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# TRADESTATION<sup>®</sup> MADE EASY!

USING EASYLANGUAGE<sup>®</sup> TO  
BUILD PROFITS WITH THE  
WORLD'S MOST POPULAR  
TRADING SOFTWARE

**SUNNY J. HARRIS**

FOREWORD BY **BILL CRUZ**  
FOUNDER AND FORMER CEO OF TRADESTATION



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# **TradeStation<sup>TM</sup> Made Easy!**

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# TradeStation<sup>TM</sup> Made Easy!

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*Using EasyLanguage<sup>TM</sup> to Build Profits  
with the World's Most Popular  
Trading Software*

**SUNNY J. HARRIS**



WILEY

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ISBN 978-0-471-35353-9; ISBN 978-1-118-06315-6 (ebk);  
ISBN 978-1-118-06316-3 (ebk); ISBN 978-1-118-06317-0 (ebk)

Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

*I've been working on this book since 1996; that's 12 years now. Wow! When I first began, my daughter was pregnant with my second grandson, whose name is Sterling Kodiak Yates, now 10. This book is dedicated to Sterling and to my back-ordered grandchildren (hopefully from my son's new wife, Laurel).*

*The human mind, once stretched to include a single new idea, does not shrink back to its original proportions.*

—Oliver Wendell Holmes

*Until one is committed, there is hesitancy.*

—W. H. Murray

*We must never assume that which is incapable of proof.*

—G. H. Lewes

*Be sure of it; give me the ocular proof.*

—Shakespeare

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# Foreword

One of the early users of TradeStation software, Sunny Harris has been studying and programming trading strategies for more than 30 years.

I have watched her progress as a researcher and trader over the years, from the time we were still offering the DOS version of SystemWriter and TradeStation was a fledgling company.

Sunny is one of the most studious and diligent people I know and gives generously in teaching others what she has learned through the school of hard knocks. Having a software background herself, and writing books that focus on helping beginners (*Trading 101—How to Trade Like a Pro*, *Trading 102—Getting Down to Business*, *Electronic Day Trading 101*, and *Getting Started in Trading*) have inevitably led to the writing of this book.

Successful traders have one thing in common: they approach trading by developing an objective strategy and then use it consistently.

TradeStation allows traders to design their own trading strategies, back-test them on years of historical data, and then computer-automate them. The power of EasyLanguage is what makes all of this possible. Therefore, by mastering EasyLanguage, you have the power to test any idea you can imagine.

Through the many examples, Sunny Harris walks you through in this book, you'll have a much better understanding of how to use EasyLanguage to create your own strategies. This book also provides you with an invaluable guide for trading strategy development that will contribute greatly to the understanding and improvement of your EasyLanguage skills.

Sunny's unique ability to blend her highly theoretical math degrees with her artistic and graphics talents makes her understanding of markets both logical and intuitive. She has been a friend of TradeStation for many years, always lending insight and advice, and as one of our beta testers she has helped create the best possible market analysis software there is today: TradeStation.

Analyzing the markets can be daunting—a task taken on by many but mastered by few. As an aid to all analysts, our software has to be ready manage incredibly difficult tasks and the most pedantic at the same time. Sunny's 20-plus years of self-taught market analysis combined with her 10 years of experience teaching others to trade has led her to write the most readable and invaluable of books about EasyLanguage.

Through the many examples in this book, you'll have a much better understanding of how to use EasyLanguage to create your own strategies. This book also provides you with

an invaluable guide for trading strategy development that will contribute greatly to the understanding and improvement of your EasyLanguage skills.

The time you invest in mastering EasyLanguage will be the best investment of your trading life.

If you are a TradeStation or ProSuite user, this book is a must. If you are serious about learning to trade, read Sunny's books—the truth lies within.

I wish you a very successful trading career.

Bill Cruz

*Founder and former CEO of TradeStation*

# Preface

**T**his book is one of a kind. It is perhaps the only book written by a self-taught EasyLanguage speaker (programmer) who learned and helped improve EasyLanguage before there was even a TradeStation, and who is an actual trader.

