IBM PC
Public Domain Software

Volume I

by Gary Phillips
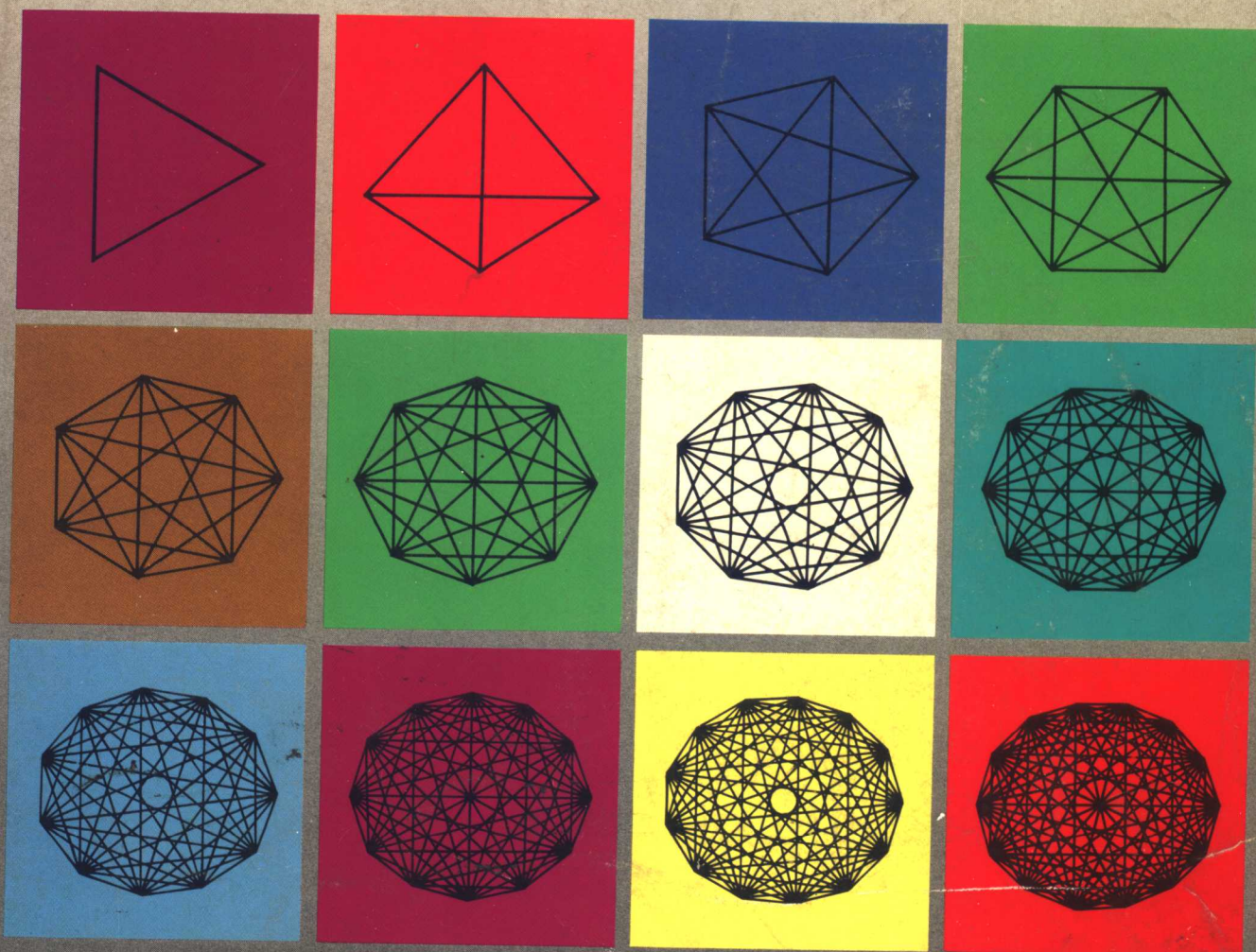
IBM PC

PUBLIC

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SOFTWARE

VOLUME 1

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ASHTON·TATE.

ACKNOWLEDGEMENTS

TRADEMARK NOTICE

CHAPTER ONE

WHAT IS PUBLIC DOMAIN SOFTWARE?

Public domain software consists of all programs which have been intentionally released by an author to the public without copyright notice. These programs may be copied and used without restriction—they are literally free. In addition to programs, public domain software includes such items as templates for spreadsheets, short fixes to IBM® or commercial software, and other useful non-program material.[1]

Hundreds of programs for the IBM personal computer now exist in the public domain. Most of these will run on the PCjr™, the PC™, and the PC XT™. Many of these programs are very useful, and are available only in the public domain. Others are less powerful than commercially available programs, but are attractive because they are free. And still others are just good, clean (and cheap) fun.

