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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:

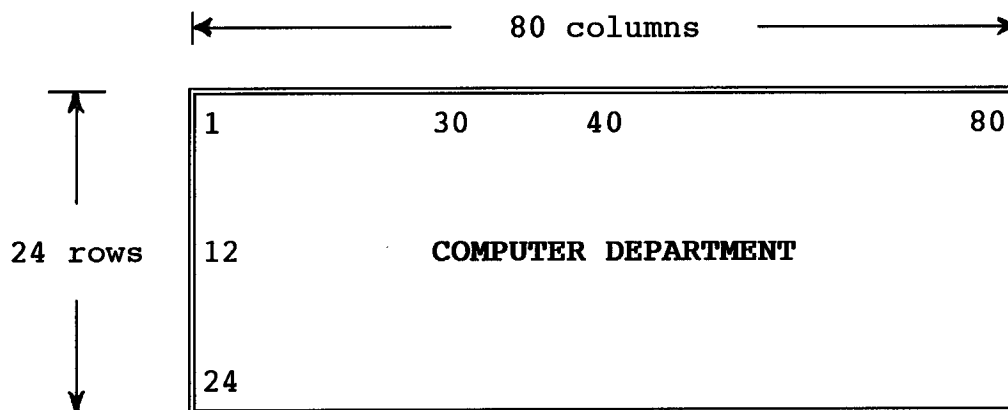
```
10 CLS
20 COLOR 4
30 PRINT "BASIC LANGUAGE IS GREAT"
```

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
```

New York, June 21, 1993

Dear John:

---

come here, to the Big

---

So long.

---

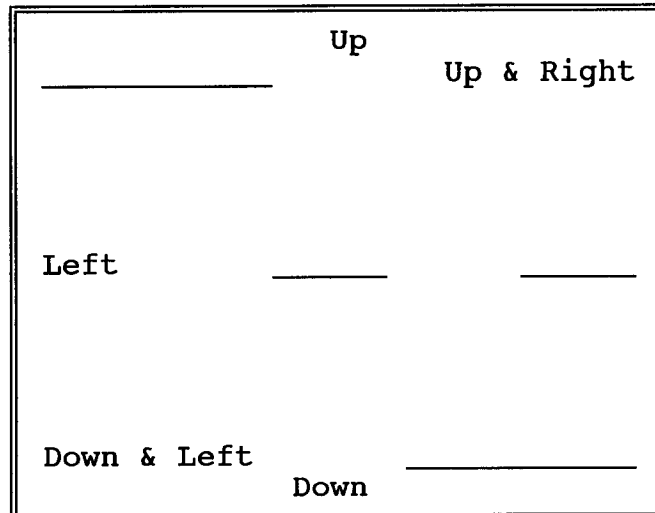
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**EXERCISE I-4**

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

```



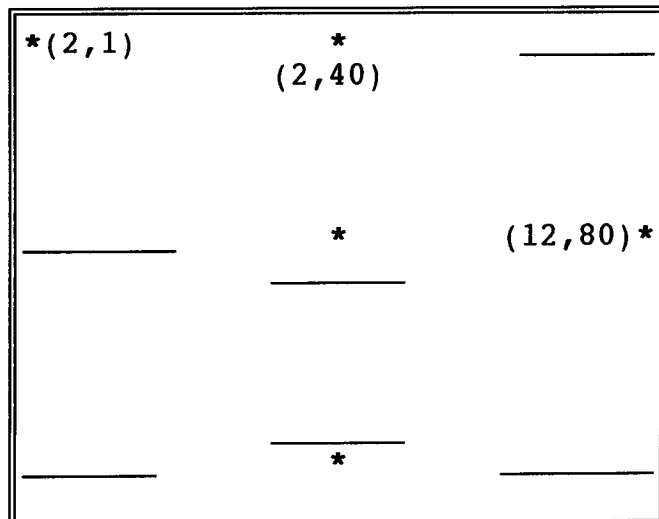
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**EXERCISE I-5**

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**  
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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.  
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**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
  
```

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**EXERCISE I-7**  
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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.

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**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

```

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**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.

<p>Merry Christmas  and  Happy New Year</p> <p>TO</p> <p>A Nice Person</p> <p>FROM</p> <p>A Secret Admirer</p> <p>Miami, Florida</p>
--

```

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

```

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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 \_\_\_\_\_

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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 \_\_\_\_\_

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**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.

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**EXERCISE I-13**

<b>INTERNATIONAL CORPORATION</b>  Franchise # 27  Sacramento, California  P A Y R O L L  <b>FROM: June 13, 1993</b> <b>TO: July 27, 1993</b>  <b>Prepared by: (Your Name)</b>
--

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

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**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	_____