I was trading beginning in 1981, when just about the only good graphics analysis package was called MasterChartist, by Roberts-Slade. The problem was, there was no testing language with which to evaluate and back-test your trading ideas. Back then we were running DOS only; or, there was no Windows yet. Testing your strategies amounted to using a rudimentary version of Excel and pencil and paper. It was tedious at best.

Along came a program by Omega Research, called SystemWriter Plus. It was a god send! At last I could rough out my ideas and test them against mounds of historical data. However, as with everything, there was a serious drawback. It only worked on daily data, not on intraday data. I was able to receive intraday data on MasterChartist but not to test it. I could draw (with a pencil) on the charts but not strategize buy and sell opportunities. With SystemWriter Plus I could print out mounds of data analysis, but the charts were rudimentary, coming out of a dot matrix printer, and only on daily data. What to do?

As necessity is the mother of invention, I decided to divide my real-time data from MasterChartist into 15-minute increments and treat it as if it were daily data over a very long period of time. I imported the fake daily data into SystemWriter. It took me 18 months to massage the data and convert it into years and years worth of 15-minute increments. (There was no CompuTrac yet either.) In order to make sense of a chart, it is necessary to demarcate dates and times along the x-axis. This took some ingenuity, and some “gerfingering.” I created a ruler with tiny marks along each day to designate 15-minute increments and ignored the Monday, Tuesday, Wednesday markings on the chart itself. To find a time during any particular day, I had to measure and mark divisions with my specially marked ruler.

It worked. I was able to test intraday trading concepts and determine success or failure statistically, even without software that operated on an intraday basis. Finally, Microsoft invented Windows, and the software vendors followed suit with more and more sophisticated programs, soon allowing not only 15-minute increment data but any minute divisions and even tick-by-tick charts.

The most important component of this new and powerful tool was in running walk-back and walk-forward tests. Did my theory of making profits hold up last week, last month, and last year? It quickly became obvious that I could spot a theory that would work for the past

three Fridays; but when I tried it in real time, I lost money for the next three Fridays. Why did that happen?

For several years I plugged away with spreadsheet, pencil, and lots of erasers at hand, keeping copious notes of the ideas that I tried against market data to see if there was any hope of creating a mechanical system that worked.

What did “worked” mean? That in itself is a whole ‘nother problem. I realized I had two large problems: finding a system that worked and finding a set of statistics that measured success. It took me the better part of three years devoting 18 hours a day to the task to come up with a meaningful system and statistics that measured its success.

In this book I share with the reader not only what I learned through three solid and dedicated years of 18-hour research days, but what I have learned subsequently through real-time trading. I wish you the best in your efforts. But I would admonish you to read this book over and again and to spend the time doing your own research following the pattern set out herein.

And now it’s 2010—and according to author Thomas Friedman, the world is flat. We are living in a flat world devoid of boundaries of language, communications, or even time constraints. We can talk with anyone, anytime, anywhere with the help of email, Skype, GoogleTalk, and tiny onboard cameras. Our computers and software are purchased over the Internet, constructed of tiny parts made in China and Taiwan, and our customer support folks are in India. When the market crashed in September 2008, it was China that bought 49% of our debt from many of our banks. No more walls. Even our cell phones are now computers that link us with the whole world: I can take your picture and send it with text to anyone, anywhere. I can make a PowerPoint presentation, put it in pdf format, and make my product demonstration to you from my cell phone or my PDA. It’s endless and magnificent.

Without EasyLanguage, where would we all be? Someone had to do it. And, as luck, good fortune, and the wisdom to see and act on the opportunity would have it, the Cruz brothers and their sister (Ralph, Bill and Michelle) were the team to pick up the gauntlet and run with it. And now we trade 24-hour markets, all over the world, in a flash, with the push of a button on a TradeStation screen. The data is next to free, the software is included in the price of your having an account at TradeStation Securities, and the commissions are ridiculously low.

It’s a M-U-R-I-C-A-L. (Miracle.)

TradeStation almost doesn’t need a manual. It is so easy to use and so intuitive that it almost seems silly to write this book. But there is more to it than just a users’ manual. Besides getting the software up and running on your computer, you need the benefit of my years and years of experience making every mistake “in the book.” There is no need for you to repeat my errors, nor for you to hunt and peck your way to success. In this book I hope to lead you through the process of installing the program, using it for the first time or two, and writing your first several indicators and strategies. If you tried it on your own, from the TradeStation Users’ Manual, you would probably give up before you even got to the point of trading. By design, all users’ manuals are full of technical descriptions of all the program’s bells and whistles from A to Z. In that order. There’s no rhyme or reason to what the user needs to do first, second, and third: it’s just an alphabetical reference to everything in the program.