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[1]Many personal computer owners use the term "public domain" to include an additional category—software which is copyrighted, but released without charge. To be very precise, these would be called "copyrighted programs offered without charge." Some of these programs are distributed without charge, but a contribution is requested from users who find the program of value (the "user-supported" concept). This book is focused on programs which are truly in the public domain—no copyright notice is present, and in many cases, the author is unknown. But in the review section, we will include a few copyrighted programs which are being distributed by IBM PC users' groups as "public domain." These programs are not legally in the public domain and may contain restrictive "licenses" or requests for "donations." We have reviewed these programs only where they are of outstanding quality and no comparable truly public domain programs are available.

CHAPTER ONE

This book provides an overview of public domain software (Chapter One), describes its legal status (Chapter Two), explains how to get it (Chapter Three), and includes a framework for evaluating and selecting programs (Chapter Four). The remainder of the book reviews, evaluates, and compares hundreds of public domain programs currently available for the IBM PC. These programs have been grouped according to type (games, business programs, educational programs, graphics programs, and so on) and compared according to specific criteria. Directions and hints for using many of the programs are included, as well as notes on problems we have encountered in using some of the programs. Appendix D provides pointers on how to eliminate or circumvent problems you might encounter with public domain programs and offers some background information concerning file extensions, the BASIC compiler, and other topics. The appendices also contain listings of sources of public domain software, user groups, and bulletin boards.

What is the Significance of Public Domain Software?

You can pay $50 for a program to handle your mailing list, or you can get one free from the public domain through a local computer club. There are dozens of professional consultants who will gladly design a bookkeeping system for you, and you will pay dearly for it. Alternatively, you can use a system that someone halfway across the continent designed—a system that's available to you without charge as public domain software. Whether you want a new game, a business application program, a household money management system, or even a programming language, there's a fair chance that a free public domain program exists to fill your needs. Often, the program you want may be available only in the public domain, or the public domain version may be superior to anything available commercially.

A network of home computer users has grown in this country over the last decade. Meeting in homes and clubrooms from Boston to Los Angeles, these hobbyists share successes and failures and help one another with problems they encounter in learning a new technology. When one person comes up with a problem, someone else is usually there to suggest a solution. As this self-help network has grown, people have begun to share not only their experience and their information, but also computer programs they have written for their personal use.

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Thus, user groups have produced a vast library of public domain software. These programs have been written in many languages for many different computers, and since the introduction of IBM's PC family of computers, the public domain program library for the PC has grown explosively.

You can become a part of this network by joining a user group or making a phone call with your computer and modem. Many user groups allow you to come to their meetings and copy public domain computer programs on your own tapes or disks ("disks" refers to both floppy diskettes and hard disks throughout this book). Others will make tapes or disks available at meetings or through the mail for a small copying charge. Still others maintain electronic bulletin board systems (BBS) from which you can call up and load a computer program without ever leaving your home. In addition, there are large computer timesharing services, such as The Source™ and Compuserve™, that maintain libraries of public domain software. These services are often financed, at least in part, by computer manufacturers. Some commercial operations will even make copies of public domain programs for a small charge and send them to you in the mail. Phone numbers for bulletin boards and addresses for clubs and other vendors of public domain software are listed in the appendices of this book, and Chapter Three provides details on how to obtain public domain programs.

As has been mentioned, some public domain programs are equal to or superior to anything available commercially. Others would never be economically feasible to market. Some are of such specialized interest that you have to either get them through the public domain, write them yourself, pay a consultant to prepare them for you, or do without.

Other public domain programs have become standards in the industry. An example is the computer program that, along with a piece of electronic equipment called a modem, allows you to use your PC with a telephone. In the late 1970s, a computer hobbyist named Ward Christensen wrote a modem control program called simply *MODEM*. Over the last few years, *MODEM* has evolved and been continually updated and improved. The current version, *MODEM7*, sets the standard for telecommunications—so much so that many commercial programs advertise themselves as being compatible with the Ward Christensen protocols. The *MODEM7* program has been configured to run on dozens of different makes of computers, thousands of copies are in use, and

MODEM7 is available free of charge through the public domain.

