

Paper 3578-2019

Are You a Lifelong Learner? Validate Your Skills and Stand Out with SAS® Certifications!

Andrew Howell, National Australia Bank

ABSTRACT

Why get certified? What's new? How do you set yourself apart from the rest? And how to nail the SAS® Certification exams?

In 2019, SAS® Certification celebrates 20 years. Just as SAS continues to evolve, so does its certification program, as demand increases for highly skilled SAS® consultants.

To date, most certification examinations have been multiple-choice tests. In 2019, more practical tests are coming—not just for the predictive modeling certification, but for programming certifications as well—requiring candidates to access SAS to create and execute code as part of the certification exam.

In this session, we review everything you need to know to prove your worth as a SAS certified consultant: the certifications that are available in programming, data management, modeling, administration, visual analytics, data science, and more. We also look at the various ways to prepare for the certification exam: the training courses that are available (including free online training); the SAS Certification prep guides for Base SAS® programming and for advanced programming; what the SAS® Academy has to offer; how to download and run your own free installation of SAS to prepare for the SAS Certification exams, and lots more.

Embrace lifelong learning, and use SAS Certification to validate that learning.

INTRODUCTION

As we move towards a more truly global software development cycle, more and more organisations – AWS, Cloudera, Microsoft, CISCO, etc – recognize the need for practitioners to be able to independently measure their skills.

Papers about SAS Certification are presented regularly at SAS Global Forum. It is not the same message reinforced every few years; as the SAS suite of software products evolves, and technology itself changes, it is important that the benchmarks we use to validate new products & new technology is also kept up-to-date.

How do you wish to stand out as a SAS professional? Is SAS Certification necessary? Some may say not. After all, it is only one of potentially many ways to validate yourself as a qualified SAS professional. Other methods may include documented experience, presenting papers at SAS User Group meetings, publication, referrals from colleagues, and so on.

However, SAS Certification remains the only independent method to validate your SAS knowledge.

If you want to better understand the “why” of SAS certification, I highly recommend you read the excellent SAS Global Forum 2015 paper presented by Andra Northup & Susan Slaughter. When researching this paper, I was very surprised that Andra & Susan’s paper was four years ago; having re-read it, their advice is just as valuable today as it was four years ago.

Instead, this paper will focus on:

- Updates of the certifications on offer;
- Updates to the certification process;
- Ways to prepare, including obtaining a free copy of SAS for practice;
- What support is available.

During the presentation of this paper at SAS Global Forum 2019, I intend to walkthrough the various websites & software discussed in this paper.

WHAT CERTIFICATIONS ARE AVAILABLE, AND WHAT'S NEW?

There have been major changes to SAS Certification in the last year or so, not just new certifications in SAS' new platform SAS Viya, but also major updates to the more "traditional" certifications, and the way the certifications are tested.

SAS certifications currently available include:

- SAS® Certified Base Programmer for SAS®9
- SAS Certified Specialist: Base Programming Using SAS 9.4
- SAS® Certified Advanced Programmer for SAS®9
- SAS® Certified Clinical Trials Programmer Using SAS®9
- Clinical Trials Programming Using SAS 9, Accelerated Version Exam
- SAS Certified Predictive Modeler Using SAS Enterprise Miner 14
- SAS Certified Statistical Business Analyst Using SAS 9: Regression and Modeling
- SAS Certified Specialist: Machine Learning Using SAS Viya 3.4
- SAS Certified Specialist: Forecasting and Optimization Using SAS Viya 3.4
- SAS® Certified BI Content Developer for SAS®9
- SAS® Certified Visual Business Analyst: Exploration and Design Using SAS® Visual Analytics
- SAS® Certified Visual Modeler Using SAS® Visual Statistics 7.4
- SAS® Certified Big Data Professional Using SAS®9
- SAS® Certified Data Integration Developer for SAS®9
- SAS® Certified Data Quality Steward for SAS®9
- SAS® Certified Platform Administrator for SAS®9
- JMP Certified Specialist: JMP Scripting Using JMP 14
- JMP Certified Specialist: Design and Analysis of Experiments Using JMP 14
- *There are additional SAS certifications available for partners – primarily in platform and/or solution installation. These are not covered in this paper.*

Source: https://www.sas.com/en_us/certification.html

NEW CERTIFICATIONS

As SAS rolls out its new flagship product SAS Viya, there is a new suite of certifications for SAS Viya, SAS Visual Analytics & SAS Visual Statistics, plus more certifications will become available as more products & solutions are ported to the SAS Viya platform.

