HOW TO BECOME A
Top SAS® Programmer

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Chapter 1: Become a Top SAS Programmer

Introduction

Congratulations on making the decision to become a top SAS programmer! You have made a significant decision to embark on a course of action that will maximize your professional standing in the world of information technology specialists. To rise through the ranks of other programmers and become a top SAS programmer is not a simple task. It will take careful planning, as well as plenty of time and effort on your part. You have a lot of work ahead of you, but the professional, financial, and personal rewards of being a top SAS programmer will make it all worthwhile. So, let's get started!

Where you go from here depends on where you are starting from. Perhaps you are currently taking computer programming classes and do not yet have your first programming job. Maybe you have been programming in SAS for a few years and are looking for strategies and techniques that will help you to focus on and enhance your career. Or, possibly you have been programming in SAS for many years and need some ideas on how to rekindle your creative spark and revitalize your career. No matter where you are now, this book can help you.

Student Studying SAS Programming

If you are a student studying SAS programming, then you have a great career ahead of you! SAS programming professionals are employed in virtually all sectors of the U.S. economy. They can be found in large and small businesses, in pharmaceutical companies, in local and state governments, in the Federal government, in non-profit organizations, in colleges and universities, in research

organizations, and in many, many other industries. SAS professionals are always in demand, the work is interesting, and the disciplines SAS is used in are always evolving with new technologies to master and new software to learn how to use. Salaries for beginning and for experienced SAS programmers have been strong for many years, compared to numerous other professions.

This book presents ideas on how you can pilot your SAS programming career right from the start. It equips you with specific strategies and methods that you can employ early on to distinguish yourself from your peers. This text describes particular tasks you can perform to go beyond the requirements of your job and rise to the top of your chosen profession using SAS software.

Additionally, you will find several chapters that are designed to give you a broad overview of the scope of the world of SAS programming. These chapters present information about a variety of SAS resources that are readily available to you, such as documentation, training, virtual communities, certification, and users groups. You can use those chapters to quickly get up to speed on the wide world of SAS programming and the many resources that you can use to become a top SAS programmer.

Programmer with a Few Years of SAS Programming Experience

Now that you have been programming with SAS for a few years, you have a good sense of what it takes to be reasonably successful at your job. You understand who your clients are: your boss, lower management, upper management, user groups within your organization, external clients, etc. You have become proficient in the SAS programming tools at your disposal. You understand the amount of effort required to maintain a computer job and the intricacies of working with other information technology professionals to successfully complete assignments. You understand your organization's structure and where SAS programmers fit in, and you have a general sense of what is going on in the computer industry at large. Now, you are trying to determine how to ramp up your own game and figure out what it takes to get to the top.

You are in a very good position, because your career is still young. Bad work habits and complacency have not set in. You are still in a career growth mode. Your management expects that your skills and knowledge will continue to grow, and with them, your salary. So, there is some expectation on the part of management that your career will continue to evolve. But, those expectations will turn out to be short-sighted on your management's part because their expectations are limited to what they regard as the *normal* career growth of a SAS professional in your position.

This book provides guidance on how you can start reshaping your SAS programming career to maximize its growth. It shows how you can build upon your current successes by employing techniques and strategies that go beyond what most of your peers are willing to do. By pursuing these strategies and employing the techniques in this text, you can maximize your professional standing, earning potential, and job satisfaction as you move past your colleagues. And, they won't even see it coming.

Programmer with Many Years of SAS Programming Experience

With many years of SAS programming experience behind you, you find that you are in a very comfortable position. You know you have the programming and business acumen to be successful in your career. You have been through any number of waves of technology shifts—in software, in hardware, and in computer business methodologies. You have experienced or witnessed *Agile development, RDBS, proprietary software, open source, OLAP, HOLAP, ROLAP, mainframes, mini-computers, fourth-generation languages, distributed processing, parallel processing, object-oriented programming, ROI, ETL, cloud computing,* and let's not forget all of those *paradigm shifts*. You have participated in many projects and completed countless assignments. Your experience has allowed you to see what works and what does not work, firsthand, on any number of computer application projects. You have enjoyed a normal degree of professional development, upward mobility in your organization, and salary growth. You like what you have been doing for a living for the past years; however, you feel somewhat restless.

