Practice

If you restarted your SAS session, open and submit the **libname.sas** program in the course files.

Level 1

4. Using a Conditional DO Loop

The **pg2.np_summary** table contains public use statistics from the National Park Service. The Northeast region has seen an increase in visitors at its national monuments that previously experienced low visitation. Determine the number of years it will take for the number of visitors to exceed 100,000, assuming an annual 6% increase.

a. Open **p206p04.sas** from the **practices** folder. Run the program and review the results. Notice that the first two monuments are not near 100,000 visitors, but the third monument is near 100,000 after one year with a 6% increase.

Obs	ParkName	Current Day Visitors	Increased Day Visitors
1	African Burial Ground National Monument	46,526	49,318
2	Booker T. Washington National Monument	23,440	24,846
3	Fort Stanwix National Monument	94,006	99,646

b. Add a conditional DO loop around the assignment statement where **IncrDayVisits** is being increased by 6%

1) Add a DO UNTIL statement that executes until the value of **IncrDayVisits** exceeds 100,000.
2) Add an OUTPUT statement to show the increased values per each iteration.
3) Add an END statement.

c. Run the program and review the results.

Years Until Northeast National Monuments Exceed 100,000 Visitors Based on Annual Increase of 6%

Obs	ParkName	Current Day Visitors	Increased Day Visitors
1	African Burial Ground National Monument	46,526	49,318
2	African Burial Ground National Monument	46,526	52,277
3	African Burial Ground National Monument	46,526	55,413
4	African Burial Ground National Monument	46,526	58,738
5	African Burial Ground National Monument	46,526	62,262
6	African Burial Ground National Monument	46,526	65,998

d. Within the DO loop, add a sum statement to add 1 to the value of **Year**.

```
Year+1;
```

e. Before the DO loop, add an assignment to set the **Year** to 0. Add **Year** to the KEEP statement.

f. Run the program and review the results.

Years Until Northeast National Monuments Exceed 100,000 Visitors
Based on Annual Increase of 6%

Obs	ParkName	Current Day Visitors	Increased Day Visitors	Year
1	African Burial Ground National Monument	46,526	49,318	1
2	African Burial Ground National Monument	46,526	52,277	2
3	African Burial Ground National Monument	46,526	55,413	3
4	African Burial Ground National Monument	46,526	58,738	4
5	African Burial Ground National Monument	46,526	62,262	5
6	African Burial Ground National Monument	46,526	65,998	6

g. How many years did it take until the number of visitors exceeded 100,000 for each national monument?

ParkName	Number of Years
African Burial Ground National Monument	
Booker T. Washington National Monument	
Fort Stanwix National Monument	

h. Remove the OUTPUT statement. Run the program and view the results. The number for **Year** should match the numbers that you specified above.

Years Until Northeast National Monuments Exceed 100,000 Visitors
Based on Annual Increase of 6%

Obs	ParkName	Current Day Visitors	Increased Day Visitors	Year
1	African Burial Ground National Monument	46,526	105,191	14
2	Booker T. Washington National Monument	23,440	100,601	25
3	Fort Stanwix National Monument	94,006	105,625	2

i. (Optional) Modify the DO UNTIL statement to be a DO WHILE statement that produces the same results.

Level 2

5. Using an Iterative and Conditional DO Loop

The **pg2.eu_sports** table contains European Union trade amounts for sport products. Belgium wants to see their exports exceed their imports for golf and racket products. They expect to annually increase exports by 7% and want to achieve their goal within 10 years.

a. Open **p206p05.sas** from the **practices** folder. Run the program and review the results. Notice that the golf export number is farther from the golf import number as compared to the racket export and import numbers.

Belgium Golf and Racket Products - 7% Increase in Exports

Obs	Sport_Product	Year	Amt_Import	Amt_Export
1	GOLF	2015	14,923,000	6,609,390
2	RACKET	2015	14,085,000	11,759,300

b. Add a conditional DO loop around the assignment statement for **Amt_Export**.