“Why are there two Base Programmer certifications?”, I here you ask..

This is part of the changes to the certification process. Whereas the **SAS Certified Base Programmer for SAS 9** examination is a series (50-55) of multiple choice questions, requiring a 70% pass rate, this is being phased out in favour of a practical exam - **SAS Certified Specialist: Base Programming Using SAS 9.4** - where you will write & execute SAS programs to read & manipulate data, product reports, and so on.

Gradually, more & more certifications will incorporate a practical element in the examination process.

WHAT'S NEW IN TESTING?

The SAS Certification process is externally managed by Pearson Vue. This is critical, as it provides an independent evaluation process which allows SAS employees and SAS end-users to be treated the same when it comes to being evaluated.

Previously, you were required to book on the Pearson Vue website, and attend the office of a local Pearson Vue testing centre to sit the SAS certification examination.

Pearson Vue now offer **Online Proctoring**, meaning you can now sit your certification exam on your own computer at home or at work, subject to some technical requirements (such as a webcam & microphone, etc).

More details about the Online Proctoring process, requirements, etc is available on the Pearson Vue SAS website: <https://home.pearsonvue.com/sas/op>

HOW DO I PREPARE TO BECOME SAS CERTIFIED?

I am often asked this question on my LinkedIn profile, and my answer is still the same – it depends on how you prefer to acquire your knowledge required to pass the certification examination.

CERTIFICATION PREPARATION GUIDES

Certification preparation guides for Base and Advanced Programming are available for purchasing from the SAS Publishing site: <http://support.sas.com/publishing/cert> as well as sites such as Amazon, etc.:

- SAS Certification Prep Guide: Base Programming for SAS 9, Fourth Edition
- SAS Certification Prep Guide: Advanced Programming for SAS 9, Fourth Edition

These are excellent books, regularly updated. However, there are currently no SAS Certification Preparation guides for the remaining certifications.

TRAINING

Another option is consider undertaking training courses. Each SAS certification has recommended SAS training courses:

SAS® Certified Base Programmer for SAS®9 and SAS Certified Specialist: Base Programming Using SAS 9.4

- SAS Programming 1: Essentials
- SAS Programming 2: Data Manipulation Techniques

SAS® Certified Advanced Programmer for SAS®9

- SAS Programming 3: Advanced Techniques and Efficiencies
- SAS Macro Language 1: Essentials
- SAS SQL 1: Essentials

SAS® Certified Clinical Trials Programmer Using SAS®9

- SAS Programming 1: Essentials
- SAS Programming 2: Data Manipulation Techniques
- SAS Macro Language 1: Essentials
- SAS Report Writing 1: Essentials
- Statistics 1: Introduction to ANOVA, Regression, and Logistic Regression

Clinical Trials Programming Using SAS 9, Accelerated Version Exam

- SAS Macro Language 1: Essentials
- SAS Report Writing 1: Essentials
- Statistics 1: Introduction to ANOVA, Regression, and Logistic Regression

SAS Certified Predictive Modeler Using SAS Enterprise Miner 14

- Applied Analytics Using SAS Enterprise Miner

SAS Certified Statistical Business Analyst Using SAS 9: Regression and Modeling

- Statistics 1: Introduction to ANOVA, Regression, and Logistic Regression
- Predictive Modeling Using Logistic Regression

