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# SAS® Programming *Master Class*

- a focused way of learning SAS programming

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```
data work.season;
  set orion.customer_dim;
  length Promo2 $ 6;
  Quarter=qtr(Customer_BirthDate);
  if Quarter=1 then Promo='Winter';
  else if Quarter=2 then Promo='Spring';
  else if Quarter=3 then Promo='Summer';
  else if Quarter=4 then Promo='Fall';
  if Customer_Age>=18 and Customer_Age<=25 then Promo2='YA';
  else if Customer_Age>=65 then Promo2='Senior';
  keep Customer_FirstName Customer_LastName Customer_BirthDate
      Customer_Age Promo Promo2;
run;
```

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```
proc print data=work.season;
  var Customer_FirstName Customer_LastName Customer_BirthDate Promo
      Customer_Age Promo2;
run;
```

---

```
Proc means data=work.season;
  class Promo;
  var Customer_Age;
run;
```

SAS Programming Master Class is a structured way of learning SAS. The program is divided into two parts: Foundation and Advanced.

In the program you gain the skills that are needed to be a skilled SAS Programmer. Learn how to write efficient SAS code and SAS programs, macro programs and SQL. You will earn knowledge to pass two certifications: SAS Base Programmer and SAS Advanced Programmer.

*The perfect start of those interested in a career as a SAS professional*

The program is intended for people with an interest in programming skills, such as:

- Business analysts
- Data scientists / statisticians
- IT Professionals

The objectives of the program are to get experience in programming and data management using SAS®9 and be able to:

- Import and export raw data files.
- Manipulate and transform data.
- Combine SAS data sets.
- Create basic detail and summary reports using SAS procedures.
- Identify and correct data, syntax and programming logic errors.

Program objectives

The program takes you through the fundamental to the advanced concepts of SAS programming as well as the different components and techniques required to succeed and create real value with programming and analytics.

The program focuses on comprehensive training using software products such as SAS® Enterprise Guide® and SAS Studio to complete class assignments. Prior knowledge of these software products is not required.

Strategic and tactical program outcomes

For the organization:

- Get your workforce into SAS programming fast.
- Organizational SAS programming focus.
- Talent management for analytical talents.
- Modern way of learning (*cost efficiency*).

For the individual:

- Invest in your future.
- Strengthens your daily work with SAS.
- Get the knowledge of SAS programming fast.
- Network and skills sharing with compeers.
- Modern may of learning (*flexible*).

Learn how to

- Write SAS-code from a beginner level to more advanced level.
- SAS Programmers create programs and work more efficiently with SAS.
- Solve your problems with SAS programming.
- Get immediate analytic insights and programming knowledge to support and impact your organization.
- Collect skills to get certified in SAS programming.

## Overview

This is a learning and networking program at a 6 months duration with focus on everything that is needed for a SAS Programmer.

The program combines:

### Instructor-led Classroom

Scheduled, instructor-led classroom courses at SAS with small-group discussions, presentations, and hands-on software demonstrations, for a highly engaging learning experience with our SAS experts (required).

Courses:

- SAS Programming 1: Essentials
- SAS Programming 2: Data Manipulation Techniques
- SAS Macro Language 1: Essentials
- SAS SQL 1: Essentials
- SAS Advanced Programming

### Extended Learning

Online Extended Learning offers a beneficial extension of the classroom learning experience after the SAS' classroom training. Each of our Extended Learning pages provides students access to the course content and additional learning tools from a variety of other SAS and user resources. The results are a richer learning experience and one that extends well beyond the last day of class (optionally).

### Programming LAB days and Case Studies

The participants use monthly Programming LAB days at SAS to practice case studies to anchor the programming and analytic mind-set. The cases contain a variety of different program examples useful for an everyday work as a SAS programmer learned in the courses to bridge the gap between high-level business messages to technical code.

During the LAB days, skilled and certified SAS instructors are available, so you can get help from the specialists on specific topics. Our

instructors are committed to help you learn and grow with SAS (optionally).

### Practice Exams

Online practice exams for Base SAS and Advanced certification are designed to be as representative as possible to the actual exam in difficulty level, objective coverage, length, and look and feel – and is a good way of homework preparation prior to taking your exam (optionally).

### Certification Exams

The SAS Certified Base Programmer for SAS9 credential is the ideal certification for those new to SAS programming and is also the principle certification for the SAS Certified Advanced Programmer for SAS9 (required).

The SAS Certified Advanced Programmer for SAS9 credential represents the upper echelon of SAS programmers. Those who earn the advanced programming credential have demonstrated a high level of proficiency in SAS programming expertise. The candidate must currently hold a SAS

Certified Base Programmer for SAS9 credential (required).

You will get a voucher for each certification exam at SAS for the first exam attempt.

If you do not pass, you can re-take the exam up to five times in a 12-month period, waiting a minimum of 14 days between each attempt. Exam charges are incurred for each exam attempt.

### Certificates and SAS Digital Badges

When you take an eligible SAS course or earn an internationally recognized credential from SAS, you also earn a digital badge - SAS Learn Badge or SAS Certification Badge - that you can share on email signatures, digital resumés and on your social media sites, including

LinkedIn, Facebook and Twitter. The digital images contains verified metadata that confirms your accomplishments.



**Program plan for 6 months**

		<b>Session 1</b>	
		<b>Duration</b>	<b>Topic</b>
<b>Foundation</b>		2 days	Introduction, program and accessing data. Creating reports and format data values. Manipulating data and combine data.
		2 days	Control SAS data set input and output. Summarize, read and write different types of data. Perform DO loop and SAS array processing. Transform character, numeric and data variables.
		Self-study	Extended Learning for Programming 1 + 2 Base practice exam. Case studies and exercises.
		½ day	Base SAS Certification Exam
		<b>Session 2</b>	
		<b>Duration</b>	<b>Topic</b>
<b>Advanced</b>		2 days	Perform text substitution in SAS code. Automate and customize the production of SAS code. Conditionally or iteratively construct SAS code. Use macro code variable and macro functions.
		2 days	Query and subset data. Summarize and present data. Combine tables, including complex joins and merges. Replace multiple DATA and PROC steps with one SQL query.
		3 days	Control memory, I/O, and CPU resources. Create and use indexes. Combine data horizontally. Create user-defined functions and in formats.
		Self-study	Extended Learning for Macro 1, SQL 1 and Advanced. Programming. Advanced practice exam. Case studies and exercises.
		½ day	Advanced Certification Exam

You should expect time for self-study each week to complete the program.

#### Price

Price for 1 participant on the program is DKK / SEK / NOK 40,000 exclusive of VAT.

#### More information

For more information or pricing specific to your company needs, please contact your SAS Education Sales Representative:

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