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LESSON 1 - PRINTING TEXT ON THE SCREEN

LEARNING OBJECTIVES: Students will learn:

* to control the screen.
* to print text anywhere on the screen.
* to select colors.
* to write simple BASIC language programs.
* to use the commands: CLS, PRINT, COLOR, LOCATE, and END.

The first skill we should learn in any computer language, including BASIC, is to control the screen. That is the ability to print text (messages, titles, letters, numbers, etc.) in different colors, anywhere on the screen. Planning the display of text on the screen is about the same as planning the printing of similar text on a sheet of paper.

A **command** is a specific word that the student types on the keyboard. It gives the computer an order to do something. Controlling the screen is a simple process, since it just requires the use of the following five commands:

CLS : The command CLS is used to clear the screen. It is usually the first command that it is given to the computer.

PRINT : This is probably the most important command in BASIC language. The command PRINT tells the computer to display text on the screen. Suppose we wish to have the message **I LIKE MY COMPUTER** to appear on the screen. To achieve that, type:

```
PRINT "I LIKE MY COMPUTER"
```

Notice that the desired message must be inside quotations on the right side of the PRINT command.

COLOR: To have text on the screen appear more appealing, we select colors that produce nice contrasts. For instance, blue, red, and white interact attractively. To select a color, a number from 0 to 15 must be indicated at the right side of the COLOR command. For instance, COLOR 4 is red. Therefore, to have the message **BASIC LANGUAGE IS GREAT** appear in red letters, the following three instructions should be given to the computer:

```
10  CLS
20  COLOR 4
30  PRINT "BASIC LANGUAGE IS GREAT"
```

At this point it is convenient to mention that a **PROGRAM** is simply one or more commands we want the computer to execute. All commands must be numbered, and be located in line numbers having ascending values. The first line of every program in this book will always be the number **10**, and each new line in the program increases by **10**. Therefore, the second line is **20**, the third line is **30**, and so on.

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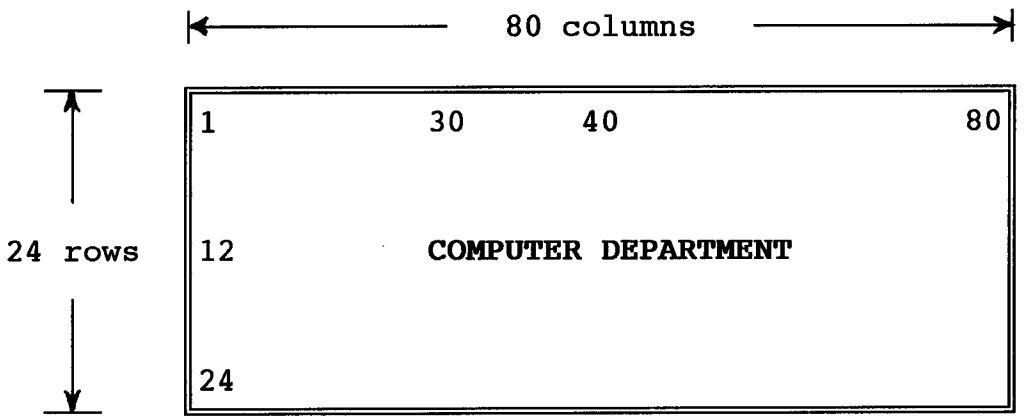
The best time to use the COLOR command is immediately before the PRINT command. The following table should be used to find the appropriate number when a specific color is desired:

TEXT COLORS TABLE

Number	Color	Number	Color
0	Black	8	Gray
1	Blue	9	Light Blue
2	Green	10	Light Green
3	Aqua (Cyan)	11	Light Aqua
4	Red	12	Light Red
5	Purple (Magenta)	13	Light Purple
6	Brown	14	Yellow
7	White	15	White (Brighter)