SAS Certified Specialist: Machine Learning Using SAS Viya 3.4

- Supervised Machine Learning Pipelines Using SAS Viya 3.4

SAS Certified Specialist: Forecasting and Optimization Using SAS Viya 3.4

- Forecasting Using Model Studio in SAS® Viya® 3.4
- Optimization Concepts for Data Science and Artificial Intelligence

SAS® Certified BI Content Developer for SAS®9

- Creating Business Intelligence for Your Organization: Fast Track

SAS® Certified Visual Business Analyst: Exploration and Design Using SAS® Visual Analytics

- SAS® Visual Analytics: Fast Track

SAS® Certified Visual Modeler Using SAS® Visual Statistics 7.4

- SAS® Visual Statistics: Interactive Model Building

SAS® Certified Big Data Professional Using SAS®9

Exam #1: SAS Big Data Preparation, Statistics, and Visual Exploration Exam

- Statistics 1: Introduction to ANOVA, Regression, and Logistic Regression
- SAS Visual Analytics: Fast Track
- DataFlux Data Management Studio: Essentials
- DataFlux Data Management Studio: Customize the Quality Knowledge Base

Exam #2: SAS® Big Data Programming and Loading Exam

- DS2 Programming Essentials with Hadoop
- Introduction to SAS and Hadoop
- Getting Started with SAS In-Memory Statistics

SAS® Certified Data Integration Developer for SAS®9

- SAS® Data Integration Studio: Fast Track

SAS® Certified Data Quality Steward for SAS®9

- DataFlux® Data Management Studio: Fast Track
- DataFlux® Data Management Studio: Customize the Quality Knowledge Base (QKB)

SAS® Certified Platform Administrator for SAS®9

- SAS® Platform Administration: Fast Track

JMP Certified Specialist: JMP Scripting Using JMP 14

- JMP Software: Introduction to the JMP Scripting Language
- JMP Software: Designing and Building a Complete JMP Script

JMP Certified Specialist: Design and Analysis of Experiments Using JMP 14

- JMP Software: Custom Design of Experiments
- JMP Software: Classic Design of Experiments
- JMP Software: Design and Analysis of Mixture Experiments

If your preferred learning method works best in a classroom environment these courses could be the way forward for you.

Alternatively, you can contact your local SAS Education site to discuss self-paced courses, where you can sign up and train yourself at a time & pace that best suits you.

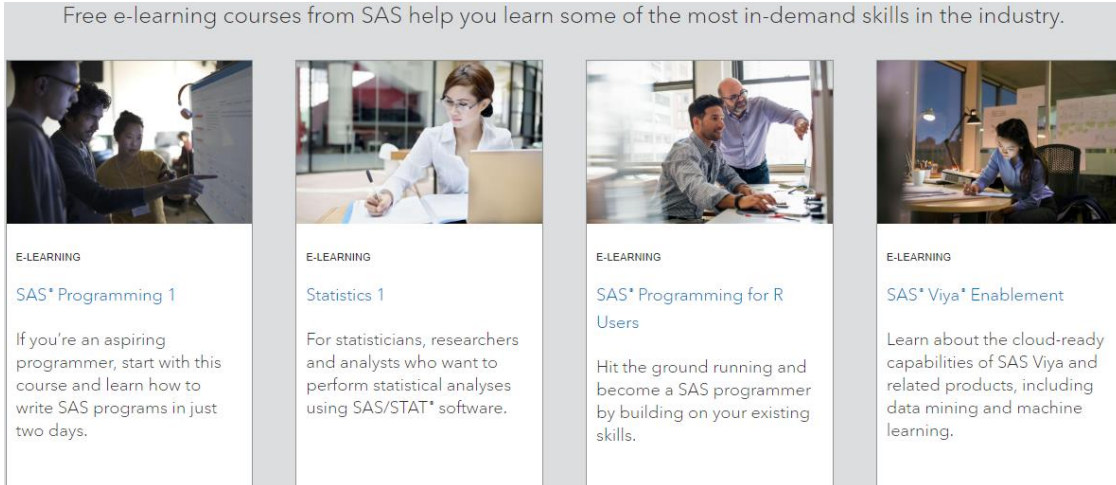
However, undertaking several courses could be costly.

