INTRODUCTION

Commodore 64 Fun and Games provides you with complete listings for 35 programs written specifically for the Commodore 64 home computer. (**NOTE:** These programs do not work on the Commodore VIC 20 or the Commodore PET.)

The programs use the special features the C-64 offers, such as color, sound, sprites, and character graphics. All of the programs are written in BASIC, but you don't need to be a programmer to play these games. All you need to do is enter them from the listings provided.

HOW TO USE THIS BOOK

A complete listing is provided for each program. You type the program into your computer exactly as it is listed in the book and then play. Instructions on how to play each game are given in the introduction to each program.

Whenever you enter a program, be sure to save it on cassette or diskette *before* you try to run it. If you've made a typing mistake that causes your C-64 to "lock up," you will be able to load the program from cassette or diskette and correct the error. This method of saving a program before running it may save you hours of retyping.

HOW TO READ THE LISTINGS

Most of the programs use C-64 special characters and functions, such as color keys, reverse video, cursor control, and character graphics. We use our own special notation in the program listings to make them easier to read. Before you enter any of the listings, take a few minutes to become familiar with the notation. Although it may look strange at first, once you learn the notation you will be able to type in the programs correctly.

We do not use listings produced by a Commodore printer for a good reason: it's difficult to type lengthy C-64 programs that use graphics when working from C-64 produced listings. The Commodore printer uses graphic symbols for the special functions, such as cursor movement or changing colors. When you type in a program from a C-64 produced listing, you have to remember what the large set of graphic characters means. The notation used in this book indicates which keys to press when you type in the program. Look at Table 1 if you want to see what graphic character the C-64 will display when you type the appropriate key.

The key to entering programs successfully from this book of listings is to be careful. We've included several short programs called TINY-1 through TINY-5 to help you get started. The best way to learn the notation used in this book is to try typing several of these TINY programs.

If you hurry while typing in a program, you may later discover that the program doesn't work when you try to run it.When this happens, you'll have to compare each line you typed against the listing in the book. You'll quickly discover that slowing down and carefully entering the program will take much less time than "debugging" a program that was entered incorrectly.

The Listings

Most often you will type exactly what is printed in the listings. When you see the curly braces ("{" and "}"), you know that we are using our special notation, which will be explained below. Otherwise, type exactly what is shown in the listing, with one exception. It is often important that you type in a specified number of blank spaces. If a blank space is important, we will show it as the caret ("^") which is not a character on the C-64. Here is an example:

```
1 PG$="^P^I^A^N^O^":AU$="BY^GLEN^
  FISHER"
```

In this line from the PIANO program, there are eight blanks that are required. Since these blanks must be entered, they are represented by the caret symbol.

In C-64 BASIC, blanks are not always required in a program statement. Sometimes you use blanks to make the program easier to read. We've shown these "optional" blanks as actual blanks in the listings. Although the programs will work even if you leave

Table 1. Notation Used for Program Listings

Listed:	Key(s) to Press:	Screen Graphics:	Listed:	Key(s) to Press:	Screen Graphics:
{home}	HOME		{blu}	COMMODORE 7	
{clr}	SHIFT CLR		{yel}	COMMODORE 8	
{up}	SHIFT CRSR UP		{rvs-on}	CTRL 9	
{down}	CRSR DOWN		{rvs-off}	CTRL 0	
{left}	SHIFT CRSR LEFT		{pi}	SHIFT ↑	
{right}	CRSR RIGHT		{space}	SPACE BAR	
{inst}	SHIFT INST		{shift space}	SHIFT SPACE BAR	
{blk}	CTRL 1		{A}	SHIFT A	
{wht}	CTRL 2		{B}	SHIFT B	
{red}	CTRL 3		{C}	SHIFT C	
{cyn}	CTRL 4		{D}	SHIFT D	
{pur}	CTRL 5		{E}	SHIFT E	
{grn}	CTRL 6		{F}	SHIFT F	
{blu}	CTRL 7		{G}	SHIFT G	
{yel}	CTRL 8		{H}	SHIFT H	
{blk}	COMMODORE 1		{I}	SHIFT I	
{wht}	COMMODORE 2		{J}	SHIFT J	
{red}	COMMODORE 3		{K}	SHIFT K	
{cyn}	COMMODORE 4		{L}	SHIFT L	
{pur}	COMMODORE 5		{M}	SHIFT M	
{grn}	COMMODORE 6		{N}	SHIFT N	

