

# SAS<sup>®</sup> GLOBAL FORUM 2018

USERS PROGRAM

## The Art of Accurate Reports (with Examples from SAS<sup>®</sup> Enterprise Guide<sup>®</sup>)

By Victoria Garcia

Florida Fish and Wildlife Conservation Commission

April 8 - 11 | Denver, CO

**#SASGF**


# The Art of Accurate Reports (with Examples from SAS<sup>®</sup> Enterprise Guide<sup>®</sup>)

By Victoria Garcia

Florida Fish and Wildlife Conservation Commission

**Abstract:** Many times, we find ourselves with an overwhelming amount of data at our fingertips. The goal of this paper is to aid the user in creating accurate reports in SAS Enterprise Guide in a simple top-down approach using four steps; Envisioning, Planning, Creating, then Testing. For this paper, we will be working data from the Florida Fish and Wildlife Conservation Commission.

Big Data



Your  
Report

# The Art of Accurate Reports (with Examples from SAS® Enterprise Guide®)

By Victoria Garcia

Florida Fish and Wildlife Conservation Commission

## Envision

### Layout and Format:

Write out what you want your report to look like down to the nitty gritty.

### Using the Data Dictionary:

Know what each column represents.

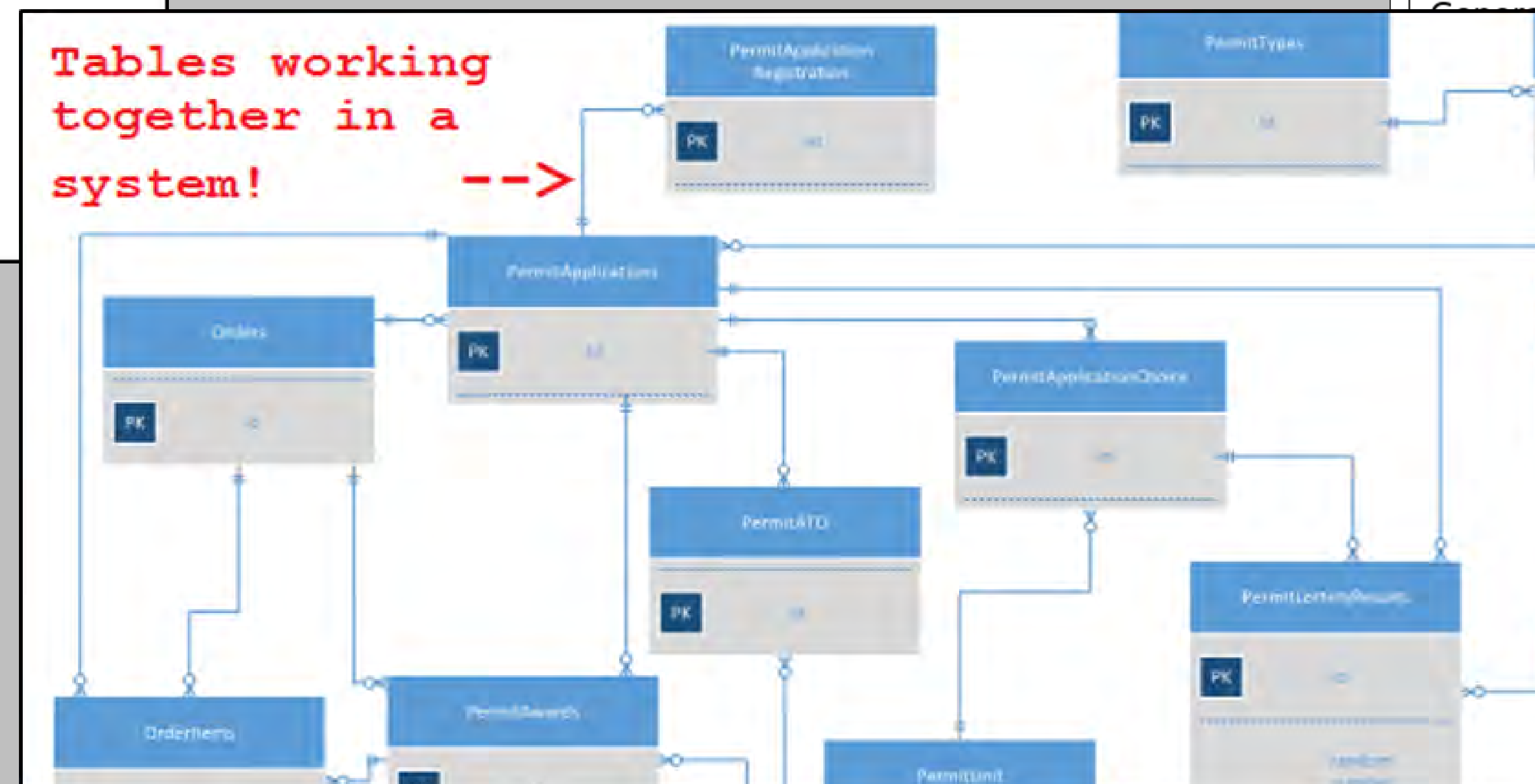
### Know your data:

