Assessing SAS® Skill Levels during Interviews

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ABSTRACT

This paper provides tools and guidelines to assess SAS® skill level during the interview process. Included are interview questions for Base SAS® developers, statisticians, and SAS administration candidates. Whether the interviewer has a deep understanding or just some familiarity with these areas, the questions provided will allow discussions to uncover skills and usage experience for the skills your company requires.

INTRODUCTION

Interviewing is a necessity but it's a task many people would prefer not to do; whether you are the interviewer or the interviewee. It requires a lot of mental effort for both roles and there is little or no opportunity to practice. You are either in the situation of needing the perfect new employee or wanting a new job opportunity. In the technical world, being the interviewer is usually not one of the tasks we had been hired to do in the first place. Frequently, for a technical person, interviewing doesn't always come naturally and requires specific effort to be successful.

Having a basic predetermined approach to the interview process can help yield the required results. Not having an approach will lead to misleading information, a vague interpretation of abilities, and become a waste of time for both parties. Having a solid interviewing game plan will provide a better sense of control and confidence. This paper will consider the approach from a technical perspective regarding SAS specific skills and leave other software, human resource needs, "soft" skills and compatibility issues for another discussion.

A certain amount of research is required prior to conducting an interview. As a result of this research, a set of skills should be outlined. A level of competency must to be determined for each desired skill. Flushing out this information will provide guidelines for assessing the skill level you require.

WHAT SKILL LEVEL IS NEEDED?

Is industry experience the top most consideration? Is statistical savvy unimportant, but skill with ODS a must? Which operating systems are required? Or, is this not a crucial point? Knowing which skills are essential, those that are not and which only require a general competency is of the utmost importance when conducting a technical interview. Having well-defined skills and expertise levels provides the interviewer the opportunity to weed out resumes, bring in the right candidates in the first place, and devise the right set of questions to ask.

If you're interviewing for a solo position without other SAS programmers or the project is a startup, you may need a candidate with considerable experience who is self-reliant. On the flip side, you may have a stable programming team on a stable project. In this case, someone with intermediate skills or even a beginner may work because the team can teach and build the skills of a lesser learned candidate. Basic understanding of your environment is absolutely crucial.

DEFINING BEGINNER, INTERMEDIATE, ADVANCED, & EXPERT

Definitions of beginner, intermediate, advanced and even expert skill level are as varied as there are jobs. The lines between each are very grey and up for discussion. Someone quite skilled in one area may only be a beginner in another. A candidate with a few years' experience may be a quick learner or has had the opportunity to focus most of their time on only one area of SAS.

Below are this author's general guidelines
- Beginner 1-3 years
- Intermediate 3-6 years
- Advanced 6-10 years
- Expert 10+ years

Of course, there are exceptions to everything. With this general time table, you are given a basic starting point to begin your assessment. The length of a candidate's experience should be clearly identified in the resume allowing you to somewhat predetermine a skill level. The responses to the interview questions can be used to confirm their stated experience level.

CREATING THE BEST JOB DESCRIPTION

What is the best way to avoid wasting time interviewing? The answer is: get the best candidates to apply. A well written job description is one of the more advantageous pieces of the interview process. We are all busy and writing job descriptions is a tedious task. Cut-n-paste job descriptions lead to wasted time reviewing resumes that don't have the skills we're really seeking. Spending the time upfront identifying critical information to be included in the job description will provide the best results.

Job description building pieces:

1. Which exact SAS skills are required? Examples: (Installing hotfixes, model validation, SAS macros)
2. The skill level defined for each item.
3. The importance of each item.
4. What type of task is associated with each skill?

Listing skills which would be rarely utilized is misleading and may deter a candidate from applying. The lesser used or not necessarily needed skills should be listed as "like to have" skills. Allow the candidates to know how major skills will be utilized. While one skill may be a "must" with heavy experience, another may be one where exposure is sufficient and can be built upon later.

Great care needs to go into every word of the description. Don't be ambiguous and leave too much up to interpretation. You may end up with many inappropriate candidates vying for an interview and you'll end up with a bewildering mess of resumes to review. A description that is too stringent, however, might ward off very viable candidates. Minimum experience requirements and specific skills and minimum education level should be very clear. If specific experience will substitute for education, say so. With the above fully flushed out, you'll have fewer resumes to review so reviewing them will be much more effective and efficient.

