Computer Basics and PC Software

By: Akhilesh Singh

This reference book can be useful for

BBA, MBA, B.Com, BMS, M.Com, BCA, MCA

and many more courses for Various Universities

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Sample Preview of The Chapter

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COMPUTER BASICS AND PC SOFTWARE

BASICS OF COMPUTER HARDWARE

Computer–their Origin and Applications

1

INTRODUCTION

With the advent of Information and Communication Technology (ICT) use of computer has increased in every phase of our life. **A computer is a programmable machine that receives input, stores and manipulates data, and provides output in a useful format.** Basically computers were meant to 'compute', to perform large calculations in seconds with accuracy. But now the machine is doing wonders. Gone are the days when computers were used only to calculate or compute, now you can hardly find any area untouched by the use of computer. We can see that computers are replacing the manual style of working. Keeping in view the overwhelming use of computer in almost every field such as banking, railways, commerce, book keeping, ticketing, billing, education, etc. It becomes a necessity to get familiar with computer.

This chapter will introduce you to the origin of computer, computer generations, computer system, its components, integrated circuits, operating system, current applications of computer and limitations of computers.

CHAPTER AT A GLANCE

ORIGIN OF COMPUTERS

Initially, computers were invented to compute, and the basic role of computers was to calculate, or to perform lengthy calculations in seconds. In order to count large numbers various systems of numeration were generated, such as:

- Babylonian System of Numeration,
- Greek System of Numeration,
- Roman System of Numeration, and
- Indian System of Numeration (decimal system of numeration 0-9).

But we should be proud to know that our Indian System of Numeration has been accepted universally.

1. Abacus: Since civilizations began, many of the advances made by science and technology have depended upon the ability to process large amounts of data and perform complex mathematical calculations. For thousands of years, mathematicians, scientists and business-men have searched for computing machines that could perform calculations and analyze data quickly and efficiently. One such device was the abacus. The literal meaning of Abacus is the calculating board. The Chinese hold the credit of inventing 'abacus'.

The abacus can be thought of a counting frame, with vertical wires, with seven beads on each wire. A horizontal divider separates the top two beads from the bottom five, sometimes referred to as the heaven and the earth beads. The user manipulates the beads by using the principle of positional weight of beads on a rack.

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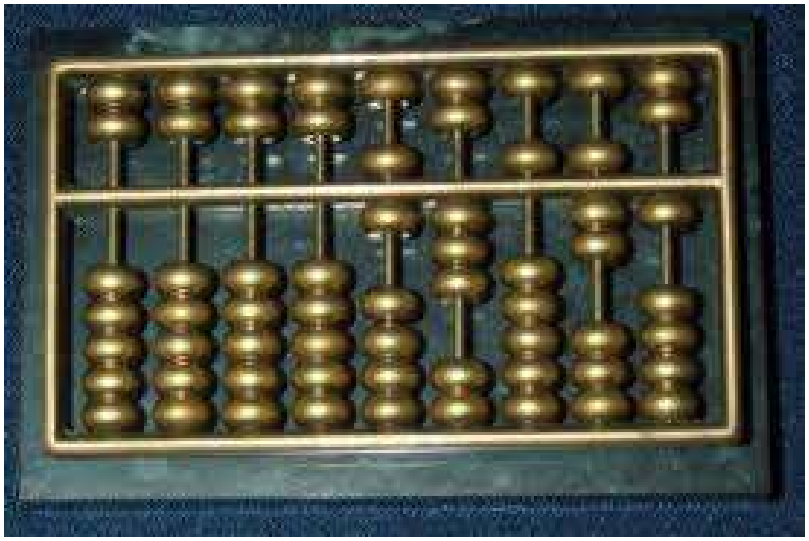
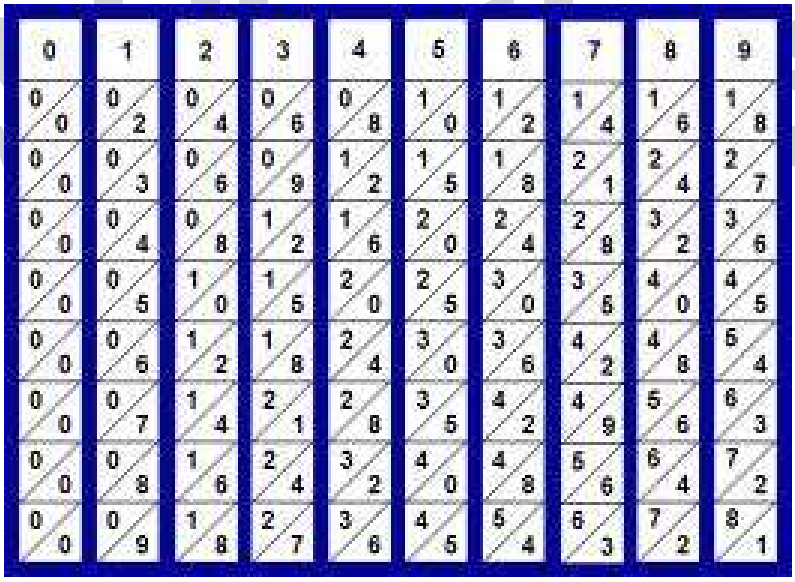