Computer hobbyists share not only complex, multipurpose programs like *MODEM7*, but also simpler programs useful to a limited audience. It is not uncommon to find programs in the public domain which allow you to set up your printer to customize its output. There are templates (the grid pattern that appears on the screen) for financial programs similar to *VisiCalc*® with which to compute home loan payments or balance checking accounts. Some programs are "fixes," designed to clear up problems with a commercial program that doesn't run quite the way it is advertised to run. There are also programs of amazing ambition—computer programming languages, disk operating systems, and integrated packages of programs for database management.

Although there are many commercial software packages that have no equivalent in the public domain, you can often find an early version of a popular commercial program offered by a user group bulletin board system. Sometimes an author will release a program to the public domain to get feedback from a cross-section of potential buyers on what changes or improvements could be made to the program before it is released for sale. If you're willing to accept the program without the bells and whistles and fancy options, you may be able to save hundreds of dollars on software purchases. And in some cases you'll be surprised to discover that your free program serves you better than the expensive retail package purchased by a friend.

If you ask a new computer owner why he uses public domain software, he'll probably answer, "because it's free." If you check back with that same user six months later, you may find he has written one or two "small programs" for his user group, or "uploaded" them to a BBS. This is one of the reasons for the success of user groups: people who start out wanting only to use the network often end up making important contributions to it themselves.

One woman, the mother of two small children, became a celebrity of sorts within her user group on Compuserve. She'd only had her home computer for a few months when she found herself answering the questions other people were asking. Soon she got tired of answering the same questions over and over, so she started writing small but useful programs to solve other people's problems. She writes programs for new computer owners—the kind of programs they never anticipated needing when they bought their computers.

Other software authors are estab-

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lished computer professionals who have their careers well-in-hand and have no interest in selling programs. Many of these professionals work on large, mainframe systems and tinker around with their home computers. Others are professional writers, doctors, or insurance salesmen. What all these software authors have in common is an interest in and knowledge of small computers, and a willingness to share.

CHAPTER TWO

PUBLIC DOMAIN
AND
COPYRIGHTED SOFTWARE

The easiest way to explain the legal status[1] of public domain software is to compare and contrast it with commercial software. Most commercial programs, like most books and magazines, are copyrighted. If you obtain a word processing program like *WordStar*® or a financial planning package like *VisiCalc*, you will find a copyright notice on your manual and another on the disk or cassette label. When you run the program, the first thing you will see on your screen will probably be a copyright notice.

The company that produces a commercial software package plans to make money by licensing copies of the program to you and other users. By putting a copyright notice on the program, the company establishes legal notice that it owns the program and that no one may make or distribute copies without the company's permission.

Fortunately, not everyone who

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[1]Since software law is quickly developing and will be modified by future court decisions and legislations, and since the legal aspects of a particular situation will vary with the specific facts involved (and perhaps also with matters of contracts and state law), you should obtain experienced professional advice in answering any of your legal questions. Attorneys with experience in "software law" may be located through bar association referral services; the Computer Law Association in Springfield, Virginia; computer industry trade associations; or by referral from other companies or individuals who have already located lawyers with a concentrated practice in this area.

writes programs does so for money. Public domain software is simply computer programs for which no one claims a copyright. When software is not copyrighted, anyone is free to make copies of a program for his or her own use—or even to sell. A public domain computer program is thus like a book in the public domain. Just as no one owns the rights to the Bible or to Shakespeare's plays, no one owns the right to public domain software.

What is Copyright?

Today, anyone who writes a computer program can copyright it. This was not the situation thirty years ago when computer programming was almost unknown, or even ten years ago when programming for microcomputers first began.

When computers first came on the scene, it was not at all clear to lawmakers that programs needed legal protection or that computer software should have the same legal status as poetry or prose. Many people thought that computer programs seemed more like parts of a machine than books, and that programs should more properly be patented than copyrighted. But the history of copyright law shows Congress extending the copyright to cover ever more diverse writings—from books, maps, and charts, to engravings, musical compositions, photographs, motion pictures, sound recordings, and finally computer programs.

The Constitution gives Congress the power "To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." By passing a copyright law, Congress turned books into property.

The first copyright law, passed in 1790 along with the patent law for inventions, created a limited property right in what is now called "intellectual property." There is good reason for this protection. If a writer were to find soon after publishing a novel that copies were being printed and sold in competition with his own publication, he would have little incentive to write. It is far cheaper to reproduce a written work than to produce it in the first place. Someone who comes along afterwards and reprints another's writing pays only for ink and paper, not for the writer's time or ideas.

The copyright law gives an author the "Exclusive Rights" to commercially exploit his creation, so that, free from competition, he can recover his expenses and make a reasonable profit as an incentive to produce more. He has the

exclusive right to reproduce, distribute, and adapt the work he has produced. He can sell this right or any part of it, give it away, or pass it along in his will. The copyright, however, has a time limit attached. When the time limit set by law has passed, the author's rights expire, and the work becomes available for anyone to use—it enters the public domain.