FREE SELF-PACED TRAINING COURSES, TO GET YOU STARTED!

SAS offers some self-paced training course at no cost – perfect for a budding SAS programmer looking for a cost-effective way to get started with SAS certification.

The Programming 1 and Statistics 1 courses are available free of charge – so there's no excuse!

Free e-learning courses from SAS help you learn some of the most in-demand skills in the industry.



E-LEARNING	E-LEARNING	E-LEARNING	E-LEARNING
SAS* Programming 1 If you're an aspiring programmer, start with this course and learn how to write SAS programs in just two days.	Statistics 1 For statisticians, researchers and analysts who want to perform statistical analyses using SAS/STAT* software.	SAS* Programming for R Users Hit the ground running and become a SAS programmer by building on your existing skills.	SAS* Viya* Enablement Learn about the cloud-ready capabilities of SAS Viya and related products, including data mining and machine learning.

Display 1. Graphic from the SAS Free Training webpage.

This can give you a quick (*and free!!*) start to obtaining the following SAS certifications:

- SAS® Certified Base Programmer for SAS®9
- SAS Certified Specialist: Base Programming Using SAS 9.4
- SAS® Certified Clinical Trials Programmer Using SAS®9
- Clinical Trials Programming Using SAS 9, Accelerated Version Exam
- SAS Certified Predictive Modeler Using SAS Enterprise Miner 14
- SAS Certified Statistical Business Analyst Using SAS 9: Regression and Modeling

Take a look at the **Free Training** web page:

https://www.sas.com/en_us/training/offers/free-training.html

PRACTICE EXAMS

Think you are ready? Both SAS & Pearson Vue have practice exams you can purchase to test your knowledge.

SAS provides **SAS Certification Practice Exam: Base Programming for SAS®9** and **SAS Certification Practice Exam: Advanced Programming for SAS®9** exams.

Pearson Vue have a much wider range of practice exams, which simulate the actual certification examination process:

- SAS Base Programmer for SAS®9
- SAS 9.4 Base Programming Performance-Based Exam
- SAS Advanced Programmer for SAS®9
- SAS Advanced Predictive Modeling
- SAS Statistical Business Analysis Using SAS®9: Regression and Modeling
- SAS Text Analytics, Time Series, Experimentation, and Optimization
- SAS Data Integration Development for SAS®9
- SAS Data Quality using DataFlux® Data Management Studio
- SAS Platform Administration for SAS®9
- SAS Big Data Preparation, Statistics, and Visual Exploration
- SAS Big Data Programming and Loading
- SAS Interactive Model Building and Exploration Using SAS® Visual Statistics 7.4
- SAS Predictive Modeling using SAS® Enterprise Miner 14
- SAS Viya 3.4 Supervised Machine Learning Pipelines

Source: https://www.sas.com/en_us/certification/resources/sas-practice-exams.html

TRAINING COURSES AREN'T MY STLYE – I DO THINGS MY OWN WAY..

If “out-of-the-box” training courses aren’t for you, and you’d prefer to learn your own way, but don’t know **WHAT** to go out and learn? Again, fear not!

Each certification has recommended training courses. This doesn’t mean you must undertake those courses; certification is a test of knowledge, after all, not a test of how many training courses you’ve attended.

But for any given certification, have a look at the agenda of the recommended training courses. This becomes your “shopping list” of the knowledge you are expected to have acquired in order to pass that certification – tick off what you already know and work out how best to address your knowledge gaps.

How you acquire that knowledge is completely up to you – training course, self-study, practice, etc.

HOW DO I PRACTICE?