Image of Abacus

2. Napier's Bones: Napier's Bone is a device invented in 1617 A. D. by John Napier, a mathematician. He invented the logarithms to reduce any multiplication problem.



0	1	2	3	4	5	6	7	8	9
0 0	0 2	0 4	0 6	0 8	1 0	1 2	1 4	1 6	1 8
0 0	0 3	0 6	0 9	1 2	1 5	1 8	2 1	2 4	2 7
0 0	0 4	0 8	1 2	1 6	2 0	2 4	2 8	3 2	3 6
0 0	0 5	1 0	1 5	2 0	2 5	3 0	3 5	4 0	4 5
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0 0	0 7	1 4	2 1	2 8	3 5	4 2	4 9	5 6	6 3
0 0	0 8	1 6	2 4	3 2	4 0	4 8	5 6	6 4	7 2
0 0	0 9	1 8	2 7	3 6	4 5	5 4	6 3	7 2	8 1

Image of Napier's bones

3. Slide Rule: Slide rule, is a mechanical analog computer. It was developed by English mathematician E. Gunter. The slide rule is used primarily for multiplication and division, and also for functions such as roots, logarithms and trigonometry, but it is not normally used for addition or subtraction.

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Image of Slide Rule

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4. Pascal's Calculator: The credit of building calculator goes to Blaise Pascal, a French mathematician and scientist. The machine was also called Pascaline, it could add and subtract directly and multiply and divide by repetition.

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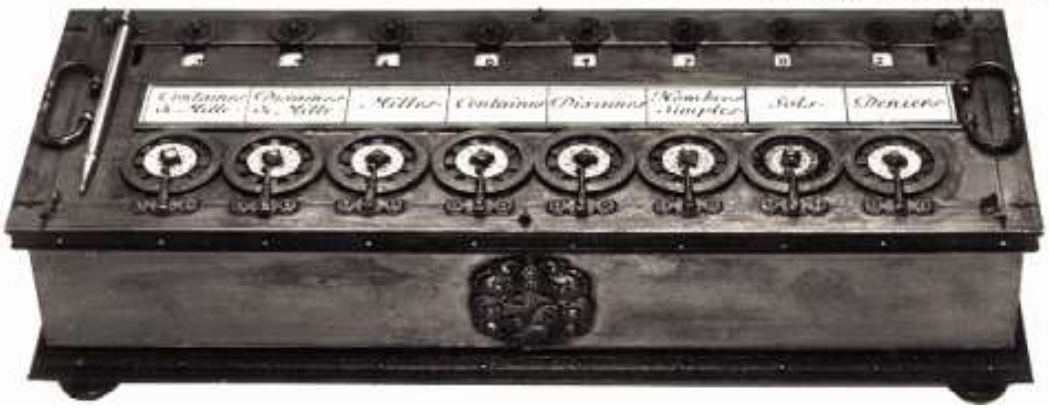

Pascal's Calculator

5. Leibniz's Multiplication and Dividing Machine: German mathematician Gottfried Wilhelm Leibniz invented a digital calculator around 1672 which was called the step reckoner. It was the first calculator that could perform all four arithmetic operations: addition, subtraction, multiplication and division.