1) Use a DO WHILE statement that executes while the export value is less than or equal to the import value.
2) Create a **Year** column that increments by a value of 1.
3) Create a row of output for each year.

c. Run the program and review the results.

Partial Results (5 of 18 Rows)

Belgium Golf and Racket Products - 7% Increase in Exports

Obs	Sport_Product	Year	Amt_Import	Amt_Export
1	GOLF	2016	14,923,000	6,609,390
2	GOLF	2017	14,923,000	7,072,047
3	GOLF	2018	14,923,000	7,567,091
4	GOLF	2019	14,923,000	8,096,787
5	GOLF	2020	14,923,000	8,663,562
6	GOLF	[illegible]	[illegible]	[illegible]

d. How many years did it take until the exports exceeded the imports, and what is the final **Year** value for each sport product?

Sport_Product	Number of Years	Final Year
GOLF		
RACKET		

e. Modify the DO statement to include an iterative portion before the conditional portion. The iterative portion needs to be based on **Year** values of 2016 to 2025 (10 years).

f. Within the DO loop, delete any statements related to the incrementing of **Year**.

g. Run the program and review the results. The results show 14 data rows.

h. Complete this table based on your last modification:

Sport_Product	Number of Years	Final Year	Do Exports exceed Imports?
GOLF			
RACKET			

i. Delete the OUTPUT statement.

j. Run the program and review the results.

Belgium Golf and Racket Products - 7% Increase in Exports

Obs	Sport_Product	Year	Amt_Import	Amt_Export
1	GOLF	2026	14,923,000	12,151,094
2	RACKET	2020	14,085,000	14,405,648

k. Do these **Year** values equal the final **Year** values before deleting the OUTPUT statement? Why or why not?

l. (Optional) Include a conditional OUTPUT statement within the DO loop that will show the two rows of output with the **Year** values equal to the final **Year** values before deleting the OUTPUT statement.

Challenge

6. Controlling Execution of DO Loop Statements with CONTINUE and LEAVE

The **pg2.storm_summary** table contains information about storms, including storm name, basin, maximum wind speed, and the start and end dates. You want to calculate the duration of each storm in days and count the number of working days lost in 2015.

a. Open **p206p06.sas** from the **practices** folder. Run the program and review the results. Note that the values for **Duration** and **LostWork2015** are incorrect.

Work Days Lost in 2015 due to Storms
(where started in 2015 and ended in 2016)

Obs	Name	Basin	MaxWindMPH	StartDate	EndDate	Duration	LostWork2015
72	NINE	EP	35	28DEC2015	01JAN2016	0	5
93	NONAME	SI	35	21DEC2015	01JAN2016	0	12
95	ULA	SP	115	29DEC2015	16JAN2016	0	19

b. Modify the DATA step program to correctly calculate duration and the number of lost work days in 2015 for each storm.

1) When calculating **Duration**, include both the start and end dates in the number of days.

2) Use a DO loop and accumulating variable **LostWork2015** to calculate the number of work days lost. Within the DO loop, do the following:

- Test to see whether **ThisDay** is in the year 2015. If not, exit the DO loop because there will be no further work days that occur in 2015 for the given storm. Review the SAS documentation for the LEAVE statement.
- If the current day of the week is Sunday or Saturday, skip the remaining statements in the DO loop and go to the next iteration. Review the SAS documentation for the CONTINUE statement.
- Otherwise, increment **LostWork2015** by 1.

c. Run the program and review the results. The table **work.storm_workdays** should have 95 rows and seven columns, and the PROC PRINT step should produce these results:

Work Days Lost in 2015 due to Storms
(where started in 2015 and ended in 2016)

Obs	Name	Basin	MaxWindMPH	StartDate	EndDate	Duration	LostWork2015
72	NINE	EP	35	28DEC2015	01JAN2016	5	4
93	NONAME	SI	35	21DEC2015	01JAN2016	12	9
95	ULA	SP	115	29DEC2015	16JAN2016	19	3

End of Practices