Writing the job description, if done well, will also help prepare the interviewer in developing questions to be used during the interview.

TYPES OF INTERVIEWS

There are two types of technical interviews: the phone interview and the face-to-face interview. Both have their advantages and disadvantages.

Meeting a person face-to-face gives a lot more opportunity to assess their skills. The candidate obviously brings to the interview only what they have in their headso body language can be very enlightening. Confusion, confidence, and comfort with questions are harder to hide in person. Time permitting, programming tests can easily be administered. I have found it very enlightening to have the candidate bring in code of their own and ask them to explain what it is doing.

There are disadvantages to a face-to-face interview. If you are going to the effort of bringing in a candidate for an interview, it's likely you will have this person interview with multiple people. Unless the person is a referral, you don't know anything more about the candidate than what is in his or her resume. You run the risk of wasting the time of multiple people with a candidate who could be quickly eliminated in a phone interview

Phone interviews allow the interviewer a chance to assess more candidates and it does not have to involve as many people. Phone interviews tend to take less time. This is could be its biggest advantage. Obviously written tests or code reviews are not really options. This can be overcome with a good set of questions that can be easily answered over the phone. Phone interviews, however, also hide the possibility that the candidate is using notes or looking items up during your discussion.

QUESTION TYPES: OPEN VS. CLOSED

There are two types of interview questions: open and closed. A "closed" question requires a yes/no or specific response. Questions such as: "Are you a US citizen?" (Yes), "How many years have you programmed in SAS?" (5), "What is the SAS numerical value of January 1, 1960?" (Zero).

An "open" question guides the candidate to lengthier responses and explanations. These types of questions reveal the most information. It is important to devise questions that elicit honest and revealing responses and require more thought from the candidate. Questions such as: "How did you get started using SAS?" require full sentence responses and frequently produce revealing answers. It's important to remember to give some "breathing time" after each question has been answered. The interviewee may often have additional input as they think through their response.

While open questions reveal the most, they are more tedious on both the interviewer and the interviewee. A nice mixture of both makes for the best interviews. The combination of the two types helps keep the flow of the interview moving and the candidate on their toes.

PRODUCTIVE INTERVIEWING

Below is a list of suggestions to make an interview as productive as possible: Come prepared with a list of relevant questions.

- Provide a private uninterrupted time to conduct the interview.

- Thoroughly familiarize yourself with the applicant's resume. Focusing on the pertinent areas to the role being discussed.

- Don't hesitate to take notes during the interview. As you go through each question, write down key words used by the candidate as a reminder of their reply.

- After finishing a question, it's helpful to categorize each answer with rough score: a B (Basic), I (Intermediate), A (Advanced), or E (Expert) for the 4 levels of skill. You can change them later, but it's a reminder of your initial impression. The accumulation of these categorizations will easily highlight your initial overall level assessment of the candidate.

- Taking notes and quick assessments during the interview will slow the pace, giving the interviewee time to shift more easily from one question to another. Sometimes this results in additional information from the candidate that would have otherwise been missed by speeding through at a fast a pace.

- If you are an experienced SAS professional, let the candidate know up front. They will be less likely to just use buzz words and waste time giving answers you know aren't correct. If you aren't experienced, do not offer this information. In that case, keep them guessing.

- Avoid leading questions such as "Isn't it right to", "Would you agree that", and "Wouldn't you". All of these phrases suggest an answer. Instead, use phrases such as "List", "Describe", "Tell me about",

"How would you …"

- Use follow-up questions when a vague or incomplete answer is given. The response may be the result of a candidate not fully understanding the question. Coming back with the same question worded differently may yield the desired results.

- Follow-up questions may be useful when you think the person is providing a distracting answer to avoid showing their lack of knowledge on a topic.

- Hold your fire. If you get an incorrect answer, it doesn't benefit either of you to point it out. It will distract the candidate from the rest of the interview. Just make a note of it when assessing the skill level for that particular question.

- Review your notes immediately after the interview to add additional comments or change your ratings based on the entirety of the interview.

GENERAL SAS INTERVIEW QUESTIONS (USE FOR GENERAL, ADMIN, & STATS)

This paper provides interview questions for 3 types of SAS professionals: Base SAS programmer, SAS Administration, SAS Statistician. The following questions may be used for all 3 types and a good way to get things rolling.