Systems can be huge and complex like a clock. One gear can depend on another. Be sure that you are using the correct one!

```

The Art Accurate Reports - Notepad
File Edit Format View Help
Resident Senior License Count and Revenue of Fiscal Year 2016
Report Layout and Format:
Layout [Count] [Type] [Revenue]
Format [BESTW.] [DOLLARw.d]
Define:
Count = Count of licenses bought
Revenue = Sum of license fees
    
```

<u>Column Name</u>	<u>Type</u>	<u>Description</u>
Cust_ID	char	Customer ID
Residency	char	Displays if customer is resident or non
Generation	char	Generation customer falls into. Baby boomer, Millennial, etc.
	char	Male, Female, Other



# The Art of Accurate Reports (with Examples from SAS® Enterprise Guide®)

By Victoria Garcia

Florida Fish and Wildlife Conservation Commission

## Plan

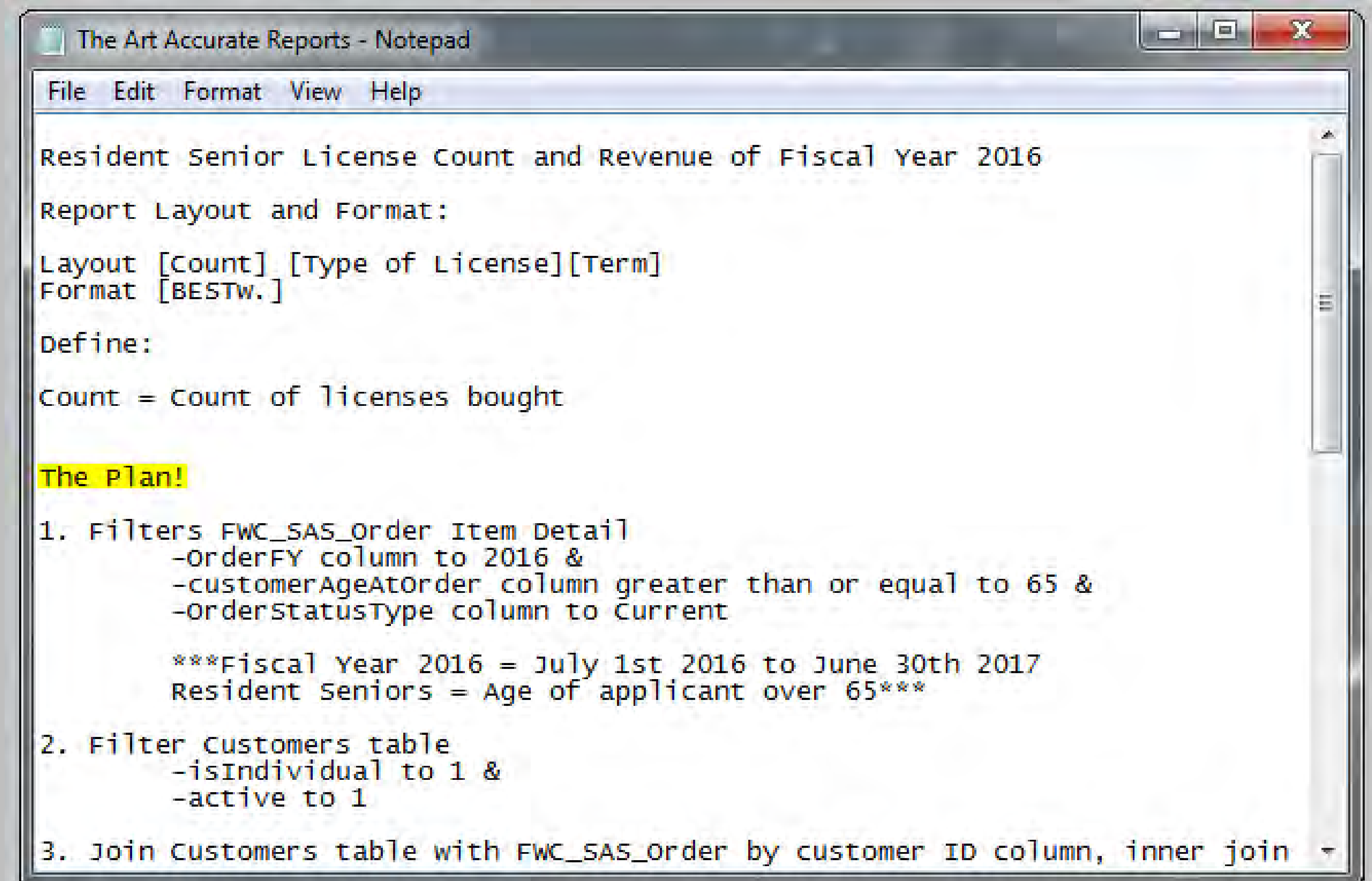
### Which Data Sets

With help from the Data Dictionary, decide which data sets you need to use. Use caution when using multiple sets, as you don't want the same information twice.

### "Think twice, Code once"

There's an old saying when it comes to programming and it's "Think Twice, Code Once". It means you should plan before you code. This applies to creating accurate reports.

In your notepad, write out a plan. Carefully, step by step, put an imaginary process flow into words.



```
The Art Accurate Reports - Notepad
File Edit Format View Help

Resident Senior License Count and Revenue of Fiscal Year 2016
Report Layout and Format:
Layout [Count] [Type of License][Term]
Format [BESTw.]

Define:
Count = Count of licenses bought

The Plan!

1. Filters FWC_SAS_order Item Detail
   -OrderFY column to 2016 &
   -customerAgeAtOrder column greater than or equal to 65 &
   -OrderstatusType column to Current

   ***Fiscal Year 2016 = July 1st 2016 to June 30th 2017
   Resident Seniors = Age of applicant over 65***

2. Filter customers table
   -isIndividual to 1 &
   -active to 1

3. Join customers table with FWC_SAS_order by customer ID column, inner join
```

# The Art of Accurate Reports (with Examples from SAS® Enterprise Guide®)

By Victoria Garcia

Florida Fish and Wildlife Conservation Commission

Now, follow your  
brilliant plan!