Copyrights for Computer Programs

The Founding Fathers were certainly not thinking of computer programs when they established the rights of authors. In fact, computer programs were not explicitly recognized as eligible for copyright until 1980. Before that time, the Copyright Act of 1909, which embraced "all the writings of an author," gave some protection; and by 1964 the administration of copyright registration system in Washington was expanded by the Copyright Office to encompass computer programs as "literary works."

When computers first appeared after World War II, it was by no means clear that computer programs were entitled to or needed copyright protection. The first computers were behemoths— large as houses, built of unreliable vacuum tubes, prone to break down several times an hour, and expensive. Huge air conditioners were needed to keep them running. They were so expensive to build and maintain that only the government, a few large universities, and some giant corporations owned them. Programs grew out of arrangements of plug boards that looked like old-fashioned telephone operator's boards. It was almost as much trouble to reproduce a computer program as it was to produce it in the first place—and there was no market anyway. For the early years of the computer industry, computer programs were produced by the manufacturers of the machines and designed to run only on that company's machine, sometimes only on a particular model or even a single machine. Since there was no incentive for an outsider to copy a computer program, there was no need for protection.

Today, with millions of computers in use and single game programs selling as many as 100,000 copies, software publishing has become like book or music publishing. In fact, the history of computer development mirrors, in telescopic form, the history of sound recordings. In 1831, copyright law recognized the need to protect musical compositions, but this law referred to sheet music. Some protection was given by patent laws to music boxes, or the me-

chanical means of reproducing this music. In 1908, however, the Supreme Court denied protection to piano rolls. The form of the writing on a piano roll was not readily perceptible to the human eye, the argument went, and therefore the piano roll was not a copy of the music it produced on the player piano. If it wasn't a copy, then it couldn't be copyrighted. This ruling remained in force through the passage of the Copyright Act of 1909 and on into the 1960s. While the means of reproduction remained tedious and expensive, as with music boxes, piano rolls, and even early phonograph records, this ruling did not produce a major hardship for writers.

The arrival of inexpensive sound reproduction technology changed the picture, however. With pressed plastic phonograph records and magnetic recording tape, it became so inexpensive to reproduce musical works that pirated copies of popular music became commonplace. To protect the owners or originators of this music, Congress acted in 1972 to add sound recordings to the "writings" covered by copyright law.

Computer programs stored on floppy disks are no more perceptible to the human eye than are the notes of a Beethoven symphony stored on a phonograph record. The copyright for sound recordings was an important precedent for the copyright of computer programs. The bulky, awkward computers of the late 1940s were the piano rolls of data processing, and technological change transformed data processing just as it had sound recording. Vacuum tubes gave way to transistors, printed circuit boards, and integrated circuits. The circuitry that once would have filled a three-bedroom house now balances on the ball of your thumb, and with each technological advance, computers became smaller, cheaper, more reliable, and easier to maintain. (Ralph Gommery of IBM once commented that if the auto industry had progressed at the same rate as the computer industry, we would now be able to buy a self-steering car for twenty dollars that could go as fast as 400 miles an hour and travel the length of California on one gallon of gas.)

At the same time computer hardware was evolving, the methods of storing computer programs evolved. Awkward plug boards were replaced with punched cards and paper tape, then magnetic tapes and floppy disks, and now integrated circuit chips. With the arrival of the microcomputer in the homes of millions and the ability to mass-market software on tape cassettes, floppy disks, and cartridges, computer programs are now "published" in every sense of the word.

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Since its beginning in 1790, the copyright law has undergone a major overhaul approximately every forty years. By this schedule, Congress was already a little late in the early 1960s when it began debate on revision of the 1909 law. It took twenty-one years—until 1976—to come to a decision, and all through those years technological change made yesterday's debate obsolete before today's was over. Any new law had to cope with juke boxes, tape recorders, cable television, satellite communication, videotape recorders, photocopy machines, electronic databases, and computers.

Though the need for a new law was great, Congress was unable to reach a decision because so few of its members knew anything about this new technology. As a compromise, Congress created a National Commission on New Technological Uses of Copyrighted Works (CONTU) to study the situation, and passed a law that for all practical purposes deferred the issue surrounding computer programs and the use of copyrighted works in computers. Section 117 of the new law gave the owner of a copyright the same rights with respect to computers and information retrieval systems as those in effect on the day before the law took effect. What this boiled down to was that Congress didn't know what rights anyone had or should have with respect to computers, but whatever they were, there would be no change.

