SAS STATEMENTS

IF-THEN/ELSE Statement in SAS

02/07/2020 SAS Example Code

In SAS you can use the IF-THEN/ELSE statement to execute other statements that meet a specific condition. Also, you can use this statement to subset a data set. This article discusses the syntax of the IF-THEN/ELSE statement and its different applications. We use examples to explain these applications.

The IF-THEN/ELSE Syntax

IF *expression* **THEN** *statement*;
<**ELSE** *statement*;>

The IF-THEN/ELSE statement always contains the IF-THEN part. The ELSE part is optional. The *expression*

is a condition that SAS can evaluate and is either True or False. The *statement* is another SAS statement or a group of SAS statements within a DO group. The statement will be executed if the forgoing expression is True.

IF-THEN/ELSE Examples

For all the examples below, we use a data set with tree columns:

- City: A city somewhere in the world
- Beach: “Yes” or “No”
- Temperature: Temperature in degrees Celsius

We created the data set with the datalines statement and the delimiter option.

```
data work.ds;
    infile datalines dlm=',';
    length city $ 25;
    input city $ beach $ temperature;
    datalines;
Amsterdam, No, 30
Barcelona, Yes, 31
Buenos Aires, Yes, 15
Detroit, No, 31
Lima, Yes, 14
Los Angeles, Yes, 25
Madrid, No, 35
Moscow, No, 10
Paris, No, 20
```

```
Sydney, Yes, 10
;
run;
```

	city	beach	temperature
1	Amsterdam	No	30
2	Barcelona	Yes	31
3	Buenos Aires	Yes	15
4	Detroit	No	31
5	Lima	Yes	14
6	Los Angeles	Yes	25
7	Madrid	No	35
8	Moscow	No	10
9	Paris	No	20
10	Sydney	Yes	10

In the first example, we use only the IF-THEN statement. Rows 1, 2, 4 and 7 meet the expression “temperature >= 30”. So, for these rows, the column “Warm” is filled with “Yes”. However, for the other rows, the column “Warm” is empty. This is because we didn’t use the ELSE part.

```
data work.warm_1;
    set work.ds;

    if temperature >= 30 then warm = 'Yes';
run;
```

	city	beach	temperature	warm
1	Amsterdam	No	30	Yes
2	Barcelona	Yes	31	Yes
3	Buenos Aires	Yes	15	
4	Detroit	No	31	Yes
5	Lima	Yes	14	
6	Los Angeles	Yes	25	
7	Madrid	No	35	Yes
8	Moscow	No	10	
9	Paris	No	20	
10	Sydney	Yes	10	

If we add the ELSE statement, then the “Warm” column will be filled.

```
data work.warm_2;
    set work.ds;

    if temperature >= 30 then warm = 'Yes';
    else warm = 'No';
run;
```

	city	beach	temperature	warm
1	Amsterdam	No	30	Yes
2	Barcelona	Yes	31	Yes
3	Buenos Aires	Yes	15	No
4	Detroit	No	31	Yes
5	Lima	Yes	14	No
6	Los Angeles	Yes	25	No
7	Madrid	No	35	Yes
8	Moscow	No	10	No
9	Paris	No	20	No
10	Sydney	Yes	10	No

Besides a single IF-THEN/ELSE statement, you can also create multiple ELSE statements. The example below creates the column “Weather” based on three different conditions.

```
data work.weather;
    set work.ds;

    if temperature >= 30 then weather = 'Warm
    else if 15 <= temperature < 30 then weath
    else weather = 'Cold';
run;
```

	city	beach	temperature	weather
1	Amsterdam	No	30	Warm
2	Barcelona	Yes	31	Warm
3	Buenos Aires	Yes	15	Nice
4	Detroit	No	31	Warm
5	Lima	Yes	14	Cold
6	Los Angeles	Yes	25	Nice
7	Madrid	No	35	Warm
8	Moscow	No	10	Cold
9	Paris	No	20	Nice
10	Sydney	Yes	10	Cold

Until now, we have seen that one simple line of code was executed when the IF or ELSE statement was met. However, it is also possible to execute multiple lines of code if the IF or ELSE statement is satisfied. In this case, the lines of code you want to execute need to be within a DO block.

```
data work.action;
    set work.ds;

    if temperature >= 30 and beach = 'Yes' th
        warm = 'Yes';
        action = 'Go to the beach';
    end;
    else if temperature >= 25 and beach = 'No
        warm = 'Yes';
        action = 'Eat Icecream';
    end;
    else do;
        warm = 'No';
        action = 'Something else';
    end;
run;
```

	city	beach	temperature	warm	action
1	Amsterdam	No	30	Yes	Eat Icecream
2	Barcelona	Yes	31	Yes	Go to the beach
3	Buenos Aires	Yes	15	No	Something else
4	Detroit	No	31	Yes	Eat Icecream
5	Lima	Yes	14	No	Something else
6	Los Angeles	Yes	25	No	Something else
7	Madrid	No	35	Yes	Eat Icecream
8	Moscow	No	10	No	Something else
9	Paris	No	20	No	Something else
10	Sydney	Yes	10	No	Something else

Finally, the IF-THEN statement can be used to subset a data set. For example, the code below shows how the cities with a beach are stored in one data set while the cities without a beach are stored in another.

```
data work.beach work.no_beach;
    set work.ds;
```

```
    if beach = 'Yes' then output work.beach;
    else output work.no_beach;
run;
```

	city	beach	temperature
1	Barcelona	Yes	31
2	Buenos Aires	Yes	15
3	Lima	Yes	14
4	Los Angeles	Yes	25
5	Sydney	Yes	10

	city	beach	temperature
1	Amsterdam	No	30
2	Detroit	No	31
3	Madrid	No	35
4	Moscow	No	10
5	Paris	No	20

The official SAS documentation of the IF-THEN/ELSE statement can be found here.

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