

# THE BASIC ADAM<sup>®</sup>

## A SELF-TEACHING GUIDE

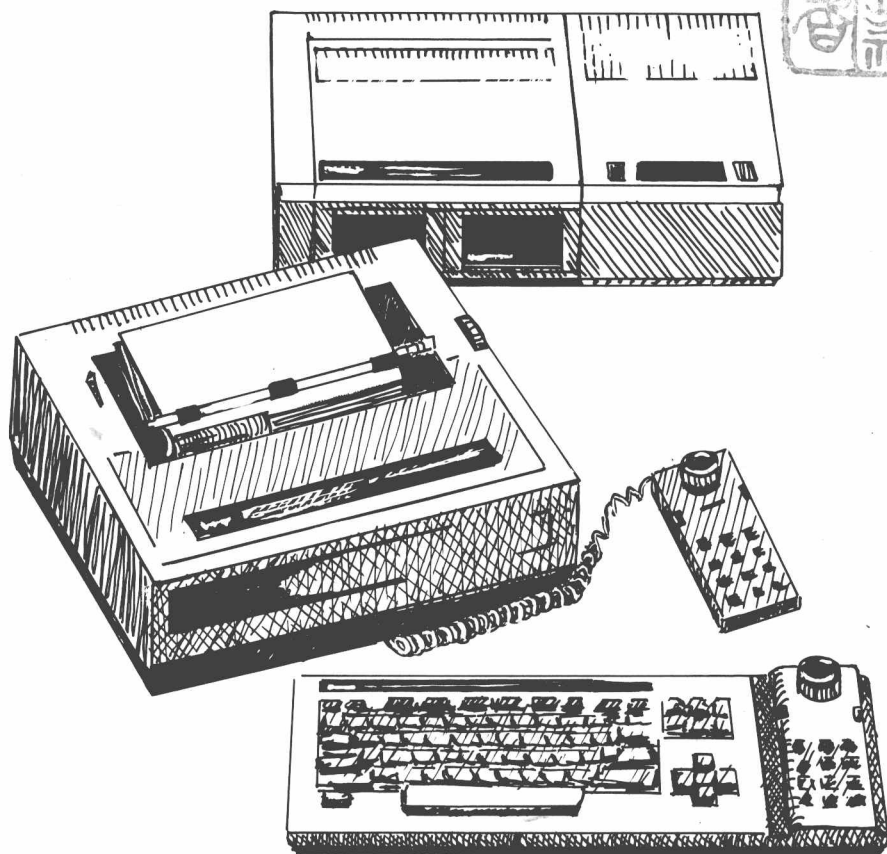


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# The Basic ADAM




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# Preface

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The ADAM Home Computer System's built-in features include an electronic typewriter, a word-processing system and even two different ways to play video games. First and foremost ADAM is a powerful computing system. ADAM also comes with a computer language called SmartBASIC. In order to master ADAM rather than just use some of its features, you have to gain control of ADAM's computer. By programming in SmartBASIC, you can do just that. The programs you can create will tell ADAM what to do.

The purpose of this book is to show you how to program in SmartBASIC. No background is needed to use the book - except a little familiarity with a typewriter keyboard. Patience is needed though, both because nothing worthwhile can be learned quickly and it's easy to get frustrated when a little typo makes your program go wild.

Since algebra or other kind of mathematics is needed to become a good programmer, we don't spend much time on using ADAM to solve math or scientific problems. We concentrate more on how to use ADAM to help in real-life situations and problems and, also, to have a good time by drawing and playing games.

To learn programming, you have to sit down at the keyboard and work through the book. There are lots of questions which will help you check yourself as well as programs that might be fun to write. The questions let you see if you have mastered the material and the programs may give you ideas for your own programs. We don't think it's a good idea to skip around in this book. Many of the techniques that we show you in one chapter are used in later chapters.

Once you have learned to program in one language on one computer, it's

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not hard to shift to a different computer or a different language. Good programming habits will make this shift even easier. We've tried very hard to explain "how to program" rather than just give you a cookbook of commands. We hope this book will help you develop good programming habits.

We've seen people who were deathly afraid of programming become quite expert in only three months. Teenagers and even younger children usually learn programming faster and with less heart-ache than either college students or adults. This may be because children are rarely afraid of computers and possibly because adults often have too high expectations. In any case computer programming is a universal leveller. The world will soon consist of two types of people: people who know programming and people who both don't know it and are afraid of it.