The Register of Copyrights announced in 1964 that computer programs could be registered for copyright under the so-called Rule of Doubt. There were three qualifications: the programs had to be sufficiently original, they had to have been published, and the copies registered had to be in human-readable form. The Copyright Office accepted computer programs for copyright but acknowledged two reasons why they might not actually be eligible. First of all, they might not satisfy the Constitutional concept of "writings of an author," and second, the machine language versions might not be "copies" in the legal sense.

The issues of doubt would have to be resolved by the courts, the Register declared, but meanwhile computer programs would be registered. Between the time that the first programs were accepted and the end of 1976, only 1,205 programs were registered, and, of these, 971 were from IBM and Burroughs. The copyright status of computer programs stayed in limbo through the passage of the Act of 1976 until 1980, when Congress accepted the recommendations of CONTU and officially extended copyright protection to computer programs.

CHAPTER TWO

The 1980 Copyright Law

In 1980 Congress added a definition of a computer program to the copyright law: a computer program is "a set of statements or instructions used directly or indirectly in a computer in order to bring about a certain result." The wording of the definition of a computer program was carefully chosen by CONTU to insure that programs in any form be protected. When a computer programmer originally creates a program, the words and instructions he or she puts down on paper are called source code. This set of instructions might be in any computer language: BASIC, Pascal, COBOL, FORTRAN, or Assembly. The source code statements—the words and instructions that the programmer actually wrote—are protected in the Act of 1976. But the source code does not actually do the work.

When source code is entered into the computer with a keyboard and converted into instructions that the computer can execute directly, it becomes Machine language or object code. As such, it bears no simple relationship to any human language. It seems the farthest thing from a literary work. Since it is no longer directly perceptible to the human

eye, under the 1908 piano roll rule, it would not be protected by copyright. Yet the CONTU definition, by protecting instructions which can be used either "directly or indirectly," apparently includes both source and object code.

Consider as an illustration that when the Franklin Ace 1000™ computer appeared on the market, the manufacturer claimed that it would run any software written for the Apple II®. The Apple Corporation sued, claiming copyright infringement, and Franklin admitted in court that it had copied fourteen programs directly from the Apple operating system. Franklin argued that the operating system programs were not eligible for copyright because they were recorded in an integrated circuit and were thus part of the machine. The Third Circuit Court of Appeals held otherwise, saying that the computer programs themselves were protected by the copyright in whatever manner they might be stored.

This ruling, unless it is overturned by the Supreme Court, makes it clear that all forms of a program are protected—source code as written out by the programmer, all copies of the program whether on disks, tapes, punched cards, integrated circuit chips, and perhaps other forms of storage not yet invented. The court ruled that the focus on the "physical characteristics" of the storage medi-

um was a mistake. "The medium is not the message," it said.

Thus, computer programs are protected from the moment they are "fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device" (17 *USC* section 102a). This wording avoids the arbitrary distinction between works perceptible to the human eye and works that are not—the piano roll criterion.

Granting protection by legislation to a work from the moment it is written breaks sharply with the practice under the 1909 statute of not protecting a work until it was published. (Despite the inadequacies of the legislation, authors, composers, and artists had some measure of proprietary rights under the states' judge-made "common law" copyright.) The old law also required that a work be published with the copyright notice prominently displayed. If a work was published without the notice, all rights could be lost forever. The new law is much more lenient. If a "relatively small number" of copies of a program are published without the notice, copyright is not lost. Even if the entire run of a program is published without a copyright notice, the author still has a five-

year grace period within which to register the copyright and make a "reasonable effort" to add the notice to any copies already distributed to the public. Just what constitutes a "relatively small number" or a "reasonable effort" is left to the courts to decide.

Copyright Does Not Cover Concept

The copyright law is designed to protect the expression of an idea, not the idea itself. For example, take the case of the revolutionary computer program *VisiCalc*, the first electronic spreadsheet program, introduced and copyrighted by the VisiCorp company in the late 1970s.

Accountants work with large sheets of paper covered with rows and columns of figures. To look at the effects of changing one figure—the rate of interest on a loan, for example—he or she might have to erase and recalculate fifty other figures on a large paper worksheet.

VisiCalc made the whole process automatic. It created an accountant's worksheet in the memory bank of a computer, and used the calculating power of the computer to post totals automatically and perform calculations across the page. *VisiCalc* was an instant hit.

VisiCorp has acquired the exclusive rights to market copies of *VisiCalc*; thus