This book can save you from workplace complacency by adding new zest and new direction to your occupation as a SAS programming professional. You can use the techniques in this book to reinvigorate and jump-start a "stale" career. Wouldn't it be exciting to get back to the old days when everything was fresh and there were many professional possibilities ahead of you? You can use the tips and techniques in this book to create strategies that will help you reinvent yourself as a top SAS programmer. You can add new energy and excitement to your information technology career, rekindle your creative spark, and revitalize your occupation. This book can help you claim the top SAS programmer spot that is the culmination of all of the years you have invested in a healthy information technology career.

What Is a SAS Programmer?

So, what exactly is a *SAS programmer*? That question is pertinent because there is some disagreement about the scope, role, and appropriateness of the term *programmer* among information technology professionals. Some use the terms *programmer*, *developer*, and *software engineer* interchangeably. Others draw a distinction between these terms, believing that *developers* and *software engineers* possess additional software development skills that programmers do not have. Some believe that a *programmer* is simply a person who writes original programs and fixes bugs in them without performing more sophisticated requirements, development, and analysis tasks. To them, the term *programmer* is at least a put-down, and at most a pejorative. Not so to us!

The vastness of SAS software offerings also makes the definition of the term *programmer* somewhat problematic. SAS encompasses a wide variety of software products ranging from Foundation Tools (Base SAS, SAS/ACCESS, SAS/CONNECT, SAS Enterprise Guide, etc.) to SAS Analytics (Predictive Analytics and Data Mining, Data Visualization, Forecasting, Operations Research, etc.) to SAS Solutions (Business Intelligence, Data Management, IT Management, etc.). Many of the SAS products and solutions provide powerful GUIs as a means for building and running applications. This book is not targeted toward computer professionals who only use SAS software powered by GUIs. Here, *programmer* refers to those who actually write lines of code

using Foundation SAS software such as Base SAS, SAS/GRAPH, SAS/CONNECT, SAS/STAT, SAS/ACCESS, and so on.

This book uses the term *SAS programmer* as shorthand to describe a wide variety of programming professionals who write computer programs using Foundation SAS software. If you are a programmer, a developer, a software engineer, a computer scientist, a statistician, or a systems analyst who primarily codes in SAS software to perform your job, then you are being addressed when this text uses *SAS programmer*. If you are a programmer working in health care, government, research, pharmaceuticals, banking, or insurance who primarily programs in SAS software, then you are a *SAS programmer*. Consequently, the term *SAS programmer* is a simplification for ease of writing. Think how cumbersome this book would be if the title were *How to Become a Top SAS Programmer, Developer, Software Engineer, Computer Scientist, Statistician, or Systems Analyst*!

What Is a Top SAS Programmer?

As you can imagine, the phrase *top SAS programmer* could have many meanings. It could mean that you are the top SAS programmer in your organization. It could mean that you are well-known in the field of computer programming for your expertise in using SAS for a particular discipline. It could mean that you earn top dollars for your SAS proficiency and programming work. With any luck you might be a top SAS programmer in all three of these areas. Let's take a look at each of them.

Top SAS Programmer in Your Organization

Any organization with a population of programmers is going to have a handful of individuals who are considered to be the top programmers. They likely have a top database administrator, a top web programmer, a top SQL programmer, a top SAS programmer, and so on. Such individuals are very knowledgeable about the particular software they have mastered, very experienced in using it for any number of projects, and have proven track records of completing assignments accurately and on time. They usually have the highest salaries possible for programmers in the organization, and usually receive perks such as being sent to training or attending computer conferences. Upper management respects their professional judgment and relies on them to get the work done. Other programmers look up to them professionally, and rely on them for mentoring and for leadership on programming projects.