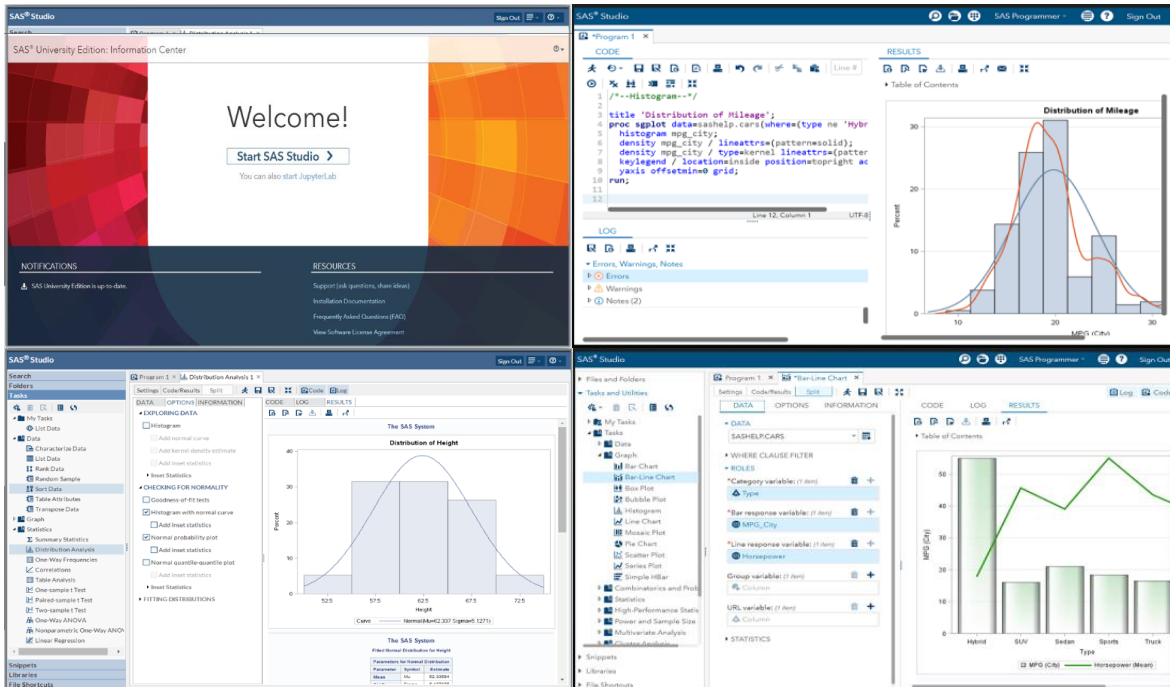
Nothing beats acquiring knowledge like lots of practice.

Do you work or study at a site where the SAS software is available for you to practice? If so, then take full advantage of it.

If not, there is free SAS software available for you to download & use.

SAS UNIVERSITY EDITION – YOUR OWN FREE SAS SOFTWARE!

For those seeking a programming certification (Base, Advanced, etc), if you don't have access to a SAS environment in your workplace, then fear no more! You can now download & run your own personal copy of SAS, at no cost!



Display 2. SAS Studio screenshots from the SAS University Edition webpage.

The SAS University Edition is a cut-down set of SAS products:

- Base SAS
- SAS/STAT
- SAS/IML
- SAS/ACCESS
- SAS/ETS
- SAS Studio.

It is available for download at: <https://support.sas.com/en/software/university-edition.html>

It is run as a virtual application on your computer, running VirtualBox or VMWare Player. Otherwise, you can run it directly from the Amazon Web Services MarketPlace.

All you need to run is your web browser, where you can practice programming using the SAS Studio interface.

Tip: The practical examinations use SAS Studio as the programming interface, so if you're a SAS Enterprise Guide (or the even older SAS Display Manager) user, now is the time to start practicing with the new web-based interface.

Note: SAS University Edition is available only for personal use; it is not intended for commercial use.

SAS ONDEMAND FOR ACADEMICS

SAS also has a free cloud-based offering for students, professors & researchers. Available products include Enterprise Guide, SAS Studio, Enterprise Miner & Forecast Server.

For more details, go to: http://www.sas.com/en_us/industry/higher-education/on-demand-for-academics.html

WHERE DO I FIND HELP?