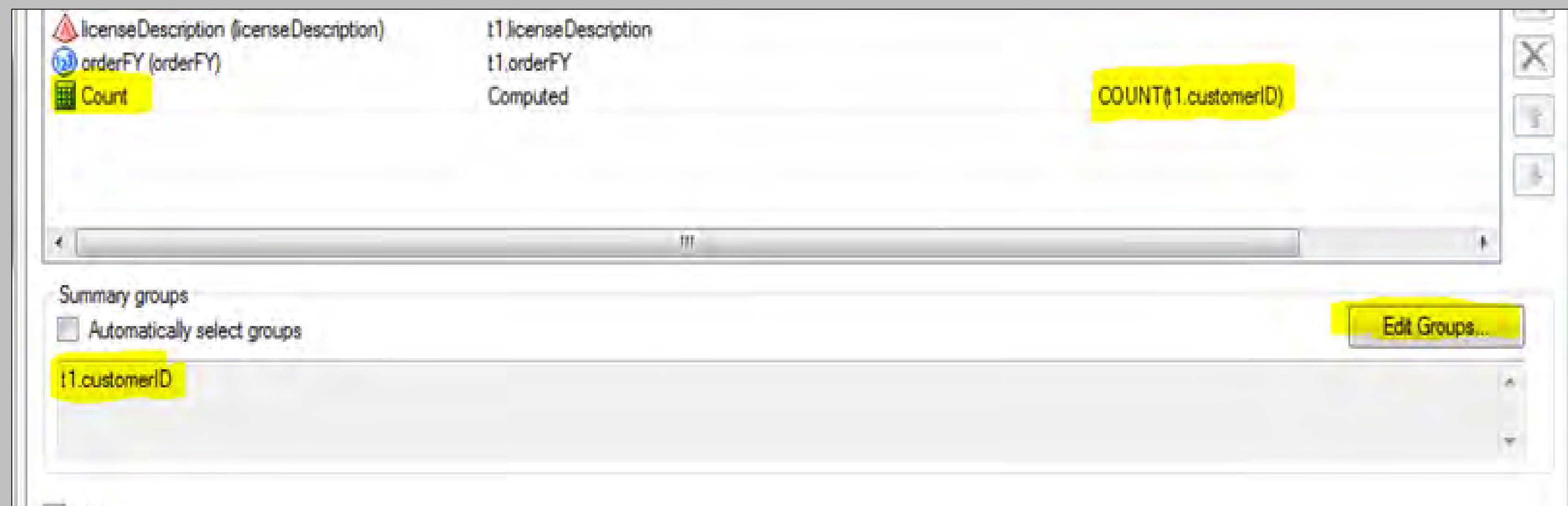
## Create

### Tip #1. Finding Duplicates

Removing duplicates is easy. Simply use the 'Select distinct