Table 1. Notation Used for Program Listings *(continued)*

Listed:	Key(s) to Press:	Screen Graphics:	Listed:	Key(s) to Press:	Screen Graphics:
{O}	SHIFT O		{J}	COMMODORE J	
{P}	SHIFT P		{K}	COMMODORE K	
{Q}	SHIFT Q		{L}	COMMODORE L	
{R}	SHIFT R		{M}	COMMODORE M	
{S}	SHIFT S		{N}	COMMODORE N	
{T}	SHIFT T		{O}	COMMODORE O	
{U}	SHIFT U		{P}	COMMODORE P	
{V}	SHIFT V		{Q}	COMMODORE Q	
{W}	SHIFT W		{R}	COMMODORE R	
{X}	SHIFT X		{S}	COMMODORE S	
{Y}	SHIFT Y		{T}	COMMODORE T	
{Z}	SHIFT Z		{U}	COMMODORE U	
{A}	COMMODORE A		{V}	COMMODORE V	
{B}	COMMODORE B		{W}	COMMODORE W	
{C}	COMMODORE C		{X}	COMMODORE X	
{D}	COMMODORE D		{Y}	COMMODORE Y	
{E}	COMMODORE E		{Z}	COMMODORE Z	
{F}	COMMODORE F		{+}	SHIFT +	
{G}	COMMODORE G		{±}	COMMODORE +	
{H}	COMMODORE H		{−}	SHIFT −	
{I}	COMMODORE I		{–}	COMMODORE −	

Table 1. Notation Used for Program Listings *(continued)*

Listed:	Key(s) to Press:	Screen Graphics:	Listed:	Key(s) to Press:	Screen Graphics:
{*}	SHIFT *		{\}	COMMODORE \	
{*}	COMMODORE *		{@}	SHIFT @	
{\}	SHIFT \		{@}	COMMODORE @	

out the optional blanks, we strongly recommend that you use them.

To make the program listings conform to the format of this book, we "folded" long statement lines at a convenient place on the line and continued the statement on the next line. When you type the program in, you should ignore where we have "wrapped" the line around and just keep typing. When long statement lines are continued, they are aligned with the rest of the text. Since the screen of the C-64 is 40 columns wide, the longer lines of the programs will look different on your screen than they do in the book.

Another minor point about these listings is that we show the line numbers aligned to the right, rather than the left as they will appear on the C-64 screen. This was done to make the listings look more attractive and easier to type in.

Special Notation

Everything inside curly braces ("{" and "}") is our special notation that tells you which keys to press on the C-64 keyboard. There are three types of keys that will appear within the braces: keys that move the cursor, keys that control color, and keys that produce C-64 graphic symbols.

There are several keys that we've given special names. For example, we use {home} to mean "press the HOME key." This is the easiest part of the notation to learn, since all you need to know is what we've decided to call the various keys. Table 1 has three different headings: what will appear in our listing, the actual key you need to press, and a picture of the graphic character that will appear on the screen.

When you need to enter a "clear screen" code in a program, we will show {clr} in the listing. As shown in Table 1, you will hold down the SHIFT key and press the CLR key. A reverse-video heart graphic character will appear on the screen.

It is useful to notice that the keys we have named, such as {clr}, are all printed in lowercase letters. When capital letters appear within the braces, they always represent graphic characters produced with either the SHIFT or the COMMODORE key. Since the keys we have named are all printed in lowercase, there isn't any possibility of confusion between names of keys and the same set of keys used to produce graphics.

Cursor Movement Keys

To indicate cursor movement keys that are entered in strings, we use {home}, {clr}, {up}, {down}, {left}, and {right}. The "insert character" function is shown as {inst}.

Color Keys and Reverse-Video

As you know, the C-64 can display 16 colors. Abbreviations for eight of the colors are printed on the front of the number keys. To produce these colors, you hold down the CTRL key and press the number key with the name of the color you want. With each listing, we show these first eight colors by printing the name of the color on the front of the key: {blk}, {wht}, {red}, {cyn}, {pur}, {grn}, {blu}, and {yel}. These colors are names for the keys, just as {down} is the name for the cursor-down key.

The remaining eight colors, whose names are not printed on the C-64 keycaps, are shown as the *underlined names* of the colors which are on the keycaps. When you see an underlined color name, it means "hold down the COMMODORE key and press the key

with the appropriate color name." For example, {blk} is how we indicate orange, the second color for the 1 key. You will see below that underlining within braces *always* means "hold down the COMMODORE key."

To turn reverse-video on and off, we use {rvs-on} and {rvs-off}. By looking at Table 1, you can see that this involves pushing two keys. You can produce the reverse-video by holding the CTRL key down while pressing 9 for {rvs-on} (reverse on) or 0 for {rvs-off} (reverse off).