1) Where did you learn SAS _____ (Administration, Stats, etc.)?

   This is a nice generic question to get the conversation started. Did they learn it at school, on the job, attended SAS led training? I would be skeptical if someone tells me they taught themselves, although it is possible. In this case, I would follow up with a couple more questions.

2) How many companies have you worked for using SAS?

   While job hopping may be an indication of other issues, some variety may lead to a broader experience and show an ease to adapting to new SAS environments.

3) What version(s) of SAS are you currently using?

   a.   What previous versions have you used?

   b.   Which SAS software/tools have you used?

   If they don't know there are versions or which one(s) they are using, I'd label the candidate a beginner. An expert will be able to tell you which service package they're using and the history of the versions use. SAS has many software tools for many different purposes. If the candidate lists a tool you are unfamiliar with, jot it down and look it up later.

4) Which operating systems are you running under?

   a.   How long for each?

   b.   How long ago/recent?

   This author spent the first 10 years using SAS in a mainframe environment but have been on a Unix Platform or using PC SAS since that time. It would not be appropriate to suggest my skill in the mainframe arena is current.

5) Where do you go when you have a SAS question?

   This is a favorite question of this author's. I like to hear that the candidate has other SAS professionals they reach out too. Using the SAS community boards, searching for Papers on lexjansen.com, SAS topic books, User Groups, Google and SAS/Support are some of the most used tools. It would be concerning if a candidate suggests they mostly go to SAS/Support. I interpret this as someone that doesn't want to figure out their issues and wants someone else to do it for them. A

combination of responses is most desired.

6) What size of data is being processed in the environments you've run SAS?

    "Big" is a very relative term. Using the term Big Data doesn't necessarily mean the same thing to everyone. A million records with 4 variables is quite different from 300 million rows with 100 variables. This question is especially important if your environment uses data that is big enough that the approach to the job is affected by the skill of the user. Respectively, the number of servers or other measurements of the environment and the candidate's exposure should be explored.

7) Do you attend any local / in-house/ regional/ international/ etc SAS conferences?

    While this question does not necessarily lead to determining skill level, someone that is active in this aspect usually has a real desire to learn new skills, keep up with the latest tools and make profitable contacts.

8) Are you SAS Certified in any of the areas of competency?

    While Certification is a nice thing to have, certification without the years of professional experience means someone may only be good at studying and taking tests. Learning SAS in a controlled environment is quite different than the real world. The real world has very flawed data and less than ideal processing environments.

SAS DEVELOPER SKILL QUESTIONS

1) What is the significance of January 1st, 1960?

    Dates are one of those things that often give SAS users headaches even though dates are rarely not used. This is one of the most basic questions you could ask. If the candidate doesn't know the answer is 0 and that all SAS dates increase by one for each day after and decrease by 1 going backwards from Jan. 1st 1960 then they are not likely to be anything more than a true beginner.

2) Which SAS Procedures (Procs) do you use and for what purpose?

    An experienced SAS user will be able to list a dozen procedures they regularly use and how they use them. In addition, they will be able to list others less used but know their purpose.

3) List the SAS functions you generally use and how you use them.

    Similar to question #2 in the amount of examples which are listed and the description of their uses. One would expect this list to be much longer. Keep an eye out for the pattern and types of functions and their uses. Are most of those listed used for character string manipulation, data selection, in creating macro variables or other purpose? If some obscure, less obvious functions are listed, make sure to follow up with a description of how they use it. A "text book" answer may be more a sign of text book knowledge and not practical application.

4) Are there SAS system options you use and for what purpose?

    As with #2 and #3, an experienced user should have a varied response. A beginner may be aware of having Options in their code but not really understand their uses. The candidate may be using code inherited and just take the Options for granted and continue to use them even if they have little purpose for their current application. An experienced user will know how and when Options are effective.

5) Describe your familiarity with SAS formats/Informats and how you use them.

    A beginner may only be familiar with formats to manipulate dates and numbers into predictable printed formats (commas , dollar signs, percent signs, dates, length of character strings). The ability to create basic formats for specific purposes unique to their environment shows a bit more experience. The ability to create data driven formats is yet another step forward in experience. There are even more advanced application beyond these and would show an expert level of

knowledge.

6) When creating reports, what methods do you utilize? What type of output is produced and what is the method applied to create it?