rows only' in the Query Builder.

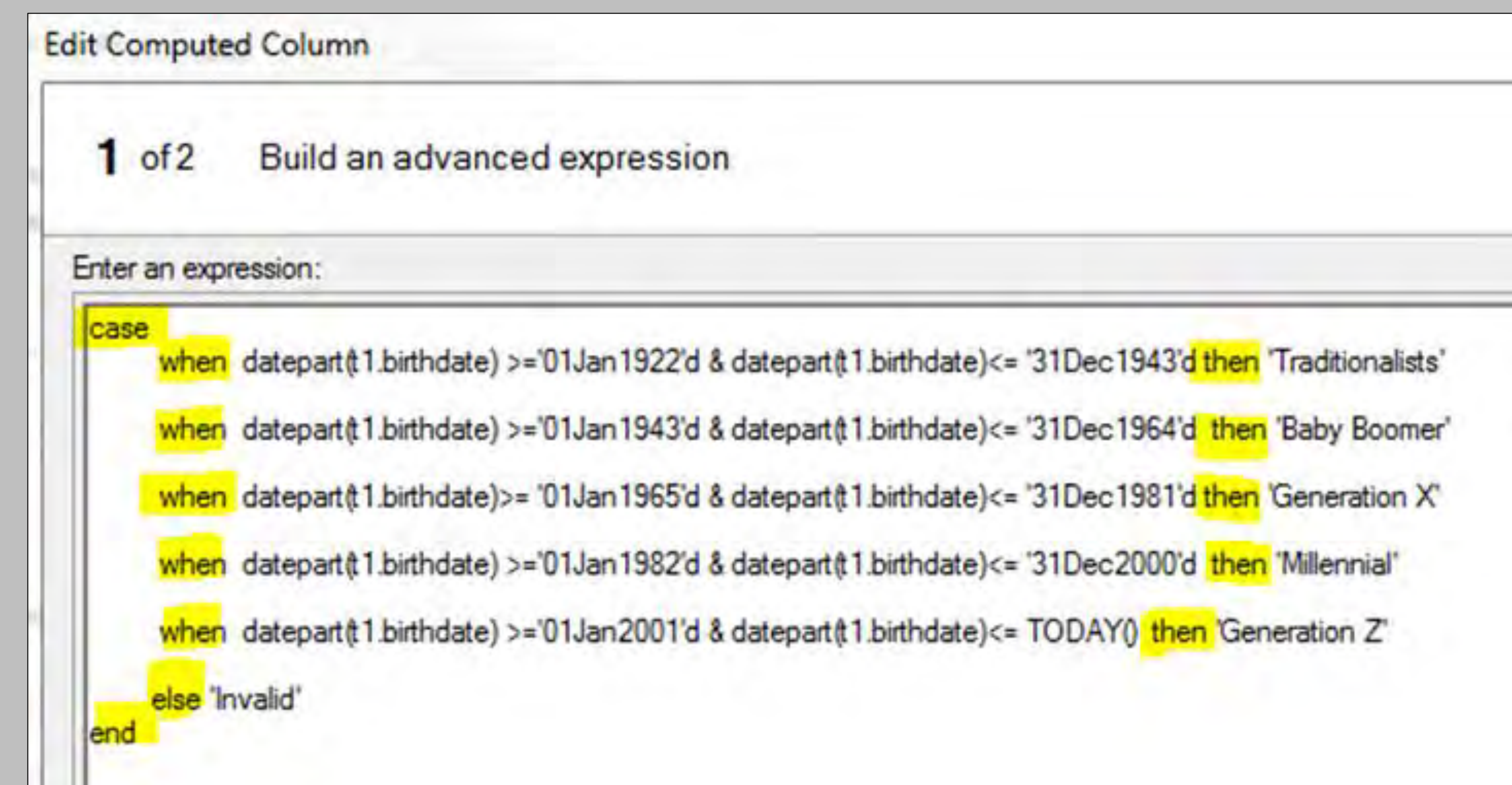
But what if you want to find how many times an item appears in the data?