Perhaps you like the organization that you are currently working for. It provides a professional, respectful work environment with ample room for career growth. The work you do is interesting, and there are a variety of other projects that you could possibly work on that would also be of interest to you. The salaries for SAS professionals are generous for the area you live in, or for workers in the organization, or for the computer industry as a whole. The company offers in-house and off-site computer training, supports your involvement in professional organizations, supports certifications, and sends staff to computer conferences. The company benefits are attractive and maybe you are already vested in the corporate 401K plan, profit sharing, employee stock ownership plan, or have a generous employee leave plan. Maybe there are other environmental factors such as

an easy commute, free parking, on-site day care, a subsidized cafeteria, tuition reimbursement, etc. Whatever the case, you see yourself as being a part of your organization for the long term.

Determining your chances of becoming the top SAS programmer in your organization requires an honest assessment of its possibility. Smaller organizations present more of a challenge for a person who is working on becoming the top SAS programmer. People generally tend to stay in the same job for years, so you could find your way blocked by "old timers." There might not be an abundance of diverse projects that could allow you to exercise and increase your programming acumen to the point where you can demonstrate that you are a top SAS programmer. There might be limited training budgets, limited management support for certification and conferences, and even limited upper management recognition of the value of the IT staff's contributions to the organization. Consequently, your task of becoming a top SAS programmer could be tougher in a smaller organization.

Large organizations usually provide more opportunities for upward mobility. This is true because there are more overall SAS programming positions available in a large organization. There is often a greater amount of turnover among computer professionals, which produces opportunities for people to take their place. A growing organization can also offer more opportunities for upward mobility. As new projects are initiated, staff are either shifted to them or recruited. Management will tend to favor moving high-accomplishing SAS programmers up the chain of responsibility into the new positions on those projects because management knows they are reliable.

To become the top SAS programmer in your organization requires you to understand some of the on-the-ground realities of the business environment you are working in. Here are some of the things you need to identify.

Know which projects or systems are the most important. Some projects and systems are more important to an organization than others in terms of their value to the enterprise. They might be long-established projects such as Corporate Accounting, vital projects such as Payroll, or exciting new initiatives such as Internet data collection systems. Programmers who work on those projects or systems usually have greater opportunities for advancement and visibility than those who do not. Learn who the key players (managers, users, administrators, etc.) and SAS programmers are on those projects. Determine how you can get on board one of the important systems or hot projects. Doing so could increase your chances to contribute to your organization, to participate in programming the latest business strategies, and to increase your visibility, experience, and opportunities for advancement.

Know the standing of other SAS programmers in your organization. Whether your organization is big or small, it likely has other SAS programmers working in it. You should evaluate where you stand in relation to the other SAS programmers in regard to opportunities and promotions. Some of them might be junior to you, some might be your peers, and others might be more senior than you. Junior staff and peers are often easier to pass by with promotions and key assignments as you work at becoming a top SAS programmer. But senior staff might be more problematic because they often have the more valuable and more visible programming assignments, and usually have a good track record of accomplishments. Don't be put off by the fact

that such senior staff are enjoying the visibility that they have so rightfully earned. By constantly striving to become innovative, professional, and adept at solving your enterprise's business problems using SAS software, you can rise to the position of top SAS programmer. The techniques in this book and your own ambition can get you there.

The characteristics for being a top SAS programmer in an organization fall into three main categories. You must be:

1. **An expert SAS programmer** – Be adept at using SAS programming language tools. Have a firm command of DATA step programming, SAS procedures, SAS macro programming, PROC SQL, etc. Understand which SAS tools are the most effective for a particular programming problem.
2. **Expert at completing assignments** – Know the intricacies of your organization's data. Understand your clients' needs. Know how to use corporate resources, from in-house subject matter experts to the computer facilities available to you. Get your tasks done on time and make sure that your reports and result sets conform to the requirements.
3. **The go-to person for SAS knowledge and information** – Be familiar with the most recent versions of SAS software. Know the latest SAS programming language features and constructs. Understand the latest SAS programming techniques. Be a mentor to other SAS programmers in your organization.