Instead of a reference manual, however, with this tome I am writing a cookbook. Step 1, do this; step 2, do that. It is a simplistic approach, but one that will get you on the road to doing it yourself much quicker and with much more confidence. Then you can go back to the reference materials with some understanding of what to look for.

One more thing before I get on with it. I have been using TradeStation since before it was called TradeStation. I have seen the versions go from 1, to 2, all the way to 8.8 and now 9.0, which is the version I am currently using. In many ways all the versions are alike, and in many ways they differ vastly. When I first started writing this book, I thought I would give instructions for the most recent three versions of TS and compare and contrast the differences. As the years went on and the book progressed, the versions kept coming and coming and coming—faster than I could write. And that is still true. As I am putting the finishing touches on the manuscript, yet another version of TS has been released, which differs in many respects from the prior version. Never fear! This book applies to them all.

One of the biggest differences between TradeStation 2000i and TradeStation 4.0 is in the way they engage systems. TradeStation 2000i made enhancements for testing a variety of entries and exits without getting back into EasyLanguage and modifying your code. This can be a great advantage, unless you are entrenched in the methods of 4.0 and are reluctant to change. On first inspection, it would seem that TradeStation has added two steps to every attempt to employ a system, and initially that is irritating. But once you realize the tremendous advantages to mixing and matching entry and exit signals, you'll get used to it and be thankful.

After version 2000i, the company again integrated EasyLanguage with the main program. With versions 8.8 and 9.0 it has once again separated the EasyLanguage Editor from the main program and made it stand-alone. In spite of all these changes, this book will apply universally to all versions before and hereafter. Don't worry if you are reading this book years after it was first released. The concepts are applicable to whatever version of TradeStation you are using.

With version 9.0 TradeStation's EasyLanguage is a complete programming language, much like VB or C++. It has tremendous strides in extensibility for programmers. We are not going to address any of that in this easy book. that will be left for the advanced book.



# Acknowledgments

Thanks to Pamela van Giessen for originally telling me I could write, and encouraging me to write my first book, *Trading 101—How to Trade Like a Pro*. I really thought that I had nothing to say.

And thanks to Bill Cruz, co-founder of TradeStation, who helped me along the way with learning EasyLanguage.

Because of all he has contributed to this industry, and to my personal learning, a great big thanks goes out to Larry Williams, who really trades for a living.

My 88-year-old, nearly blind, mother proofread this manuscript with her magnifying glass, all 733 pages of it. I'm eternally grateful for her help and her inspiration. My children and grandchildren have been patient and understanding as I sat behind my laptop while they watched TV and movies, played games, and built Lego monuments. I've been halfway participating for years during the growth of this tome. I thank them for their creativity and their love.

And most of all, I thank my partner of 21 years for her continued support and understanding and encouragement during thick and thin. She's an exceptional partner and a magnificent physician.

To those who are reading this book, I thank you also. You will grow by immeasurable bounds as you read and learn. Keep up the good work. And tell your friends.



# Author's Note

Please understand that this book is intended to be educational in nature. I am not recommending that you trade, nor am I giving trading advice. Further, I am not suggesting that any of the methods presented in this book will generate a profit or will not generate losses.

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Hypothetical or simulated performance results have certain inherent limitations. Unlike an actual performance record, simulated results do not represent actual trading. Also, since the trades may not have been executed, the results may have under- or overcompensated for the impact, if any, of certain market factors, such as lack of liquidity. Simulated trading programs in general are also subject to the fact that they are designed with the benefit of hindsight. No representation is being made that any account will or is likely to achieve profits or losses similar to those shown.

Any statements of facts herein contained are derived from sources believed to be reliable but are not guaranteed as to accuracy, nor do they purport to be complete. No responsibility is assumed with respect to any such statement, nor with respect to any expression of opinion herein contained. All trade recommendations should be discussed with your broker and made at your own risk.