Then the COUNT function is your best friend. Here we are counting how many unique customers appear in our data.



### Tip #2. The WHEN statement

The WHEN statement is incredibly can be used in so many scenarios for example



# The Art of Accurate Reports (with Examples from SAS<sup>®</sup> Enterprise Guide<sup>®</sup>)

By Victoria Garcia

Florida Fish and Wildlife Conservation Commission

## Test

### The Checklist

- Compare your report to information from the system(s) you are working in. It's always good to make sure your report accurately reflects the system.
- Ask a co-worker if the report makes sense. Now, I'm not talking about just any co-worker; try to find one that is familiar with the system.

Red flags include comments like: *"That seems a bit inflated/deflated."*

*" ... Are you sure? "*

and *"I think you're completely wrong."*

- Take a break. Either it be 15 minutes or a day. Just give yourself time to refresh. When you return, read your notes over.
- Compare your data to your data. Meaning, create another report in a different way that verifies the first report.

Paper #1799-2018  
The Art of Accurate Reports  
(with Examples from SAS® Enterprise Guide®)  
Victoria Garcia  
Florida Fish and Wildlife

1. Envision your report
  - Layout and format
  - Not everything is as it seems (Using the data dictionary)
  - Know your Data
2. Plan your report
  - Which data sets to use
  - Write it out – “Think twice, Code once”
3. Create your report
  - Tips and Tricks (Finding duplicates, the WHEN statement)
4. Test your report
  - The checklist

### **Abstract:**

Many times, we find ourselves with an overwhelming amount of data at our fingertips. The goal of this paper is to aid the user in creating accurate reports in SAS Enterprise Guide in a simple top-down approach using four steps; Envisioning, Planning, Creating, then Testing. For this paper, we will be working data from the Florida Fish and Wildlife Conservation Commission.

### **Step 1. Envision your report**

The first step to creating an accurate report is knowing what you want and how you want it. You might be tempted to skip this step. You might say “Of course I know what I want!” then start building. I assure you, this step is vital. Having a solid vision of what you want keeps you on track.

- **Layout and Format:**

Start with a notepad, virtual or not. Type in the name of your report then the columns you want, even if the columns don't exist in the data you are working with. Below the columns, write the format that suites each one if at all. Remember that raw data doesn't have commas or dollar signs. For columns that do not exist in the data, define them.