Why shouldn't *you* be the person who gets the most challenging assignments, who contributes the most to key projects, who gets the top pay, who is sent to training, who management counts on, and who junior programmers look up to? The answer to all of these rhetorical questions is that there is no good reason to the contrary. You *should* be the top SAS programmer in your organization!

Top as in "Well-Known" in the SAS Programming World

The global SAS programming community has grown larger, year by year, since SAS was founded more than 35 years ago. SAS currently has more than 13,000 employees located in 400 local and regional offices in 55 countries. SAS is used at more than 60,000 sites in 135 countries, including 90 of the top 100 companies on the 2012 FORTUNE Global 500® list. The worldwide SAS community is linked via discussion groups such as the forums on www.support.sas.com, by the sasCommunity.org wiki, by webinars on the SAS website, by SAS newsletters, and by annual users group conferences such as SAS Global Forum and PharmaSUG. With SAS being used in so many organizations by so many computer professionals, it is not surprising that some have emerged as well-known experts in the SAS programming world.

The most well-known SAS programmers are well known because they assert themselves both in writing and in live presentations. They write books for SAS Press, papers for SAS conferences, blogs related to SAS, articles for the sasCommunity.org wiki, and responses in the discussion forums on www.support.sas.com. They present instructional webinars, teach SAS seminars and classes, and present technical papers at SAS conferences. Because they are active in sharing their SAS expertise, their particular names are known over the names of the thousands of other SAS programmers who do great work, but are less vocal about it.

Well-known SAS programmers tend to fall into two general categories:

Recognized experts in a particular area of SAS programming – These are the people that others turn to for information and advice on using a particular feature of the SAS programming language. They are people who have published papers on SAS topics, written extensively in online forums about a particular topic, given presentations about a specific topic, or taught classes based on a distinct topic[1]. Their publications are usually in-depth, easy-to-understand, and thorough. They extend the information already available in SAS technical documentation by applying it to real-life programming situations and providing plenty of examples. Recognized experts often come from the SAS user community, but they can also be SAS staff members. Though their areas of expertise might differ, what they all have in common is that they are passionate about the particular topic that they write about. They know their topic areas in-depth and consequently can explain the details in plain language that anybody can understand.

Such in-depth knowledge comes from extensively using a particular feature of SAS programming. It comes from researching that feature and learning all of its nuances. If it is a SAS procedure, then you need to learn all of the available options of that procedure, the input files, output files, and the various statements available for that procedure. You need to learn the best way to use that procedure and what, exactly, it provides for a given data analysis. You should know something about every facet of that procedure, and you should be able to answer any question about that procedure.

There is no doubt that you can master a particular area of SAS programming. Unless you are just starting out, you probably have a lot of experience with any number of SAS products, procedures, DATA step programming statements, options, functions, macros, and so on. Is there one particular area that interests you, that you have a talent for, or that you have more experience in than others? Perhaps it is not simply one SAS feature, but a way that you use SAS to your organization's benefit, such as data cleaning.

Whatever the case, you can focus on a particular facet, feature, or product of the SAS software suite and become an expert in it. Read the relevant SAS documentation. Read all of the applicable SAS conference papers. Use that programming feature extensively in your own programs, so that you understand its nuances and the best way to leverage it to get the most out of it for your organization. Then, determine how you can add to the body of knowledge of that particular feature of SAS software by authoring your own conference papers, taking part in online forums to offer advice and guidance, or even writing a book about it.

Recognized experts as SAS programming generalists – These are people who are well-known because they have written about or given presentations on diverse SAS programming subjects. Consequently, they are well-known SAS generalists. This means that they have an expert understanding of a wide variety of SAS topics and do not necessarily specialize in a particular topic area. By doing this, they have provided other SAS users with material they can use to learn features of the SAS programming suite. Not only has this helped fellow SAS programmers, but it has raised the visibility of these particular experts and made them *household names* in the world of SAS programming.