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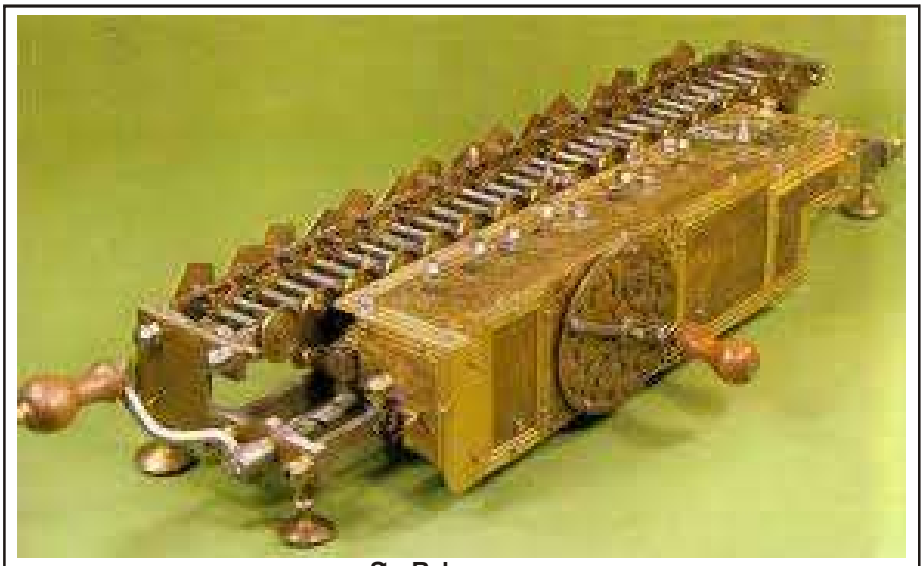
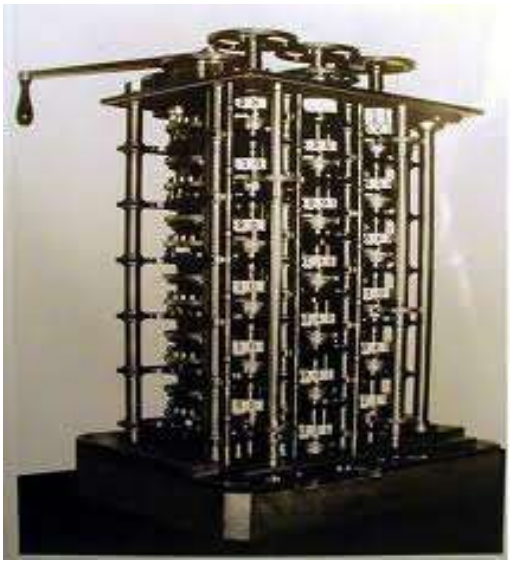


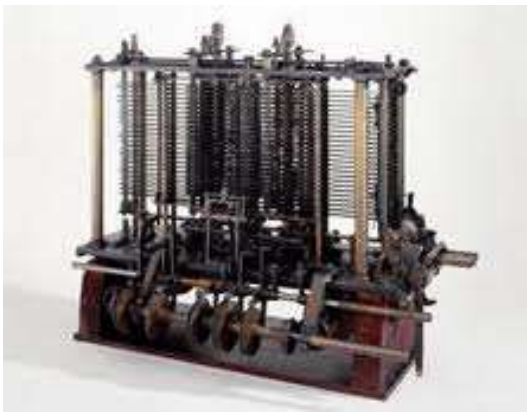
Step Reckoner

6. Difference Engine: Charles Babbage, an English mathematics professor told that all the mathematical operations, even the most complexed ones, can be broken down into simple operations. This concept could be used to make it able to be carried out by a machine in loop. This machine used the decimal number system and was powered by cranking a handle. It could be called the first step towards the creation of computers. That is why he is called as the Father of the Computers.



Difference Engine

7. The Analytical Engine: Due to some reasons Babbage left working on Difference Engine and he started working on Analytical Engine which was even closer to the concept of today's computers. Because it was a proposed mechanical general-purpose computer. It had an arithmetical unit, control flow in the form of conditional branching and loops, and an integrated memory.



Analytical Engine

8. Mechanical and Electrical Calculator: Calculators are very popular device for arithmetic calculation. Calculators were developed in the 19th

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