The best place to find help is with other SAS users, and the best place for that is the SAS Communities site: <https://communities.sas.com/>

The screenshot shows the SAS Communities forum page for SAS Certification. The header includes the SAS logo and navigation links: Industry Solutions, Products, Learn, Support, Customer Stories, Partners, About SAS. The user is logged in as Andrew Howell, with 0 notifications and 0 messages. The main banner reads "Set yourself apart with a SAS Certification credential". Below this is a search bar and a "Find a Community" dropdown menu. The main content area features a featured post titled "Take your SAS exam from home or office" with a "Learn More" button. Below the featured post is a table of forum posts.

Subject	Replies	New	Author	Likes	Views	Latest Post
New Certification - SAS Certified Specialist: Des...	0	0	beccagre	0	1041	11-10-2018 01:38 AM by beccagre
SAS Certification Prep Guide, 4th Edition chapter ...	8	9	ssaf	1	227	Saturday by ssaf

Display 3. SAS Certification page in the SAS Communities forum.

With over 200,000 community members, including SAS employees, SAS partners & SAS end-users, there is literally a worldwide network of users available at your fingertips.

Not just for certification but for all sorts of SAS-related queries, if you want to share your questions, your concerns, your success stories, the SAS Communities site is your best resource.

I'm based on the east coast of Australia; if I ever find myself stuck on an issue at the end of the day, and post it to SAS communities before I go home, when I return in the morning, users from southeast Asia, India, Europe, the Americas & New Zealand will have seen my post (and hopefully responded).

Note: SAS Communities is NOT a replacement for SAS Support.

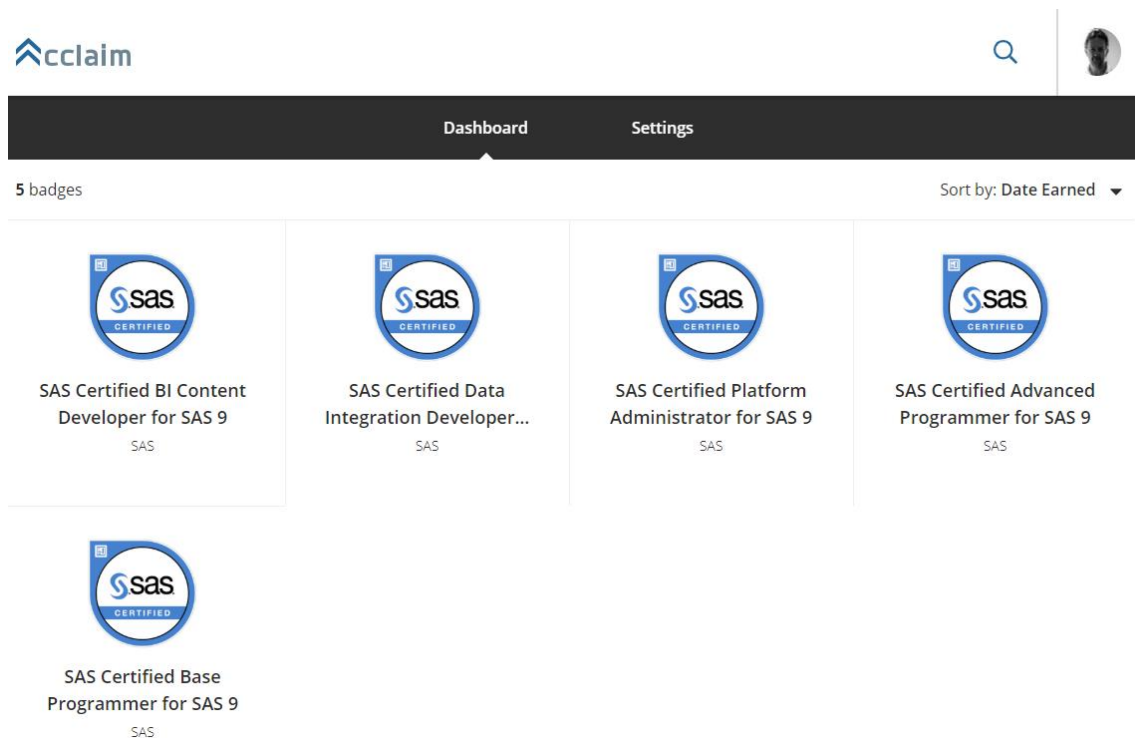
- *If you want to know how to do something, ask SAS Communities.*
- *If something breaks, contact your local SAS Support team.*

WHAT DO I GET ONCE I'M CERTIFIED?