The key to becoming an expert SAS programming generalist is to learn as much as you can about as many features of the SAS programming suite and use those features in real-life work situations to process data. Doing so, you gain an in-depth knowledge of SAS programming and are in a position to share that knowledge with other people. Then, you can write your own SAS conference papers and books, and teach SAS classes so that you become a well-known SAS programming generalist.

Top as in Earning Top Dollar for Your SAS Programming Expertise

Another type of *top SAS programmer* is somebody who earns top dollar for their SAS programming expertise. This means that the person earns substantially more than other SAS programmers in an organization or in a given geographic area. Such a person does so because of that person's expertise, experience, or a combination of both. SAS programmers who are well-known are often able to parlay their well-deserved reputations into maximizing their income.

The considerations for earning top dollar for your SAS programming expertise depend on whether you work for an organization or whether you are an independent consultant. Each situation has its own group of factors that can have a direct effect on the amount of money you can reasonably expect to earn, and so must be considered separately.

Working for an Organization

The truth is that any organization will pay only so much to its computer programming staff. Salaries are governed by established organization pay scales, by industry standards, and by geographically defined local pay levels. Many organizations have a *grade level* system for paying staff members. For example, computer professionals might occupy grades 10 – 15, where 10 is at the lower end and 15 is at the upper end that you aspire to. Salaries in grade levels often have a higher and lower boundary. For example, salaries could look like this:

Grade	Title	Salary Range
10	Programmer I	$30k - $40k
11	Programmer II	$35k - $50k
12	Senior Programmer	$45k - $60k
13	Programmer/Analyst I	$55k - $70k
14	Senior Programmer/Analyst	$65k - $80k
15	Programming Manager	$80k - $95k

Within this particular system, you could be hired as a *Grade 11 Programmer II* because of the current level of your SAS programming skills and job experience. It might be expected that you would work in that grade for two or three years as your contributions to the organization became more valuable, your programming expertise grew, and your salary level increased. Then, you would be promoted to a *Grade 12 Senior Programmer* and begin the climb to the next grade level.

This normal career growth cycle can be affected by such factors as the department you work in, the projects you work on, the assignments you are exposed to, the years of SAS programming experience you have, and the depth of experience of the other SAS programmers you are working with.

Learn the grade levels and salaries for computer programmers in your organization. That should not be hard, because many organizations either publish such information on their intranets or have it available in the personnel office. Find out what the requirements are for each level above the one you are currently within. Identify which projects have the greatest possibilities of supporting staff members at the higher grade levels. Maybe you will need to transfer to another group or division to maximize your earning power. You might need to transfer to another project or take on a different role in the project you are currently working on. Whatever the case, you will have to take action to effect a change for yourself.

Assess how realistic it is for you to advance to the next grade level to grow your salary and your expertise. This might necessitate a frank discussion with your manager on what skills and accomplishments you need to have in order to be promoted. Do not be timid; have those discussions, if necessary. Then, work hard to get yourself promoted by using as many of the techniques found in this book as is possible.

Independent Consultant

Independent consultants usually make more money than salaried employees. Sometimes they make a lot more money! But, it comes at a price. Independent consultants have less job stability. They are hired by various organizations for fixed periods of time and can be let go at the convenience of the contracting organization. They are responsible for things that salaried employees take for granted such as paying for their own insurance, health care, social security taxes, Medicare taxes, travel expenses, and paying quarterly estimated income taxes. They always have to be on the lookout for the next consulting opportunity and secure it before the current one ends. They often have to do their own marketing and networking, and might not end up working 50 forty-hour weeks in a year. If they work through a broker, then they have to pay a portion of their hourly billing rate to that broker.

