mouse is also similar to a mechanical mouse except that it uses optical sensors to detect the movement of the ball on the Mouse Pad.

Optical Mouse: Optical mouse uses a laser beam to detect the movement of mouse on specially designed Mouse Pad. We must move the mouse along a special mat with a grid so that optical mechanism has a frame of reference. This type of mouse has no mechanical moving parts. Optical mouse responds more quickly and precisely than any other mouse. These are more expensive than the other two.

1.2.3 Other Input/Output Devices

We would take up Input devices first and then the Output devices.

1.2.3.1 Input Devices

Joysticks (or Paddle): You must have seen a joystick with a video game at various video game parlours. Well the same joystick can be attached to the computer too. For playing game obviously. It consists of a small, vertical lever (called the stick) mounted on a base that is used to steer the screen cursor around. Some joysticks are mounted on a keyboard, others function as stand-alone units. The joystick can be moved left or right, forward or backward, springs are often used to return the joystick to its home center position.

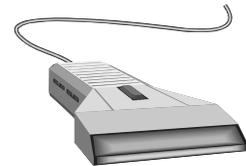
Scanners: Whereas a keyboard, mouse or trackball requires manual input of data, scanners allow input of printed data. A scanner reads text, photographs and graphics from paper which are then converted into bit patterns for processing, storage or output. Scanner is a device that examines a spatial pattern one part after another and generates analog or digital signals corresponding to the pattern. Scanners are often used in mark sensing, pattern recognition or character recognition.



Practically a scanner uses light for examining the spatial patterns. In a scanner, as the image is scanned, it is converted into light and dark picture elements, or pixels, similar to newspaper photo. Colour scanners can assign a specific colour to a pixel. The pixels are then stored as bit patterns. This technique makes the images usable by word processing, desktop publishing, and graphic packages.

There are two types of scanners, Hand-held scanner and Flat-bed scanner

Hand-Held Scanner: These devices read data on price tags, shipping labels, inventory part number, book ISBNs, and the like. Hand-held scanner, sometimes called wand scanners, use either contact or laser technology. It has a set of light emitting diodes. It is placed over the material to be scanned and slowly dragged from the top to the bottom. The light emitted by the diodes are not reflected by black lines and are reflected by whole areas. The material is converted and stored in a bitmap. Typical applications are to store images and reproduce them in publications.



Flat-bed Scanner: It consists of a box with glass plate on top, which is used for placing the document to be scanned. The light beam is situated below the glass plate and is moved from left to right horizontally. After scanning one line the beam moves up little and scans the next line. The scanner can also store colour images.



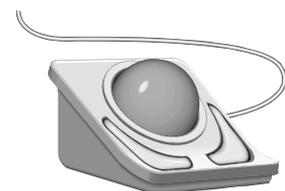
Digital Camera: A digital camera can store many more pictures than an ordinary camera. Pictures taken using a digital camera are stored inside its memory and can be transferred to a computer by connecting the camera to it. A digital camera takes pictures by converting the light passing through the lens at the front into a digital image.

Web Cameras: It is fast becoming an integral part of the computer specially for those who use Internet quite often. With this you can take an instant picture of the object to whom you focus it. It is very useful specially for those who have to show their designs, products, etc., on the computer to the clients. The picture transfer is almost instant.



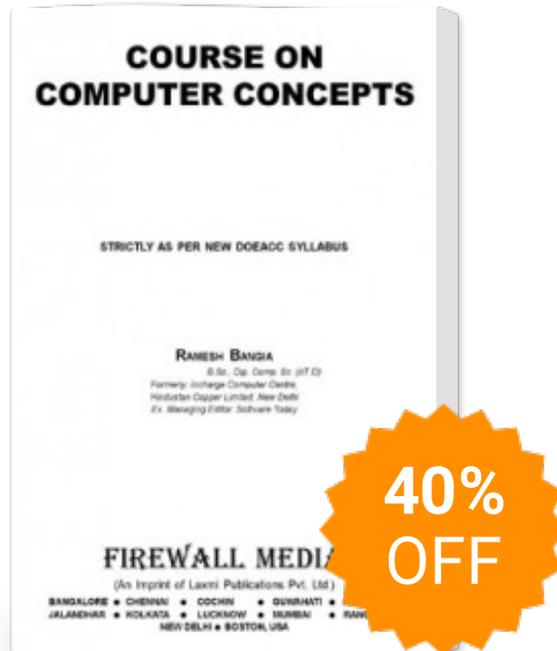
Light Pens: A light pen is a small pen-shaped wand, which contains light sensors. The light pen is used to choose objects or commands on the screen either by pressing it against the surface of the screen or by pressing a small switch on its side. This sends a signal to the computer, which then works out the light pen's exact location on the screen. The advantage of a light pen is that unlike a touch screen it doesn't need a special screen or screen coating. Used like an ordinary writing pen, this electronic pen is used to enter data by writing on the screen. The data you write is displayed on the monitor.

Trackball: Trackball is a pointing device that works like an upside-down mouse. You rest your thumb on the exposed ball and your fingers on the buttons. To move the cursor around the screen, you roll the ball with your thumb. Because you do not move the whole device, a trackball requires less space than a mouse. It is particularly used in notebook and laptop computers.



Touch Screens: Similar in use to the light pen is the touch-screen, which enables users to input instructions by merely touching on-screen prompts. The edges of the monitor of a touch-screen emit horizontal and vertical beams of light that criss-cross the screen. When a finger touches the screen, the interrupted light beams can pinpoint the location selected on the screen. Such screens are especially helpful when people are unfamiliar with computers. Information systems in shopping malls, airports, and amusement parks are now being developed using touch-sensitive screens as the only input hardware.

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