ACCLAIM

(No, really, you DO get acclaim!!) SAS have partnered with Acclaim, to provide digital versions of your SAS credentials - not just certifications, but completed training courses as well.

Once certified, you will receive an email from SAS to log into the Acclaim site & claim your credential badge.



Display 4. SAS Certification badges on the Acclaim website.

SAS CERTIFICATION MANAGER

You will also have access to the SAS Certification Manager, where you can access your certification history, manage your badges, and schedule exam appointments.



Display 5. SAS Certification Manager webpage.

SAS GLOBAL CERTIFIED PROFESSIONAL DIRECTORY

Your name will also appear in the SAS Global Certified Professional Directory

SAS Certification Manager

Candidate Login

Andrew Howell

Location: Melbourne, VIC
Postal Code: 3085
Country: AUS

Certifications

Certification Name	Active Date	Expire Date
Administration		
SAS Certified Platform Administrator for SAS 9	2009-Dec-29 12:00:00 AM	Never
BI and Analytics		
SAS Certified BI Content Developer for SAS 9	2010-Jun-18 12:00:00 AM	Never
Data Management		
SAS Certified Data Integration Developer for SAS 9	2010-Mar-30 12:00:00 AM	Never
Foundation Tools		
SAS Certified Advanced Programmer for SAS 9	2008-Aug-01 12:00:00 AM	Never
SAS Certified Base Programmer for SAS 9	2007-Jul-18 12:00:00 AM	Never

Display 6. Output from the SAS Global Certified Professional Directory.

CONCLUSION

With more certification choices, free SAS software, free SAS training courses, free support from the SAS community, the path to becoming a SAS Certified Professional has never been easier. There are guides, practice examinations, training courses for purchase, but it is possible to prepare for free. Yes, there is still the cost of the certification examination itself (just under US\$200) but think of that as investment in yourself – maybe even see if your employer is willing to invest in validating your SAS skills.

Technology is changing more rapidly than ever before, and the SAS suite of products is no different. “**Lifelong learning**” has been part of the SAS “mantra” for years, and SAS Certification is an invaluable way to validate your milestones along your journey of learning.

REFERENCES

Northup, Andra & Slaughter, Susan. SAS Global Forum 2015: “SAS® Certification as a Tool for Professional Development”, Paper 2620-2015

ACKNOWLEDGMENTS

I wish to extend special thanks to Susan Slaughter for inviting me to present this paper.

RECOMMENDED READING

- *SAS Certification Prep guide*, available at <http://support.sas.com/publishing/cert/>
- *SAS® For Dummies®*
- *Howell, Andrew. SAS Global Forum 2013: "SAS® Certification: Understand the Benefits of SAS Certification, Which SAS Certifications Are Available, and What SAS Certification Can Do for You", Paper 191-2013.*
- *Bonney, Christine & Keith, Michael. SAS Global Forum 2013: "SAS® Skill Learning and Certification Preparation in a Graduate School Setting", Paper 182-2013*

CONTACT INFORMATION

Your comments and questions are valued and encouraged. Contact the author at:

Andrew Howell

Melbourne, Australia

Phone: + 61 407 898 513

Email: info@anjsolutions.com.au

Twitter: @AndrewAtANJ

LinkedIn: <http://au.linkedin.com/in/howellandrew/>

SAS Communities: <https://communities.sas.com/people/AndrewHowell>

SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

Other brand and product names are trademarks of their respective companies.