With all of these perceived negatives, you might wonder why anybody would want to be an independent consultant. However, the flip side is that they usually make great money, do not have to deal with the same office politics as regular employees, are exposed to many more applications and computer systems, have a wide variety of assignments, can move on if they encounter an unreasonable boss, and can realize some unique tax benefits. All of this makes consulting attractive to some SAS programming professionals.

The amount of money you can make as an independent consultant depends on a lot of factors. Some of them are the geographic area you are in, the pay scale of the industry, the length of the assignment, the amount of experience and expertise you have, and the type of SAS programming expertise that you have. In some areas, consulting companies have exclusive arrangements with major employers. Consequently, all consultants must subcontract with those consulting companies in order to work at certain organizations. The consulting companies usually either take a cut of the

hourly wage or set a specific hourly rate that they will pay you—say a maximum of $50 per hour. It is often difficult or impossible to work around these organizations and get your own terms.

To make top dollar as an independent SAS consultant takes significant research and planning. Here are some of the main steps:

1. **Determine the hourly consulting rates in your area.** Research what consultants are making for SAS programming in your area. You can do this by contacting consulting agencies, researching consulting opportunities in online services, looking at what local SAS programmers are being paid as specified in advertisements on job boards and extrapolating an hourly rate, and by talking to other SAS consultants. Consulting rates are often affected by the overall salary structure of a given geographic area, the industry, the availability of qualified SAS consultants, the particular industry expertise needed for the assignment, the length of the assignment, and the particular SAS skills needed for the assignment.

4. **Consider whether you need to learn more about SAS.** No matter what your level of SAS expertise is, you cannot know everything about SAS. Having additional SAS software skills can make you more valuable. Though Base SAS programmers always seem to be in demand, sometimes specific SAS modules or expertise becomes "hot" and therefore organizations are willing to pay more for consultants with that knowledge. You might consider taking SAS e-learning courses, earning a SAS certification credential, or reading up on and experimenting with a particular SAS module that you haven't already mastered. Perhaps, you could take an initial assignment using a "hot" SAS module, say SAS BI Server, for a lower rate to gain the experience. Thereafter, you could charge a higher rate because you would have gained the expertise.

5. **Decide whether you need a broker.** As previously mentioned, some consulting organizations have contracts with local organizations to provide SAS consultants. They have already done the leg work of finding the opportunity. Working with them, you might be able to come to a good financial arrangement that allows you to maximize your rate and have a good consulting gig. That will call for frank and aggressive negotiations on your part. Knowing the prevailing consulting rates of the area, industry, and particular SAS expertise needed for the assignment is vital to your negotiations. Make sure you do your homework so that you can earn top dollar.

   Consultants who work through brokers fall into two categories: W2 and 1099 consultants, so named because of the two different IRS documents that they must file. W2 contract programmers work directly for the consulting company as quasi-employees. The company might or might not offer them benefits, but usually collects and pays state, federal, and social security taxes from their earnings. A 1099 consultant is totally independent. Though the consulting company has provided the consulting opportunity, the 1099 consultant is responsible for her own benefits and filing income taxes. Whether you are a W2 or 1099 consultant, the consulting company usually collects money for your work from the client, takes its percentage, and then pays you the agreed-upon hourly fee.

6. **Look for consulting engagements.** Once you have done your homework on the maximum rate that you can expect to earn, you can look for consulting opportunities. If you are going through a broker, then the next steps are largely up to the broker. If you are truly independent, then you need to comb through online job boards, follow up on Internet advertisements for permanent employees to see if they will hire a consultant instead, and network with acquaintances and contacts you have in the business world.

   There are usually multiple consulting organizations operating in a given geographic area, especially if it is around a major city. Take advantage of this situation by contacting several consulting organizations. Let them know that you are in discussions with other organizations and that you would like for them to give you a better hourly rate. Let them know that you are ready to establish a long-term relationship with them that will maximize both their and your own earning potential. Such negotiations can help you raise your hourly rate and consequently your bottom line.