# Introduction to EasyLanguage

## INTRODUCTION

---

*EasyLanguage is TradeStation's proprietary command language that lets you specify your trading ideas in plain English and test them before you trade. EasyLanguage allows you to write your own trading systems for TradeStation, OptionStation, and ProSuite without having to know complicated computer programming languages.*

*EasyLanguage is one of the most powerful and useful features of TradeStation and with some practice, you can become an expert, even if your background in computers is limited.*

That said (it's from the splash screen introduction to TradeStation software), all software comes with stumbling blocks. I have yet to open a software box and install and use the product with no problems along the way. Furthermore, TradeStation's EasyLanguage is more than just software; it's a programming language. And with the advent of the new Object-Oriented EasyLanguage with TradeStation version 9.0, it is more like C++ than any easy language. Albeit the easiest to use of the complex trading tools, it is still so full of features that it can't help but be difficult in spots. As I work with EasyLanguage I hum the old song by The Essex from 1963: "Easier Said Than Done."

The working title for the ideas presented in this book was "EasyLanguage Ain't." Neither Bill Cruz, prior co-CEO of TradeStation, nor my editor, Pamela van Giessen, liked that title. Nevertheless, the viewing public seemed to appreciate the reality of the working title. Each time I mentioned the project in a lecture I got nods of recognition from non-programming TradeStation, SuperCharts, and OptionStation users.

"EasyLanguage Ain't" was never meant to be disparaging to TradeStation, but rather a reflection of the simple truth that programming a computer, no matter how friendly the

programming language, is never easy. Becoming a good coder takes study, sometimes years of study. It is the intent of this book to walk the reader through that learning process in small and simple steps that will make the process comfortable. I have recently noticed the tendency of some of my competitors to use the paraphrase “EasyLanguage Isn’t,” and I here-with forgive them their lack of imagination.

Computer manuals aren’t meant to be read cover to cover. The TradeStation Users’ Manual is no exception. *TradeStation Made Easy!* however, is intended to be read from cover to cover, with pauses along the way to try the examples. Hopefully it will be an informative and enjoyable experience for you. After reading this book, you will be more prepared to go back and use the TradeStation manuals with ease and as reference.

In *Trading 101—How to Trade Like a Pro*, I wanted to introduce the basic concepts of trading to the general public. In *Trading 102—Getting Down to Business* my hope was to introduce the concepts of system design and testing. *TradeStation Made Easy!* is intended as a procedural guide to getting comfortable with programming TradeStation’s EasyLanguage.

At the same time I am writing this book I am also researching one more: *Grading the Gurus*. You will probably be interested in *Gurus* as well, since it is all about using TradeStation (and other popular software) to test the theories, strategies and technical analysis of some of the famous systems designers. The intent of the *Gurus* book is to discover both the advantages and downfalls of following other people’s systems. After that I want to write a book exploring all the commonly available systems and strategies from nongurus, strategies you find published in books, their benefits and pitfalls, and maybe call it “Breaking the Rules.”

We, the trading public, owe a debt of gratitude to Bill and Ralph Cruz and their crew, whose dedication to an initially narrow market has expanded that market and created tools we can all use to profitable ends. Thanks, guys; you have a great product.

During late January of 1999 I took a little trip to the Bahamas and then to Miami, where I had the pleasure of spending several days with TradeStation personnel. The purpose of my visit was to get an advance look at the impending, latest release of TradeStation, called 2000i, as part of the research for this book. For their generosity, hospitality, and help I would like to thank Loren Costantino, Gaston Sanchez, Kevin Feuerlicht, Amy Solt, Janette Perez, Bill and Ralph Cruz and the rest of the TradeStation staff. You’re the greatest!

## WHAT THIS BOOK IS NOT

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*TradeStation Made Easy* is not meant as a replacement for the TradeStation manuals. This programming guide is not meant to help you learn the mechanics of setting up TradeStation or your computer, or to help you with the trials and tribulations of getting data into your computer.

This book is also not meant to teach you systems, or to give you systems that are necessarily profitable, though we may discover some along the way. We will cover the essence of programming in EasyLanguage and stick with a consistent set of data and a consistent

elementary system throughout. We will not fill the book with a variety of working systems with which you can experiment; there are other books for that.