LOCATE : To have a message or title printed in the middle of the screen, we must tell the computer exactly where to do it. Certainly, the computer cannot imagine what we are thinking or wanting. The command LOCATE is used to let the computer know where it should start printing the text. Because the screen is divided into 80 columns (up and down), and 24 rows (across), two numbers must be always specified to the right of the command LOCATE. The first number always indicates the ROW number, while the second number is the COLUMN. Take a look at the screen shown below:



To have the title **COMPUTER DEPARTMENT** printed in color green, starting in column 30 and row 12, type the following program:

```
10  CLS
20  LOCATE 12,30
30  COLOR 2
40  PRINT "COMPUTER DEPARTMENT"
50  END
```

END : The last command to learn in Lesson 1 is the END command. As expected, END tells the computer to stop the execution or running of a program.

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SECTION I - WRITING THE OUTPUT SHOWN ON THE SCREEN

Each of the 5 programs shown in **Section** I: I-1, I-2, I-3, I-4, and I-5 should be typed carefully in the computer. After you **RUN** the program, the output shown on the screen must be written on the blank screen provided on the right side of the exercise.

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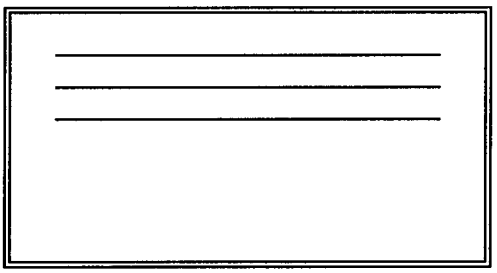
EXERCISE I-1

```
10  CLS
20  COLOR 4
30  PRINT "I am Learning"
40  COLOR 9
50  PRINT "BASIC Language"
60  COLOR 7
70  PRINT "Right Now."
80  END
```



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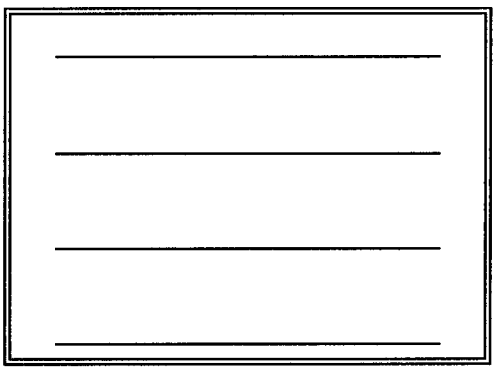
EXERCISE I-2

```
10  CLS
20  LOCATE 24,35
30  COLOR 9
40  PRINT "THIS IS ROW 24"
50  LOCATE 1,35
60  COLOR 2
70  PRINT "THIS IS ROW 1"
80  LOCATE 16,35
90  COLOR 4
100 PRINT "THIS IS ROW 16"
110 LOCATE 8,35
120 COLOR 7
130 PRINT "THIS IS ROW 8"
140 END
```



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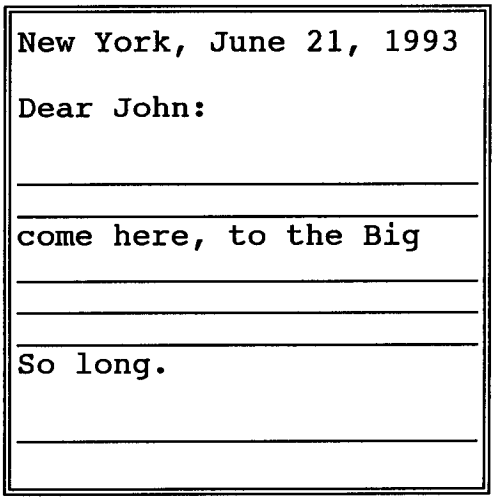
EXERCISE I-3

```
10  CLS
20  PRINT "New York, June 21, 1993"
30  PRINT
40  PRINT "Dear John:"
50  PRINT
60  PRINT "I hope you are doing fine."
70  PRINT "When are you planning to"
80  PRINT "come here, to the Big"
90  PRINT "Apple, to do business?"
100 PRINT "My computer software store"
110 PRINT "is expanding rapidly."
120 PRINT "So long."
130 PRINT
140 PRINT "Your friend,  Peter"
150 END
```