7. **Determine whether you need to travel.** Sometimes the only way to maximize your consulting rate is to travel to an area where the rate is higher. If you are willing to travel, then you need to determine whether the cost of travel and lodging will still make the higher rate worthwhile. If so, contact principal organizations and consulting organizations in the geographic areas that you believe can maximize your hourly rate. Ask them if they will be flexible enough to let you work from home part of the time.

How Much Do SAS Programmers Get Paid?

So, how much do SAS programmers really get paid, anyway? The answer to that question is the same as the answer to many of life's big questions: *It all depends!*

Whether you are a full-time employee or a consultant, the most basic step in earning top dollar for your SAS expertise is to determine what you are worth. You need to find out what programmers like you make and what the top salary or consulting rate is for a given region, industry, and organization. You can do this by combing through salary surveys, online job boards, discussion forums, newspaper advertisements, and the published salary scales of individual organizations. Once you establish the average salary and the ceiling for SAS programmers with your expertise and experience in a given organization and profession, you can make informed decisions on taking the next steps to maximize your income and earn top dollar as a SAS programmer.

As previously discussed, there are many factors that affect your earning potential as a SAS programmer, so there is no easy answer to the question about how much SAS programmers get paid. Your compensation will be dependent on a plethora of considerations that affect how programmers with any type of software expertise are paid. Here are some of the major factors:

- **An organization's pay scale** – Formal grade levels limit what an organization is willing to pay to employees and to consultants.
- **Your educational background** – A person with a PhD often makes more money than a person with a Bachelor's degree. A person with a Computer Science degree might make more money than somebody with an English degree. Some educational backgrounds pay more

because they required more education or they are more applicable to the type of computer work being done in an organization.

- **The industry you work in** – Some industries tend to pay more than others. For example, pharmaceuticals and telecoms tend to pay more than educational institutions.
- **Your job experience** – Factors such as your overall years of programming experience, time spent working in a given industry, and experience with specific SAS products, can make a difference.
- **Consulting agreement** – Whether you are a W2 or a 1099 consultant and the hourly billing rate you are able to negotiate are factors for consultants.
- **Geography** – Enterprises centered around major cities tend to pay more than those in rural settings. There are regional differences as well. The pay scales in the Northeast states are generally higher than those in the Southeast, Central, and Western states.
- **Special considerations** – Security clearance, U.S. Citizenship, PhD in Bioinformatics, etc. are some of the special considerations that might make a difference in pay and access to jobs for some organizations.

The good news is that SAS programmers receive compensation commensurate with that of other programmers in the information technology industry. You can see this in salary surveys where there is a category for "SAS Programmer." In most surveys or publications, SAS programmers are included in major job function titles such as Programmer or Programmer/Analyst. Here are a few major categories and the average pay for them as of this writing:

- Computer Programmer – $74,000
- Programmer/Analyst – $76,000
- Systems Analyst – $75,000
- Senior Systems Analyst – $85,000

SAS programmers are undoubtedly found among the ranks of those common positions, so they are earning at least those average salaries. And, top SAS programmers are earning more than that.

This is a list of sources you can use to help determine salary information and consulting rates:

- Computerworld Salary Survey
  - http://www.computerworld.com
- Bureau of Labor Statistics
  - http://www.bls.gov
- Monster.com
  - www.monster.com

- Dice.com
  - www.dice.com
- Government Service (GS) pay scale:
  - http://www.fedjobs.com/pay/pay.html

When you have completed your research, you will know whether you are earning top money for your SAS expertise. If not, continue reading this book to glean the techniques that can lead you to a top salary. If so, lend this book to a friend.

A Call to Action!

By purchasing this book, you have made the decision to become a top SAS programmer. The rest of this text provides clear-cut methodologies and strategies designed to get you to the top. These are tried-and-true methods, ideas, and resources. They are things the author has used and done, and things that have worked for many other people who are also top SAS programmers. It does not matter where you are starting from in your career, you can do it. Really! It only requires that you employ your inner strength and determination to set yourself on the course to becoming a top SAS programmer.