In particular, if you are looking for fancy EasyLanguage programming ideas I would suggest these sources:

- ▶ **Cynthia Kase**  
Kase and Company, Inc.  
PO Box 226 Cheyenne, WY 82003  
(505) 237-1600  
[www.kaseco.com](http://www.kaseco.com)
- ▶ **Joe Krutsinger**  
PO Box 4223  
Kansas City, KS 66104  
(800) 927-1035  
[www.joekrut.com](http://www.joekrut.com)
- ▶ ***Using Easy Language* by Arthur G. Putt**  
available from Ruggiero Press
- ▶ Murray Ruggiero  
**Ruggiero Press**  
18 Oregon Ave., East Haven, CT 06512  
1-203-564-1956
- ▶ ***TS Express* by Bill Brower**  
Inside Edge Systems, Inc.  
10 Fresenius Rd., Westport, CT 06880  
1-203-454-2754
- ▶ ***Ask Mr. EasyLanguage* by Sam Tennis**  
129 Staff Drive, NE  
Fort Walton Beach, FL 32548  
1-850-243-5105  
<http://www.vista-research.com>

## WHAT THIS BOOK IS

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This book is a guide to understanding the basics and beginning to use EasyLanguage. I offer this service because it fills a gap—no one else has dedicated their writings to the beginners. The more advanced tasks to becoming a TradeStation expert are between you and TradeStation, and perhaps a consultant to help you along the way. Bill Brower is an excellent resource for advanced techniques, but his efforts at teaching beginners are still too advanced for most novices.

By the end of this book you will be able to write simple and intermediate programs using EasyLanguage. Hopefully your programs will accurately reflect the theories you have, discover, or read about the markets.

By the end of this book you will have the confidence to open TradeStation's PowerEditor to a blank page and begin writing.

As I began this book, I put in examples for all the existing versions of TradeStation at that time. Now, many years later, I'm pruning it all down to the current version only. All references to ProSuite, 2000i, and earlier versions of TradeStation are being removed. If you need help with a previous version of TradeStation, give me a call and we'll talk about it.

## A CHART IS A CHART IS A CHART

*This book is not about learning to trade; it is about learning to program.* Nevertheless, throughout the book we will be reviewing and using trading concepts as examples while learning to program. In learning programming concepts, it really does not matter what our underlying data is. What we will cover in this book is how to express your theories and ideas about whatever market interests you, independent of any particular market.

A chart, is a chart, is a chart. They all go up, or down, or sideways, or all three. If you were not told what instrument (stock, bond, mutual fund, commodity) was used to produce the chart in Figure 1.1, you would not be able to guess it. No, it is not the Dow. I have not given you a reference axis for time frame (X-axis), nor is there a reference axis for price (Y-axis). In spite of that absence of information, you could tell me some things about the chart. You could tell me that the second half of the chart is less volatile than the first half. You could tell me that in the beginning, price moves downward. You could tell me that after the beginning downward move, there is a period of nearly upward movement followed by downward movement. You could not tell me that in general the bias is to the upside. You could also tell me there is a mild correction (downward movement) in the last third of the chart.

(In fact, I will give a crisp new \$20 bill to the first person who calls me and correctly identifies the chart in Figure 1.1.)



**FIGURE 1.1** An Anonymous Chart

This sort of analysis is what I call “What is?” or “What is true?” I begin every investigation by repeatedly asking myself “What is true of the chart at which I am looking?” It’s the “what is” that leads to rich brainstorming sessions and possibilities for analysis.

What you could not tell me is whether this is a chart of a commodity, stock, or mutual fund. You could not tell me if it is a chart of 1-minute, 5-minute, 60-minute, or daily data. And you could not tell me whether this price action happened in 1927, 1987, or 2010.

In fact, this is an example of what they mean when they say the markets are fractal. Each subset, or smaller time frame, looks like any other time frame. They all go up, they all go down, and they all go sideways. It’s just another way of saying “a chart is a chart is a chart.”

For the purpose of this book, the particulars of the chart do not matter; what matters is that the chart has movement and that we can describe it in programming language.