We were among the first to see the ADAM demonstrated in public. We went to that demonstration as skeptics - partially because of all the hype and partially because we were used to multi-million dollar mainframe computers and personal computers costing many thousands of dollars. We came away from the demonstration converted and decided to write this book. It took a few weeks to get machines but our experiences with them at home has done little to change our initial response. Our two ADAMs have been in use almost continuously since then - and when they weren't, they were often in pieces so that we could see what makes them "tick." All the programs in this book were developed and tested on our ADAMs. Moreover, we have also assisted in testing some of the future additions to the ADAM system at Coleco's Advanced Research and Development Center. The tricks we learned there, as well as some we developed ourselves, are passed along in this book.

Many of the programs included in the book are quite useful, but will take some time to type into ADAM and remove the typos. In order to make these programs readily available, they have been collected on a data pack. This data pack is available from the authors. For current pricing and further information, write to BG Associates, P.O. Box 513, Storrs, CT 06268.

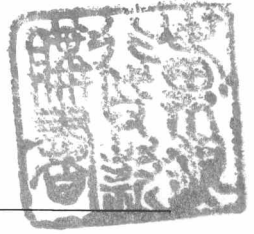
Rare is the book now written that is solely the work of its authors. Many people helped us, encouraged us and, at times, browbeat us. To all of them we owe our thanks; without them the book probably would either never have been completed or look and read quite as well as it does. Special thanks go to our editors Debbie Epstein, Suzana Lisanti, Theron Shreve and David Sobel, to Charles and Kim Nemecek who helped us in checking the programs, and, most of all, to Chris who helped us, taught us and put up with us for lo these many months.

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# **The Basic ADAM**

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# Getting into ADAM

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You can't learn to use ADAM just by reading books (even ours). You have to actually work with the machine. In computerese, the funny language spoken by computer people, this is called *hands-on experience*. So let's begin by taking a look at the system you'll be using.

The ADAM computer system, introduced in 1983 by Coleco Industries, Inc., is an incredible machine. It is more powerful than the Apple IIe, which costs more than twice as much, and includes a printer, word processor, and video game facilities at no extra cost.

If you look carefully you can see that Coleco has many plans for this machine. There is space for additional equipment that will allow ADAM to do even more. Later on in this chapter, we'll tell you some of what is expected in the way of future developments. First, though, it is worth seeing what ADAM is like as it comes out of the box. We'll begin with a few tips on how to unpack it. These hints apply only to the full ADAM system; not to the modification kit which turns the ColecoVision Video Game System into an ADAM.

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The first problem you face is getting the inner box out of the carton. The top of the inner box, the one with the colorful design, is glued to the bottom of the outer carton. The two can be separated by hand or with a butter knife. If you use a sharp knife, be careful to only separate the boxes and not cut into the boxes. If you jab into the box you might cut some of the wires for ADAM, though this isn't likely. Take the pieces out one by one, starting from the top, and place them carefully on the floor or on a large table. Once all the pieces are laid out, open the instruction packet and look through the setup manual. On pages 8 and 9 of the manual, Coleco lists all the parts that it supplies. Check that everything is included in your package.

Except for playing video games, we found it uncomfortable to have the keyboard on the floor. We were most comfortable with the keyboard on a table or desk. Keep experimenting until you find what's comfortable for you. Try putting the television on the same table or, if the set is too large, try it with the table in front of the set. ADAM's letter quality printer is fairly loud. To cut the noise a little, you can place the printer on the rug on the floor. A rubber mat might also help. Actually, one of the nicest features of any good word processing typewriter is that you don't have to be in the room while it prints, but it's best to try to cut down on the noise anyway.

Before plugging in and turning on ADAM, you might want to glance at the following description. We'll also mention some precautions worth taking as well as give some hints that will make ADAM easier and more comfortable to use.