This book is your secret weapon for maximizing your SAS programming career. Do not be shy or hesitant in becoming the top SAS programmer in your organization. Sometimes you are the expert SAS programmer just because you say you are. You studied the material, learned the techniques, and performed the work; now you are the resident expert in *all things SAS* in your enterprise. It can be as easy as that. And, why shouldn't it be? Somebody is going to be the top SAS programmer in your organization, in your industry, in your area. Why shouldn't it be you? Well, it *is* going to be you.

So, take a long, deep breath and let it out very slowly. You are now on your way to joining the elite group of top SAS programmers. You will either be the top SAS programmer in your organization, a well-known top SAS programmer, a top-earning SAS programmer, or all three. Whatever, the case, your career will never be the same as you kick it into high gear and take your rightful place at the top. What are you waiting for? Turn the page and let's get going!

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[1] Topics include such diverse subjects as the Output Delivery System SAS macros SAS hash objects PROC IML, and PROC REPORT.
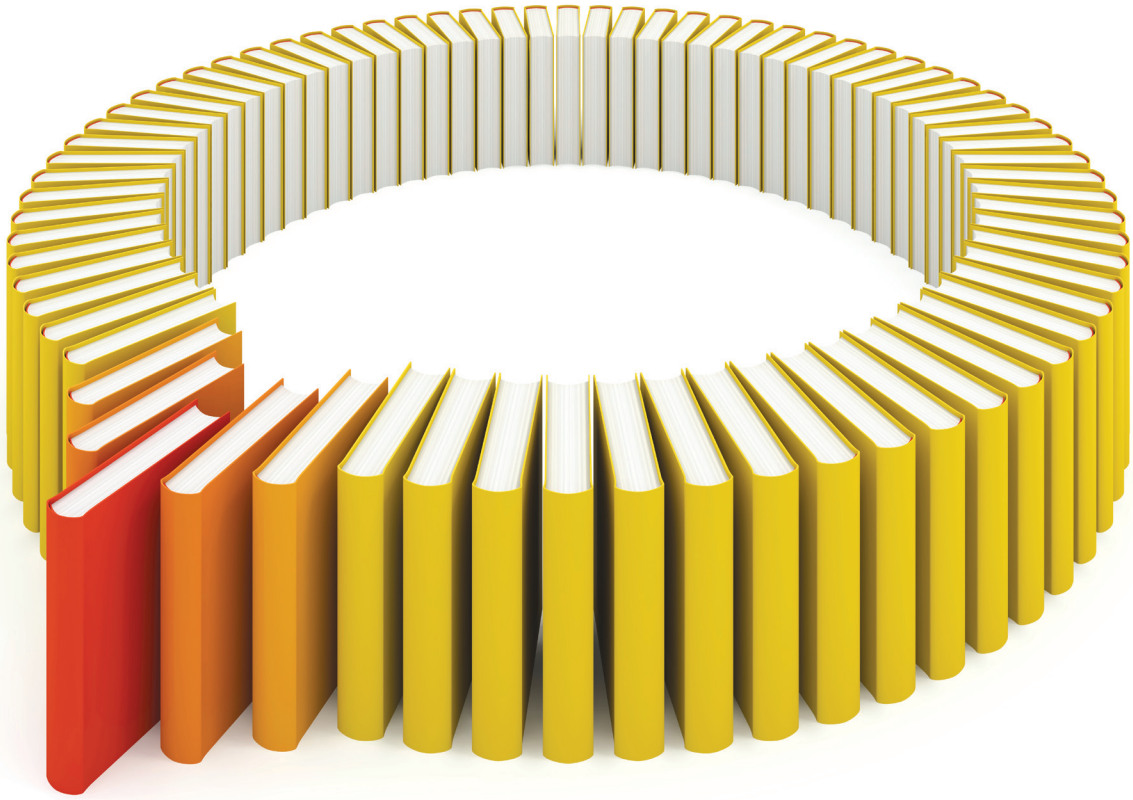
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