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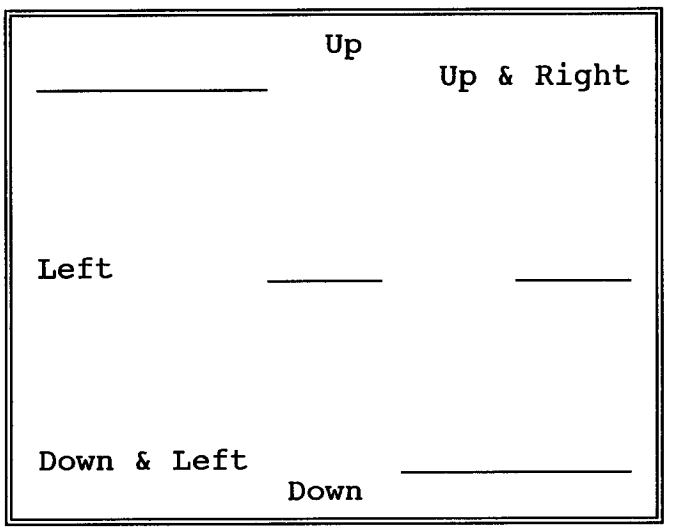
EXERCISE I-4

In BASIC language, you may give the computer two or more commands in the same line, by using a colon (:) between them. For instance, study lines 20, 40, 60, etc., in the following program:

```
10  CLS
20  COLOR 1 : LOCATE 3,1
30  PRINT "Up & Left"
40  COLOR 2 : LOCATE 2,39
50  PRINT "Up"
60  COLOR 3 : LOCATE 3,70
70  PRINT "Up & Right"
80  COLOR 4 : LOCATE 12,1
90  PRINT "Left"
100 COLOR 5 : LOCATE 12,75
110 PRINT "Right"
120 COLOR 6 : LOCATE 22,1
130 PRINT "Down & Left"
140 COLOR 14: LOCATE 23,38
150 PRINT "Down"
160 COLOR 9 : LOCATE 22,68
170 PRINT "Down & Right"
180 COLOR 7 : LOCATE 12,37
190 PRINT "Center"
200 END
```



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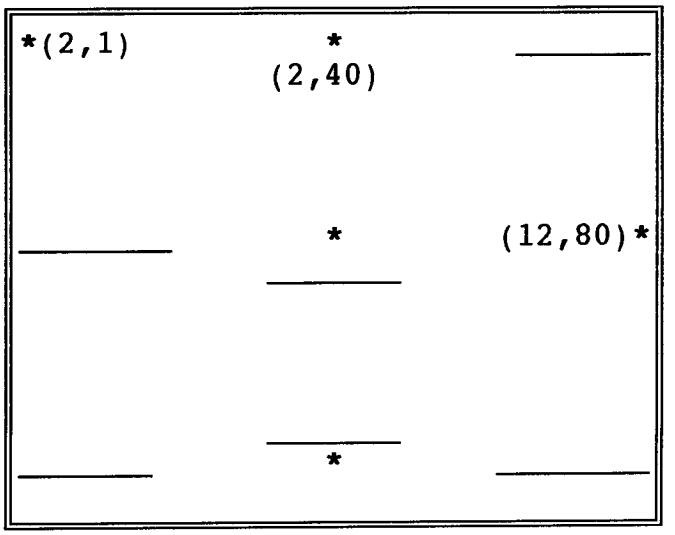
EXERCISE I-5