For this report, I have been asked to show how many and what type of licenses were sold to resident senior citizens in 2016.

```

The Art Accurate Reports - Notepad
File Edit Format View Help
Resident Senior License Count and Revenue of Fiscal Year 2016
Report Layout and Format:
Layout [Count] [Type] [Revenue]
Format [BESTw.] [DOLLARw.d]
Define:
Count = Count of licenses bought
Revenue = Sum of license fees

```

- **Not everything is as it seems. Using the Data Dictionary:**

Now that you know what you want and how you want it. It's time to know what you have. Most systems have a **Data Dictionary**. This nifty file contains descriptions of each column in your data set. Any good SAS System Administrator has one, ask yours! It could look like the one below or a bit different. If you have the Column names and Definitions, then you are golden.

**RLIS Replicated Data Dictionary** *<-- Name of Data Dictionary*

**ACHInputFile** *<-- Table Name* Object

*Stores the ACH Input files generated by Brandt.* *<-- Table Description*

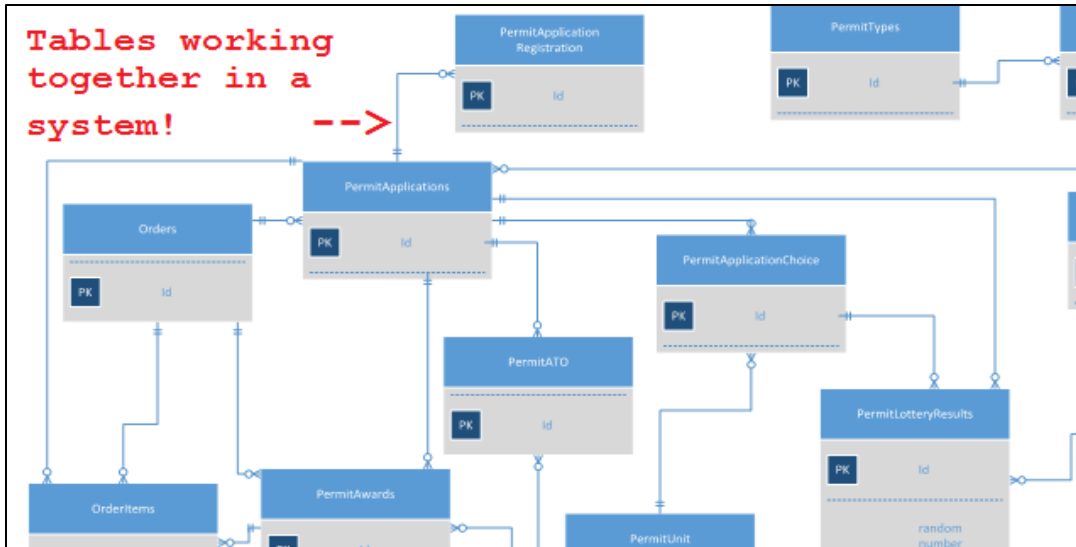
[ Column Name ]	Type	Length	Null	[ Description ]
ACHInputFileId	int	4	No	Unique ACH Input File id.

- **Know your data:**

Systems can be huge and complex like a clock. One gear can depend on another. Using the Data Dictionary, look at your tables then ask yourself "What is this table used for?" and "How do they work together?".

Note: The data provided to you in SAS might not be the same one used in the system. There can be hundreds of tables in a system. Instead of sifting through all of them, your SAS Systems Administrator might have created a couple tables for you to use!





**Step 2. Plan your Report:**

- **Which data sets to use:**

For the report mentioned in step one, I have chosen two sets; a table that contains all orders from 2016 and a table that contains current customers. There are other tables available but these two contain all the information that I need, no more, no less.

Note: Use caution when using multiple tables as you might it the same information twice.

- **Write it out – “Think twice, Code once”:**

There’s an old saying when it comes to programming and it’s “Think Twice, Code Once”. It means you should plan before you code. When writing a complex program with hundreds of lines of code, poor planning could lead to disaster like having to write the program all over again; resulting in hours of wasted time. Now, we aren’t coding but this saying applies to a lot of things in life and it certainly applies to creating an accurate report.