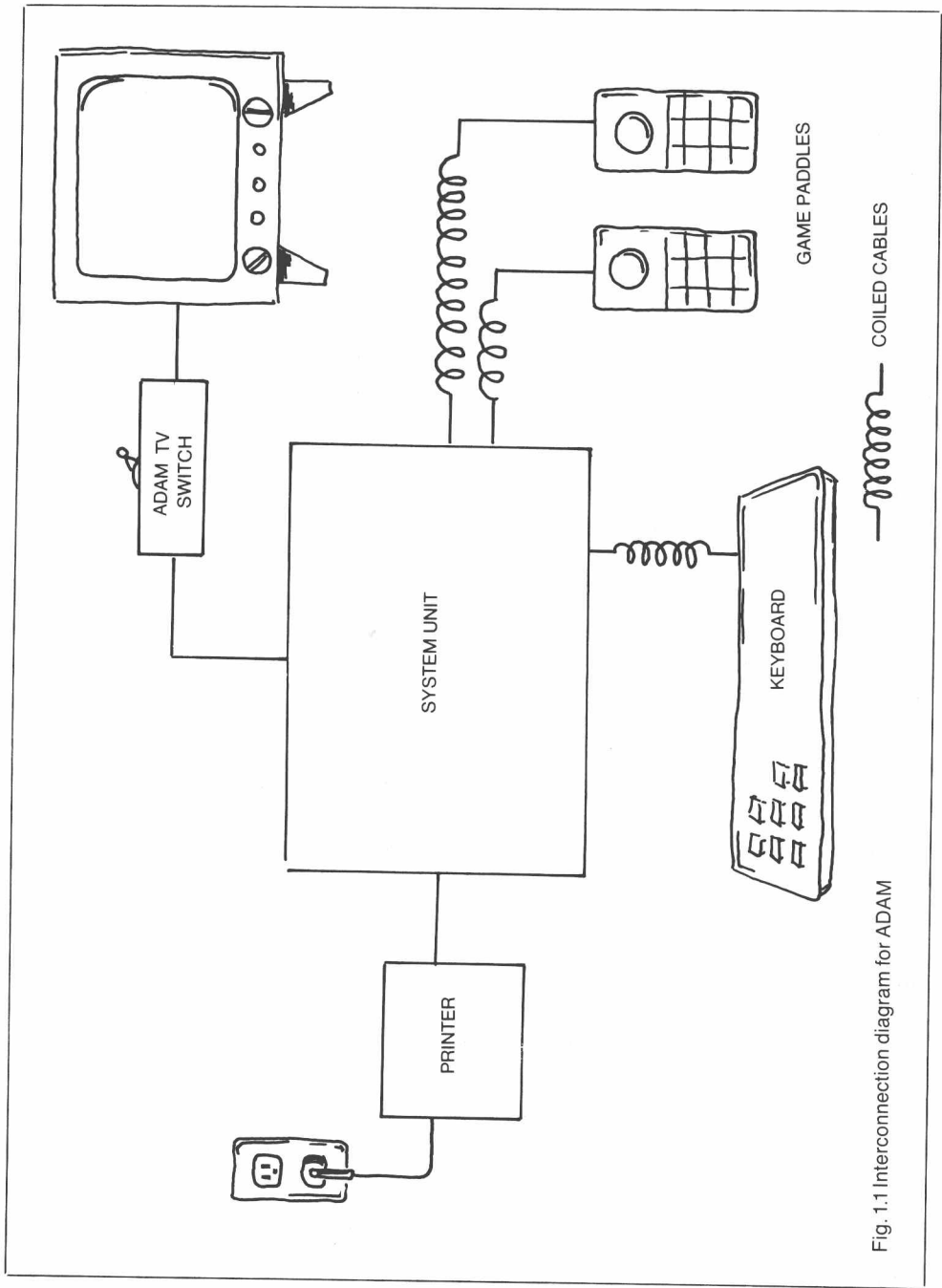
## The Components of ADAM

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The ADAM computer system consists of three main pieces of equipment (the printer, the keyboard, and the system unit), two game paddles, and some connecting wires. Three cassettes, a switch, a plug adapter, and instructions also come with the system. One major part of the system is not included; that's your television set. The components are connected by wires—in most cases, many wires bound together as a cable—as shown in Figure 1.1.

The whole system, except the television, receives its power through the printer. The printer contains a power supply which converts the electricity

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from the wall plug (110 volts) to the kind needed by the ADAM system. Let's start with the printer.

### The Printer

The two relatively new types of printers used now are *dot matrix* printers and *daisy wheel* printers. Dot matrix printers are much faster, but, except for very expensive ones, the print quality is never as good as with daisy wheels or even an old fashioned manual typewriter.

The printer on the ADAM is a daisy wheel printer. Not too long ago, all typewriters had long hammers. When you pressed down on a key, the hammer for the letter you hit moved up to strike an inked ribbon. You usually had to press hard on the keys to get nicely printed letters. Later typewriters, like the IBM Selectric, use little "golf balls" with letters on them. When you press a key, the ball moves around until the letter you pressed is lined up with the ribbon. Then the ball slams into the ribbon and writes the letter on the page. Golf ball typewriters are fairly slow and have too many moving parts. Moving parts break much more often than electronic parts.

To see the differences between the way each of these print, look at your utility bill. This was probably printed on a dot matrix printer. What comes out of ADAM's daisy wheel printer is much more pleasing to the eye. ADAM's daisy wheel printer works much like any daisy wheel printer. It is a simpler version of the golf ball idea. All the symbols (letters) that you want to print lie at the end of little spokes attached to a wheel. (This is the reason it is called a daisy wheel printer—the spokes look like petals on a flower.) When you hit a key, three things happen. Say you hit the key for A. First, the wheel spins around until the letter A is on top of the wheel. Second, a hammer pushes this petal into the ribbon and the A appears on the paper. But the printer is not done yet. Finally the whole assembly, containing the wheel, ribbon, and hammer, moves to the right exactly one space. Now the printer is ready to print the next letter. This is exactly what happens when you use ADAM as an electronic typewriter. You can see the hammer actually striking the petal.