The numbers in each pair of parentheses indicate the position of the closest asterisk. The first number represents the ROW, while the second number indicates the COLUMN. After you finish this program, add colors by inserting lines. For instance, insert the following lines: 15 COLOR 1, 25 COLOR 2, 35 COLOR 3, 45 COLOR 4, etc. In other words, introduce a COLOR statement before each PRINT.

```
10  CLS
20  LOCATE 2,1  : PRINT"*(2,1)"
30  LOCATE 2,40 : PRINT "*"
40  LOCATE 2,74 : PRINT "(2,80)*"
50  LOCATE 3,37 : PRINT "(2,40)"
60  LOCATE 12,1 : PRINT "*(12,1)"
70  LOCATE 12,40: PRINT "*"
80  LOCATE 12,73: PRINT "(12,80)*"
90  LOCATE 13,37: PRINT "(12,40)"
100 LOCATE 22,37: PRINT "(23,40)"
110 LOCATE 23,1 : PRINT "*(23,1)"
120 LOCATE 23,40: PRINT "*"
130 LOCATE 23,73: PRINT "(23,80)*"
140 LOCATE 16,2
150 END
```



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SECTION II - WRITING THE PROGRAM

Each of the 9 programs shown in **Section II:** Exercises I-6 through I-14 should be carefully completed. You need to think what commands should be written in each blank line. When you RUN the finished program, the output on the screen should resemble the picture shown on the left side.

****

EXERCISE I-6

```
Computer Languages:

BASIC
Pascal
Cobol
C++
Fortran
Logo
RPG
Assembly
Pilot
Machine
```

```
10  CLS
20  COLOR 4
30  PRINT "Computer Languages:"
40  PRINT
50  COLOR 7
60  PRINT "BASIC"
70  _____________________________
80  _____________________________
90  _____________________________
100 PRINT "Fortran"
110 _____________________________
120 _____________________________
130 _____________________________
140 PRINT "Pilot"
150 _____________________________
160 END
```

****

EXERCISE I-7

Each of the 5 titles or messages shown below needs to be **centered** in each line. To center, count the number of characters in the title (for instance, "Harvard University" has 18 characters. Do not forget to include the blank space.), then subtract that number from 80, and the result is divided by 2. The final value indicates the appropriate column to use in the LOCATE command so that the message appears centered. Using the same title "Harvard University," the operations to perform should be: (80 - 18) / 2 = 31. Use rows 4, 8, 12, 16, and 20 in this program.

```
Harvard University

Computer Class

Boston, Massachusetts

May 13, 1993

Your Name Goes Here
```

```
10  CLS
20  LOCATE 4,31 : COLOR 9
30  PRINT "Harvard University"
40  _____________________________
50  PRINT "Computer Class"
60  LOCATE 12,29 : COLOR 2
70  _____________________________
80  _____________________________
90  PRINT "May 13, 1993"
100 _____________________________
110 PRINT "(Your Correct Name)"
120 END
```

NOTE: Make sure you write your correct name in line 110. In addition, all titles should be centered as shown.

****

EXERCISE I-8

```
     PERSONAL DIRECTORY
     ******************

NAME        PHONE      CITY
----        -----      ----

Kathy       649-9800   Miami
Peter       341-8753   Dallas
Oscar Jr    289-9872   Rome
Mother      962-2732   Denver
Grandma     223-3398   Bogota
Mary        568-9087   Tokyo
Robert      570-0980   London
```

```
10  CLS
20  COLOR 2 : LOCATE 1,5
30  _____________________________________
40  LOCATE 2,5
50  PRINT "******************"
60  _____________________________________
70  COLOR 3
80  PRINT "NAME       PHONE      CITY"
90  _____________________________________
100 _____________________________________
110 COLOR 7
120 PRINT "Kathy      649-9800   Miami"
130 _____________________________________
140 _____________________________________
150 _____________________________________
160 PRINT "Grandma    223-3398   Bogota"
170 _____________________________________
180 _____________________________________
190 END
```