In your notepad, write out a plan. Carefully, step by step, put an imaginary process flow into words.

```

The Art Accurate Reports - Notepad
File Edit Format View Help

Resident Senior License Count and Revenue of Fiscal Year 2016
Report Layout and Format:

Layout [Count] [Type of License][Term]
Format [BESTw.]

Define:

Count = Count of licenses bought

The Plan!

1. Filters FWC_SAS_Order Item Detail
   -OrderFY column to 2016 &
   -customerAgeAtOrder column greater than or equal to 65 &
   -OrderStatusType column to Current

   ***Fiscal Year 2016 = July 1st 2016 to June 30th 2017
   Resident Seniors = Age of applicant over 65***

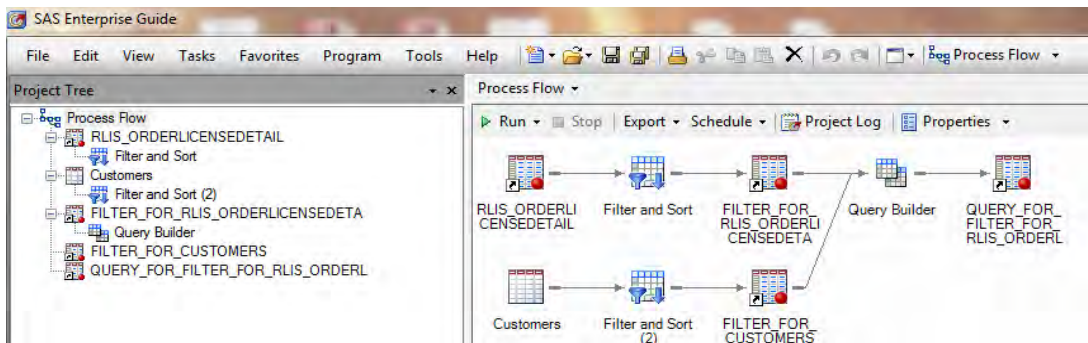
2. Filter Customers table
   -isIndividual to 1 &
   -active to 1

3. Join Customers table with FWC_SAS_Order by customer ID column, inner join

```

**Step 3. Create your report:**

Now, follow your brilliant plan! By writing it out, you have already worked out any kinks that you would have run into otherwise. If you add extra filters or do something that isn't in the plan, be sure to add it to your notepad. You are not only writing for your future self, but for others to follow behind you.

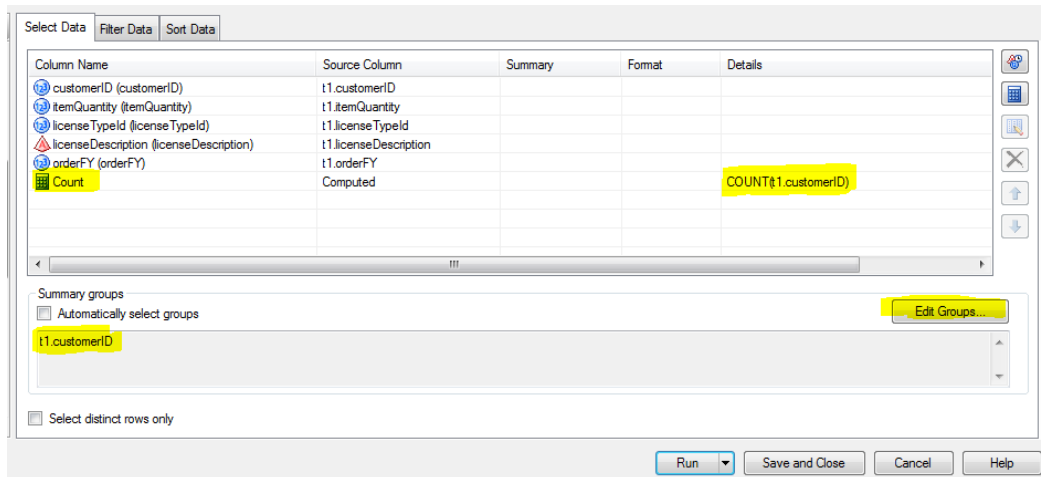


- **Tip #1. Finding Duplicates**

Removing duplicates is easy, you could simply use the 'Select distinct rows only' in the Query

Builder.