There are so many answers to this question and some of it may be dependent on the SAS software being used. Do they Put statements to create output to a text file? (Very old school but sometimes still necessary). Do the create output using ODS? If so, which Engines and Templates do they use? What type of outputs do they create? .xlsx , .txt, .xml, .html , .pdf? Techniques using templates, modifying templates, creating multi-sheet Excel sheets, traffic lighting output and many different types of adding graphing and pivot table capability show advanced report creation if this is a needed skill.

In addition, which Procs do they use to create this output? Proc Report, Tabulate, Freq, Print, Contents, Reg, any of the multitude of the graphing output options, and the list goes on.

7) Describe your familiarity with SAS Macros.

There is a clear difference between SAS Macro variables and SAS Macro language. A beginner may not be aware of the difference and may only use Macro variables to be used multiple times in a process.   Stating the use of Macros for repeated processes doesn't show extensive skill in this area. A more experienced user will be able to describe the use of macro language far beyond creating variables and repeating processes.

8) What is the purpose of Data _Null_ and how do you use it?

This is not an overly important question and the lack of use would not be a concern if the need is for a less experienced candidate. If someone states they've been using SAS a long time and doesn't know its uses, then I'd be concerned. Data _Null_ is mostly associated with creating macro variables, using macro functions, testing or outputting values to the SAS log.

9) Are there other SAS tools you have experience with and what are the situations under which you use them?

This is an opportunity to allow the candidate to expand on anything which wasn't covered in pervious questions they feel may be pertinent. With the ever expanding list of SAS software options, even if a candidate hasn't used additional packages, a more experienced user will at least be aware of the availability and even an opinion of the necessity and situations applicable for such tools.

SAS ADMINISTRATION QUESTIONS

Note: These are questions are meant to be SAS specific. You'll want to add additional questions about environment specific topics (ex. Unix experience).

1) Describe your role with the SAS products and versions you have worked with.

With so many products available beyond base SAS, the match between their product line experience and yours is helpful. Experience with versions that match yours and newer versions is ideal for the future of your installation. If your organization is desktop oriented those skills will be most immediately relevant. Though there is a trend towards integrating with servers, don't overlook that value for the long-term. The stronger the matchup, the more value the candidate offers to your organization. The roles should include application administration, with most likely metadata management (users, groups, folders), and perhaps even some end user tools.

2) Describe the operating system(s) you have used with SAS and other tools, both client and server.

Experience on the operating systems you use in your organization is valuable, but similar intense experience on others can also be a plus should your organization shift directions. Look for discussion on the tools used within the operating system to monitor and optimize the environment. This should

include discussion around performance issue identification on disk I/O, memory, CPU, and network. Strategies to resolve those issues should be evident with an advanced candidate.

3) Which products have you installed and configured (both server and desktop products)?

   Desktop software installation and configuration is a must for any candidate and server installation for more experienced candidates. Multi-server installations with SAS Grid or SAS High Performance Foundation (such as with SAS Visual Analytics or SAS Visual Statistics) is expected in the most advanced candidates, although a number of organizations outsource that specialty due to the infrequency of installations. Experience with multiple environments (development, test, production) and the SAS Platform scheduler will also be evident with more experienced candidates.

4) Describe any special SAS configurations or enterprise integrations have you done.

   On the server side, enterprise integration is essential. A less experienced level candidate should have participation with authentication via LDAP/AD, network storage integration, database connections, appropriate disabling of virus scanning, and backups. There should be a long list of these from an experienced candidate such as user and group synchronization with an external identity provider, proxying through a network load balancer or Apache reverse proxy, enterprise scheduler integration, centralized logging, and complex security, firewall, and data leakage tool integration. Public versus private web integration along with support of applications that integrate with SAS may also be evident in senior candidates.

5) Describe the SAS hotfix and patching schools of thought and also the processes you have used.

   Different organizations patch on different schedules and for different reasons. Knowing which the candidate has experienced and which they have given thought to can determine both their experience and fit to your organization. The various approaches can be discussed, from simplest (none), to as-needed, to quarterly for security hotfixes, to monthly for all released hotfixes. The reasons behind these approaches and how to successfully accomplish them with a minimum of disruption to the end users should be apparent in an advanced candidate. Talking through exactly how the candidate accomplished the task should involve discussion of SASHFADD, SAS Deployment Manager, post-installation steps, system restarts, and the use of multiple environments to test and promote the changes all the way to production.