A Simple Example

Here is an example of a PRINT statement that clears the screen, uses a cursor-right to move one space to the right, goes down one row, turns on the color red, and prints "HI" on the screen:

```
10 PRINT "{clr right down red} HI"
```

To enter the example, type the following:

the number 10
the word PRINT
a quote (")
the CLR key
cursor-right key
cursor-down key
hold down the CTRL key and press the number 3 (for the color red)
the letters H, I
and the closing quote (")

Note that blanks *inside* curly braces are never typed unless the word {space} is spelled out. Blanks are used to separate the names of special keys and are included for clarity only. For example, {down down left} means press three keys: cursor-down, cursor-down, and cursor-left. The blanks between the names are *not* entered into the computer.

Graphics that Use the SHIFT Key

Most keys on the C-64 keyboard can produce three different codes: a letter, such as an "X", and two different graphic characters. The graphic character shown on the right front of a key is produced by holding the SHIFT key down and pressing the key with the desired graphic. For example, to produce the heart character, hold down the SHIFT key and then press the S key. To produce the graphic character shown on the left front of a key, hold the COMMODORE key down and press the key with the graphic character.

The graphics produced with the SHIFT key are shown as capital letters inside the braces. For example, {X} is how we show "hold down SHIFT, and press the letter X." Table 1 shows all of the graphics produced by these shifted keys.

The plus and minus sign, the commercial "at" sign, the asterisk, and the British "pound" sign are other graphics produced by the SHIFT key when they appear inside braces.

Graphics That Use the COMMODORE Key

We show the COMMODORE key graphics just like the SHIFT graphic characters, except we *underline* the key you should press. For example, {X} will produce the character ◰. Underlined symbols give you the graphic character shown to the left on the front of the C-64 keycap, while the non-underlined symbols produce the graphic shown on the right side of the keycap.

Repeated Cursor Movements and Spaces

Some cursor movements involve a lot of repetition, for example, {home down down down down}. To save space and increase clarity, we show such repetitions by a key count followed by the key name. The example above would be shown as:

```
{home 4° down}
```

Here's an example that shows how we print a home, 10 cursor-downs, and 20 cursor-rights, followed by "HELLO" (printed in yellow):

```
10 PRINT "{home 10° down 20° right yel} HELLO"
```

Since blank spaces tend to be used in long strings, we also use the repetition factor when more than three important blanks appear together. This makes it far easier to type in the right number of spaces.

JOYSTICKS AND SOUND

Many of the games use the C-64 joystick. For such games, plug the joystick into control port 2. Port 2 is used because port 1 can sometimes interfere with the keyboard.

When you use the joystick, hold it so that the "fire button" is at the upper left-hand corner. We've found

that the joystick can become unplugged quite easily. To prevent this, use a cassette case to support the joystick plug next to the port. The case is just the right height to relieve strain on the joystick plug and help it operate reliably.

Many of the games use the C-64 sound capability. You will want to adjust the volume of the sound on your television or monitor so that you can hear it.

THE STANDARD FRAMEWORK

To save you effort in typing, all programs except the TINY series use a "standard framework" that starts at line 60000. In the program ROADHOG, the standard framework is shown with a gray background on page 11. (There are two exceptions: the BETS program has an added line at 60025, and GODZILLA has an added line at 62035.) The standard framework puts the title on the screen, handles the joystick control, provides a keyboard-handling routine, and sets several variables that are used by most programs.

You can save a lot of typing by carefully entering the standard framework by itself and saving it on cassette or diskette. Whenever you are ready to type in a new program, first load the standard framework. If you do this, you'll be able to stop typing when you reach line 60000, since the standard portion of the program will already be there. (Don't forget that BETS and GODZILLA need an extra line, though!)

You can terminate the execution of any program by typing a Q.

COMMON MISTAKES TO AVOID

There are several mistakes that you can avoid if you know about them in advance. It is easy to mistake certain letters and numbers that are similar. The letter "I" and the number "1" are often confused, as are the letter "O" and the number "0" (zero).

Remember that underlined capital letters inside the braces use the COMMODORE key, while those that are not underlined use the SHIFT key. Don't forget that blank spaces inside the braces are there purely for smooth reading. When you are required to type a space, it will be a caret ("^ ") outside of the braces or the word "space" inside the braces.

When cursor control keys are involved, make sure that you type the correct ones. If you accidentally enter a cursor-right where the program listing shows {left}, you'll find that the program won't work correctly! And when there are many cursor movement keys or spaces together, be sure that you type the correct number of keys. One too many or one too few characters in a string can create havoc with a program.

When you enter DATA lines, be especially careful. DATA statements are often long sequences of numbers or letters that are fairly easy to type incorrectly.

OBTAINING PROGRAMS ON DISKETTE

All programs are available on diskette (although you will need this book for instructions and the program listings). For more information, you should write to:

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