There are several other ways to have ADAM's printer print. We'll see those later.

One of the biggest advantages of ADAM's printer is that it is easy to change the daisy wheels. This is explained completely in the setup manual that comes with ADAM. Be careful when changing wheels that the new wheel being installed does not get caught under the clear plastic paper

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guide that curves around the paper roller. This roller is called a *platen*. One nice feature of the ADAM printer is that many standard ninety-six-petal plastic daisy wheels may be used. There are literally dozens of different daisy wheels that will work in the ADAM: for example, some plastic Diablo wheels fit in the ADAM. Make sure that the wheel you purchase is a 10-point size. (Ten point refers to a certain size letter.) You can type in Greek, French, Scandinavian, Hebrew, or Japanese if you can find the right wheel—and these wheels can be found with just a little effort. Other types of wheels give you scientific symbols and many different styles of print, called *fonts*.

You can write or call Coleco to see whether they have a particular wheel you want. Another good place to look for these daisy wheels is a large office supply store or mail order office supply house specializing in computer oriented supplies. The cost isn't much; most daisy wheels can be bought for less than ten dollars. For the first year or so that ADAM is available, the catalogs may not list which wheels fit on your printer. For this reason, it might be a good idea to take the wheel from the printer with you to a store to match up the size, the small rectangular notch, and the position of the characters on the petal.

REMEMBER THAT ADAM'S PRINTER USES ONLY  
NINETY-SIX-CHARACTER PLASTIC DAISY WHEELS.

There are several different types of paper which can be used in the ADAM printer. Individual sheets of paper are fine for typing a short letter. To print anything longer using the word processor, you can use the Smart Keys to make ADAM stop after printing each page. This lets you insert another sheet of paper and then you can have ADAM continue printing. We prefer to use a type of paper called *fanfold* paper. This is a very long piece of paper that is folded into standard size sheets. It comes apart easily at the folds, forming regular size sheets of paper.

Most fanfold paper has little holes on thin throwaway bands along the sides of the page. The holes fit into special wheels—called *tractor feeds*—which keep the paper from sliding around in the printer. Coleco says that it will sell an inexpensive tractor feed for the printer. (You can decide for yourself whether the announced price of \$125 is inexpensive.) Using a tractor feed with fanfold paper is a good idea. Otherwise you can use fanfold paper without the tractor feed bands—just tear them off.

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Fanfold paper is available from office supply stores, your local Radio Shack store, and computer stores.

When you insert paper into the Smartwriter printer, it often gets caught under the clear plastic paper guide. If you continue turning the platen, the paper will get crumpled. The problem is easy to solve. Place an index card (or a *thin* piece of cardboard) between the paper guide and the platen. As you turn the platen, make certain that the paper stays on the platen side of the index card. (Some of the Coleco engineers refer to an index card used this way as a *shoehorn*.)

### The Keyboard

Whether you are doing word processing or computing, the keyboard is the usual place from which to send information to ADAM. The ADAM keyboard is just like a standard typewriter keyboard with a few extra keys. The keyboard is exceptionally good for a nonprofessional machine. If you spend a lot of time at the keyboard it's important that it have a good "feel." We think the ADAM keyboard does.

The layout of the main typewriter keys is the traditional QWERTY pattern, shown in Figure 1.2.

The name QWERTY may seem ridiculous, but those are the letters on the keys above your left hand. The QWERTY (pronounced kwerty) layout is about a hundred years old and almost everyone who uses a typewriter is comfortable with it.

There are a few extra characters on the ADAM keyboard like ^, ~, \, !. The remaining keys are also different from typewriter keys.

When you first turn on the ADAM, it works like an ordinary electric typewriter. If you press the key marked WP, you turn ADAM into a word processor (we'll describe the word processor later on in this chapter). With two exceptions, all the remaining keys do special jobs when ADAM is a word processor. When ADAM is used as a video game, all of the action is controlled by the game paddles and the keyboard is not used. When ADAM is used as a computer, the key marked CONTROL is the only special key that you usually need. And then there is the mystery key called WILD CARD. It doesn't do anything right now but we think that Coleco placed it on the keyboard for two reasons. First, there is room for another key there. The second reason is not so clear. The engineers who design a computer don't always know the uses for the machine that will develop. So they leave room for extra things. The wild card may be for one of these new things. It's possible that Coleco has a use in mind for the key but doesn't want to say what it is yet. We'll have to wait to find out.

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