6) Describe your experiences migrating between SAS environments and versions.

   Having experience with multiple environments with active migrations indicates the candidate is well versed in this area. Discussion should include frequency of migrations (ad-hoc, daily, weekly, monthly, or only when an upgrade happens) and how long the process takes, along with nuances of the steps. Automation (or awareness of automation) of these steps indicates a more advanced candidate. Similarly with short migration times.

7) How many and what types of users have you supported?

   a) Describe some of the main support activities.

   b) What were some of the interesting outliers and challenges?

   Look for experience with a large number of users in an advanced candidate as well as a thorough discussion regarding troubleshooting, best practices and techniques the candidate uses to support a large number of end users. Different organizations draw the line between administrator and end-user

support differently. You may find an advanced candidate who works closely with an end-user support team rather than directly with users.

8) Describe the typical SAS software administrative tasks you perform daily/ weekly/ monthly/ quarterly/ annually.

   Daily testing of components, cleaning of SASWORK, review of monitoring tools or critical logs, periodic restarts, and appropriate hotfixing indicates a solid candidate. In addition, further log review, automation of administrative tasks, performance monitoring and testing, hotfixing both the operating system and applications, and periodic resizing of server resources should be discussed in-depth with an advanced candidate.

9) Describe your experience using the end user SAS tools you support such as writing SAS code, doing analytics on your SAS environment or testing and troubleshooting to confirm proper operation.

   Experience using the tools that are supported means that the candidate will be better at understanding end-user issues and able to more quickly zero in on issues. More sophisticated use of the SAS tools to make the work of the administrator easier and more productive should be part of a discussion with a senior candidate.

10) Describe the process you use to troubleshoot user reported problems and some of the quick fixes you have discovered.

   This discussion builds upon the previous responses and may possibly teach the interviewers something new and validate already known existing quick fixes. This is a good opportunity to test knowledge of your quick fixes, too, from cleaning of the SASWORK, adding additional local storage on multiple I/O channels, to product specific things like rebalancing of a hadoop cluster and associated restarting of LASR servers. A detailed conversation with topics more relevant to your organization indicates an advanced candidate.

SAS STATISTICIAN QUESTIONS

Note: These questions are meant to be SAS specific. You'll want to add additional questions on other Statistical specific topics.

1) -- Ask the questions applicable from the SAS Developer Skill set --

   Unlike SAS Administrators, a SAS Statisticians should know how to program in SAS. Only beginners or school taught would expect data to already be clean and ready for analysis.

2) What SAS software tools do you use?

   Answers such as Base SAS (Enterprise Guide), Enterprise Miner, SAS Model Manager and JMP would be likely answers. If they use other tools, get them to explain why? It may show a lack of actual skill using SAS software.

3) What steps and SAS procedures (procs) do you use to explore data for analysis?

   Answers such as Base SAS (Enterprise Guide), Enterprise Miner, SAS Model Manager and JMP would be likely answers. If they use other tools, get them to explain why? It may show a lack of actual skill and experience using little more than Base SAS (Enterprise Guide) for data prep and using other "non-SAS" tools for analysis and modeling efforts.

4) What SAS/Stat Procedures (procs) do you use to build models?

   a) For what purpose?

b) What type of output is produced and what information is derived from the output?

c) What options and statements do you utilize in each?

You should likely spend more time on this set of questions than any other. A beginner will likely speak towards using Proc Reg for linear regression, Proc Logistic for logistical regression models and some of the other traditionally used Procs. Being able to speak about the use of each, what information is derived from their use and how they use them will enlighten the interviewer to the depth of their skill. Look for "more tools in the toolbox" and why they use them.

A complete list of the SAS/Stat Procedures may be found on
https://support.sas.com/rnd/app/stat/procedures/Procedures.html

5) What procedures (procs) and tools do you use for model validation and your interpretation of the results?

Look for answers around Proc Logistics, PHReg etc. and the ability to describe when each is applicable. The tools listed in #2 should be part of this conversation. The more depth to the answer, the more advanced the skill.

6) What SAS approaches do you use to deliver results?

Listings, Proc Freq / Means and a few graphing options are pretty basic. There are a lot of advanced Graphing procedures and SAS/Stat procedures which produce output that are much more professional and better for presenting results. A more advanced user is going to provide responses that tell a story and support the results.