But what if you want to find how many times an item is appears in the data? Ladies and Gentlemen, the COUNT function. In the below picture we are using the COUNT function to count how many times a customer ID appears in the data. We changed the group by settings to group by customer ID.

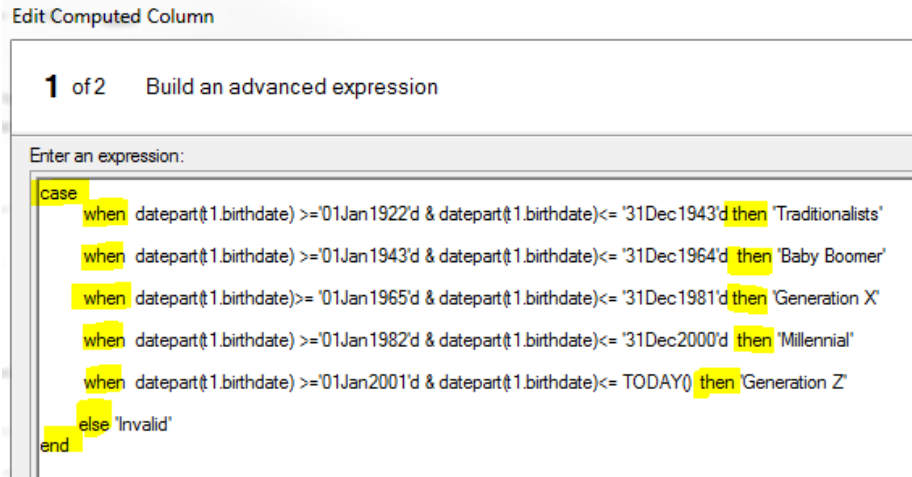


**Note:** To find how many times a customer with a specific license type appears in the data then we would add 'licenseTypeID' to groups. If you are new to creating calculated columns the first and most important thing to familiarize yourself with all the different functions.

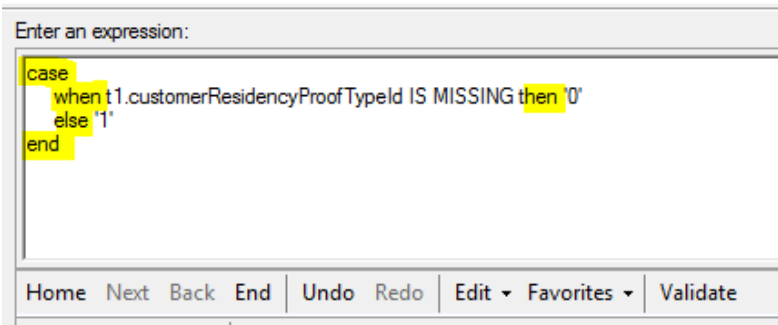
- **Tip #2. The WHEN statement**

The WHEN statement is incredibly versatile. The WHEN statement is used when you want to replace one value with another but only when that value meets certain conditions. Just remember to add **case, when, then, else, end.**

Example 1. We want to create a column for the different generations our customers fall into:



Example 2. We want to replace all missing values in our column with zeros:



#### Step 4. Test your Report

The last but certainly not least step. Testing your report. You have gone through the steps precisely and confident that your report is accurate. However, no matter how certain you are there's always a chance of making mistakes. We're human after all.

- **The Checklist:**

- Compare your report to information from the system you are working in. It's always good to make sure your report accurately reflects the system.
- Ask a co-worker if it the report makes sense. Now, I'm not talking about just any co-worker; try to find one that is familiar with the system.

Red flags include comments like:

“That seems a bit inflated/deflated.”

“... Are you sure?”

and “That seems way off.”

- Take a break. Either it be 15 minutes or a day. Just give yourself time to refresh. When you return, read your notes over.

- Compare your data to your data. This might sound silly, but try to create another report that should logically reflect the report you created first. Example, for our report of finding how many senior customers purchased a license in 2016; create a table that counts and sums the distinct number of senior customers from that year. The rows should match.

**Thank you!**

**Contact Information**

Victoria Garcia

Florida Fish and Wildlife

Victoria.Garcia@myfwc.com

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.