Hands-on Workshop: SAS® Program Debugging Challenge

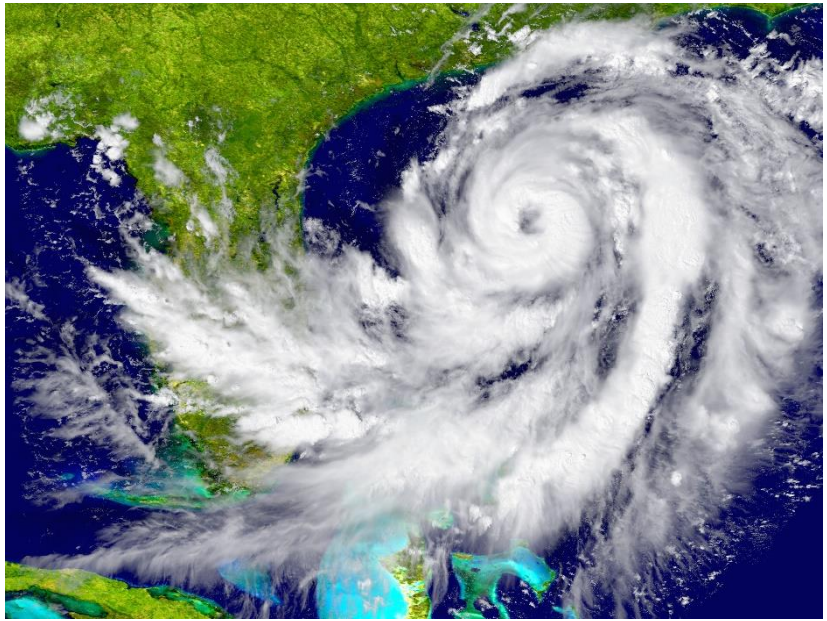
Welcome!

SAS Program Debugging Challenge

- Scenario
- Data and Desired Outcome
- The Challenge and Resources
- Get to Work!

Scenario

- You are an analyst at the National Hurricane Center.
- Your department has been working on a SAS program to automate the process for analyzing tracked storms.
- You have inherited the program.
- The program contains logic and syntax errors.



DATA

1. Storm_Details
2. Storm_Lookup

Data Information

- National Hurricane Center
- https://www.nhc.noaa.gov/data
- Atlantic & Pacific Hurricane (storms) database
- Data has been imported, cleansed, and sorted.

Storm_Details SAS Data Set

- There are 47,667 observations.
- The data contains a key, named **StormKey**, for each tracked storm.
- Data is collected for each tracked storm up to four times a day, from its initial date tracked to its last.
- **Status** is determined by **MaxWind**.
- The data is sorted by **StormKey** and **Date**.

Partial **Storm_Details**

StormKey	Date	Name	Status	MaxWind
1950ABLE	12AUG1950	ABLE	TS	35
1950ABLE	12AUG1950	ABLE	TS	40
1950ABLE	12AUG1950	ABLE	TS	45
1950ABLE	12AUG1950	ABLE	TS	50
1950ABLE	13AUG1950	ABLE	TS	50

Storm_Lookup SAS Data Set

Contains a lookup table for the descriptions of storms (**StatusDescription**).

Common Variable

Storm_Lookup

Status	StatusDescription
EX	Extratropical Cyclone
HU	Hurricane
LO	Low
SD	Subtropical Depression
SS	Subtropical Storm
TD	Tropical Depression
TS	Tropical Storm
WV	Tropical Wave

DESIRED
OUTCOMES

1. SAS Data Set
2. Report

Storm_Answer SAS Data Set

The data set contains one observation per storm. Here is what each observation should have:

- **Start_Date**, **End_Date**, and **LengthofStorm** (in days)
- **MaxWind** (maximum wind speed) and **MaxStatus** for the tracked storm
- a **MaxStatus** value based on the **StatusDescription** column in the **Storm_lookup** data set
- a new variable named **Category** that is created using the format provided

Partial **Storm_Answer**

StormKey	Name	MaxStatus	MaxWind	Category	Start_Date	End_Date	LengthofStorm
1950ABLE	ABLE	Hurricane	110	Category 2	12AUG1950	24AUG1950	13
1950HIKI	HIKI	Hurricane	75	Category 1	12AUG1950	21AUG1950	10

Final Storms Report

- PDF output with ***landscape orientation and one-inch margins***
- Automatically generated title that has the ***beginning and ending year*** of the data

Storms from 1900 to 2018

StormKey	Name	MaxStatus	MaxWind	Category	Start_Date	End_Date	LengthofStorm
1952CHARLIE	CHARLIE	Hurricane	105	Category 2	24SEP1952	01OCT1952	8

- Automatically generated footnote with the ***exact date and time*** that the report was run

Report Generated on: January 22, 2018 at 15:36:19

The Challenge and Resources

Files ⇨ C:\Workshop\Challenge\ProgramDebug

Debug **Storm Challenge.sas**

01 DATA Step Issues

02 Join Issue

03 Report Issues

SAS Program Debugging Challenge Document

- Introduction
- Challenge Issues
  - Be sure to answer the validation questions at the end of the section by running the provided validation code at the bottom of the **Storm Challenge.sas** program.
- Challenge Hints
- Suggested Answer

Recap

- Using any interface, debug the **Storm Challenge.sas** program.
- Select **Files** ⇨ **C:\Workshop\Challenge\ProgramDebug**.
- You can use the **Challenge Issues** section as a guide for help with debugging the program.
- If you are stuck, use the **Challenge Hints** section in your document.
- Answer the questions at the bottom of the **Challenge Issues** section of your document to participate in the end-of-class trivia!

SAS Program Debugging Challenge

Download the following:

- Challenge PDF
- Data Sets
- SAS Program