WRAPPING UP A TECHNICAL INTERVIEW

After all the questions you've prepared have been explored and you feel you've gotten enough of the appropriate information to make an assessment, allow the candidate some time to add additional information they feel may be of interest to you. Not only is this polite, occasionally there is interesting information divulged.

Once the interview is finished and the candidate has departed, immediately review your notes to make sure they are complete and represent your impression in its entirety. Compare the skill levels to your predetermined needs. A quick summary of the number of questions you considered adequately or appropriately answered in each category--Beginner, Intermediate, Advanced and Expert--will be a helpful score that can be useful in a contested final decision.

Make sure to retain a copy of the candidate's resume along with your final assessment, notes, summarization of skills and the job description. You never know when someone might apply in the future or a new position becomes available that the interviewee may be well suited. It's a good precaution for anything unexpected rather than having to rely on your memory, especially if interviewing is done over a long period of time and further comparisons need to be made.

CONCLUSION

This paper is a nearly complete rewrite of the SAS Global Forum 2007 Best Contributed Paper award of the same name., I have removed outdated material and added sections for Administration and Statistics. I hope that the adjustments will stand the test of time and continue to be useful.

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SAS DEVELOPER QUESITONS

GENERAL

1) Where did you learn SAS ____ (Administration, Stats, etc.)?
2) How many companies have you worked for using SAS?
3) What version(s) of SAS are you currently using?
   a) What previous versions have you used?
   b) Which SAS software/tools have you used?
4) Which operating systems are you running under?
   a) How long for each?
5) Where do you go when you have a SAS question?
6) What size of data is being processed in the environments you've run SAS?
7) Do you attend any local / in-house/ regional/ international/ etc. SAS conferences?
8) Are you SAS Certified in any of the areas of competency?

SKILL

1) What is the significance of January 1st, 1960?
2) Which SAS Procedures (Procs) do you use and for what purpose?
3) List the SAS functions you generally use and how you use them.
4) Are there SAS system options you use and for what purpose?
5) Describe your familiarity with SAS formats/Informats and how you use them.
6) When creating reports, what methods do you utilize? What type of output is produced and what is the method applied to create it?
7) Describe your familiarity with SAS Macros.
8) What is the purpose of Data _Null_ and how do you use it?
9) Are there other SAS tools you have experience with and what are the situations under which you use them?

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6) What size of data is being processed in the environments you've run SAS?
7) Do you attend any local / in-house/ regional/ international/ etc. SAS conferences?
8) Are you SAS Certified in any of the areas of competency?

SKILLS

1) Describe the SAS products and versions that you have worked with. What was your role with them?

2) Describe the operating system(s) that you have used with SAS and other tools, both client and server.

3) Which products have you have installed and configured (both server and desktop products)?

4) Describe any special SAS configurations or enterprise integrations have you done.

5) Describe the SAS hotfix and patching schools of thought and also the processes you have used.

6) Describe your experiences migrating between SAS environments and versions.

7) How many and what types of users have you supported? Describe some of your main support activities and some of the interesting outliers and challenges.

8) Describe the typical SAS software administrative tasks you perform daily/ weekly/ monthly/ quarterly/ annually.

9) Describe your experience using the end user SAS tools that you support such as writing SAS code, doing analytics on your SAS environment, or testing and troubleshooting to confirm proper operation.

10) Describe the process that you use to troubleshoot user reported problems and some of the quick fixes that you have discovered.

STATISTICAL INTERVIEWS

GENERAL

1) Where did you learn SAS _____ (Administration, Stats, etc.)?

2) How many companies have you worked for using SAS?

3) What version(s) of SAS are you currently using?

   a) What previous versions have you used?

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4) Which operating systems are you running under?

   a) How long for each?

5) Where do you go when you have a SAS question?

6) What size of data is being processed in the environments you've run SAS?

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9) Are there other SAS tools you have experience with and what are the situations under which you use them?

SAS/STAT SKILL

2) What SAS software tools do you use?

3) What steps and SAS procedures (procs) do you use to explore data for analysis?

4) What SAS/Stat Procedures (procs) do you use to build models?

   a) For what purpose?

   b) What type of output is produced and what information is derived from the output?

   c) What options and statements do you utilize in each?

5) What procedures (procs) and tools do you use for model validation and your interpretation of the results?

6) What SAS approaches do you use to deliver results?