****

EXERCISE I-9

Each of the titles shown below should appear **centered** in each line. Select appropriate rows to produce a similar display. In addition, use your own judgement to include appropriate colors. Finally, as long as you get the shown output, your program may have any number of lines.

```
Merry Christmas
      and
 Happy New Year


      TO
A Nice Person


     FROM
A Secret Admirer


  Miami, Florida
```

```
10  CLS
20  _____________________________________
30  _____________________________________
40  _____________________________________
50  _____________________________________
60  _____________________________________
70  _____________________________________
80  _____________________________________
90  _____________________________________
100 _____________________________________
110 _____________________________________
120 _____________________________________
130 _____________________________________
140 _____________________________________
150 _____________________________________
160 _____________________________________
170 _____________________________________
180 _____________________________________
190 _____________________________________
200 _____________________________________
```

****

EXERCISE I-10

```
May 9, 1993

Dear Friend:

I am taking a Computer Course
in BASIC Language. Even though
I am still practicing Lesson 1,
I am beginning to like it.

Right now I know how to boot up
the computer, save information
on floppy diskettes, print text
in different colors anywhere on
the screen, and type letters.

My Computer teacher said that in
a few months I could learn a lot
about computers if I am dedicated
and if I practice often. I will
keep you inform. Good-Bye.

            Katherine Melissa
```

```
10  _____________________________________________
20  _____________________________________________
30  _____________________________________________
40  _____________________________________________
50  _____________________________________________
60  _____________________________________________
70  _____________________________________________
80  _____________________________________________
90  _____________________________________________
100 _____________________________________________
110 _____________________________________________
120 _____________________________________________
130 _____________________________________________
140 _____________________________________________
150 _____________________________________________
160 _____________________________________________
170 _____________________________________________
180 _____________________________________________
190 _____________________________________________
200 _____________________________________________
210 _____________________________________________
220 _____________________________________________
230 _____________________________________________
240 _____________________________________________
250 _____________________________________________
260 _____________________________________________
270 _____________________________________________
280 _____________________________________________
```

****

EXERCISE I-11

```
    * The star is in Column # 5 and Row # 4

        * The star is in Column # 10 and Row # 8

            * The star is in Column # 15 and Row # 12

                * The star is in Column # 20 and Row # 16

                    * The star is in Column # 25 and Row # 20
```

```
10  _____________________________________________
20  _____________________________________________
30  _____________________________________________
40  _____________________________________________
50  _____________________________________________
60  _____________________________________________
70  _____________________________________________
80  _____________________________________________
90  _____________________________________________
```

****

EXERCISE I-12

Design a program, similar to Exercise I-3. Write a fictitious letter to a friend or a relative. Your letter must have at least three paragraphs, and each paragraph should contain no less than 5 lines. The length of each line may fluctuate between 70 and 79 characters. A blank line (dummy print) should separate each paragraph. Use appropriate headings.

****

EXERCISE I-13

INTERNATIONAL CORPORATION

Franchise # 27

Sacramento, California

P A Y R O L L

FROM: June 13, 1993
TO: July 27, 1993

Prepared by: (Your Name)

10 _____
20 _____
30 _____
40 _____
50 _____
60 _____
70 _____
80 _____
90 _____
100 _____
110 _____
120 _____
130 _____
140 _____
150 _____
160 _____

****

EXERCISE I-14

THE UNITED STATES OF AMERICA

****

STATE	CAPITAL	AREA (SQ. MILES)	NICKNAME
California	Sacramento	158,693	Golden State
Florida	Tallahassee	58,560	Sunshine State
Hawaii	Honolulu	6,450	Aloha State
New Jersey	Trenton	7,836	Garden State
Texas	Austin	267,338	Lone Star State
Wyoming	Cheyenne	97,914	Equality State

10 _____
20 _____
30 _____
40 _____
50 _____
60 _____
70 _____
80 _____
90 _____
100 _____
110 _____