**The best way I know to make this book easy to use and comprehend is to build on a simple concept from beginning to end.** To this end, I will introduce a single set of data that we will use throughout. That data is available for you on my Web site: [www.moneymentor.com/TSME.html](http://www.moneymentor.com/TSME.html). If you’d like to receive a CD of the data, just contact my office in California at 1-760-444-4174 Skype or my cell at 1-760-908-3070. I ask only that you observe Pacific Standard Time.

We will use the same chart and the same data throughout this book. We will take different perspectives, sometimes viewing daily data, sometimes weekly, sometimes intraday, but it will all be of the same vehicle. I have always wondered why authors choose a different chart to illustrate every new concept. I’ve wondered whether the concepts are only applicable to certain subsets of charts. As I tackle this book, I guess I am about to find out.

I will also start early in this book with a simple program to analyze the data and build on that program as we progress. That way you will be learning about the structure of EasyLanguage, not struggling with a new program every few pages. You will become intimately familiar with one set of data and one small program. We will analyze this single set of data at increasing depth, and will alter and enhance our initial program until it becomes sophisticated.

After you finish this book you can easily branch off and apply your new language to very complex concepts. You will be able to understand many of the sophisticated techniques presented in *Omega* magazine, TradeStation’s manuals, *Technical Analysis of Stocks & Commodities* magazine, *Futures* magazine, *Traders’ Catalog & Resource Guide*, and the various other sources and books mentioned herein.

## FONTS, SYMBOLS, AND CONVENTIONS

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I’ve used a few symbols in the book and some typefaces to separate code from text. All programming code herein is designated by using the typeface `Ø CRA`. All computer commands are shown in the typeface **Helvetica**. An arrow (→) means to pull down the menu and choose the next command. A mouse symbol (☞) means to use the mouse to pull down or click to the command. Everything else is pretty much self-explanatory.



# Quick Start

## In This Chapter

- Introduction
- Pseudo-Steps
- Detailed Steps
- Conclusion

## INTRODUCTION

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**Y**ou just spent a small fortune on trading software, data, and computers and you can't even use it. Or you opened a hefty trading account with TradeStation just so you could use the software. You probably thought that getting TradeStation was the solution to all your trading problems, not the beginning of them. You just want to trade, not to become a programmer. Right? And now, with the new version, 9, it has been extended into a full-fledged programming language.

The first step I like to take with students is to show them how easy TradeStation really is to use. Because of the vast capabilities of the software, it can appear that the learning curve is insurmountably steep. Broken down into the elementary steps, however, you will find that using TradeStation is actually quite simple and straightforward. TradeStation really is the toolbox that lets you solve all your trading problems.

Just to show you how easy it can be, this Quick Start chapter will guide you through the steps of writing your first system, the associated indicator, and checking your profit or loss. I will not offer detailed explanation of the steps in this chapter. I just want you to have a template for success. Later, throughout the book, we will go over the details.

It's easy to get a computer to do something. It is not always easy to get it to do what you **want it to**. Computers will do exactly what you tell them, no more, no less. The challenge is always in putting your thoughts into clear, logical steps that mean the same thing to the computer that they mean to you.

## PSEUDO-STEPS

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I like to use “pseudo-code” to sketch a map for myself. Writing the pseudo-code is essentially defining your goal and making an outline. Whenever I begin a new project, no matter how large or how small, I like to have a goal and an outline of how to get there. (This especially goes for driving, since I can get lost going home from work. In fact, I have GPS and printed driving instructions from MapQuest.com when I'm going somewhere, just in case.) **Without a clearly defined goal and milestones, you won't get there!**

The pseudo-code for the process covered in this book might look something like:

1. Open TradeStation.
2. Open chart with data.
3. Open EasyLanguage PowerEditor.
4. Write indicator.
5. Put indicator on chart.
6. Write system.
7. Apply system to chart.
8. View system results.
9. If system results exceed CPC™ Index, then prepare to trade, else loop back to step 6 and continue homework.

We will go through those steps now, one at a time.

## DETAILED STEPS

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### Step 1: Open TradeStation

Opening TradeStation is as easy as 1, 2, 3, 4, 5.



1. First, double-click the **TradeStation** icon on your PC's desktop (assuming you have already installed TradeStation from CD or download). This icon will vary slightly depending on the version you are using.