

Coder's Corner: First. and Retain
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The SAS System

Obs	close	PDC	Trigger	Remove	d	t	DJIA
1	7965.04	7908.25	50	25	02JAN98	9:31:00	7910.49
2	7965.04	7908.25	50	25	02JAN98	9:32:00	7926.93
3	7965.04	7908.25	50	25	02JAN98	9:33:00	7929.92
4	7965.04	7908.25	50	25	02JAN98	9:34:00	7930.42
5	7965.04	7908.25	50	25	02JAN98	9:35:00	7923.69
6	7965.04	7908.25	50	25	02JAN98	9:36:00	7922.70
7	7965.04	7908.25	50	25	02JAN98	9:37:00	7919.21
8	7965.04	7908.25	50	25	02JAN98	9:38:00	7924.19
9	7965.04	7908.25	50	25	02JAN98	9:39:00	7929.42
10	7965.04	7908.25	50	25	02JAN98	9:40:00	7931.91

```
data djia2;  
set djia;  
by d t;  
retain direction;  
if first.d then direction=0;  
if direction=0 then do;  
    if (pdc-djia)>trigger then direction=-1;  
    else if (djia-pdc)>trigger then direction=1;  
    else direction=0;  
    output;  
end;  
else if direction=-1 then do;  
    if (pdc-djia)>=remove then direction=-1;  
    else if (pdc-djia)<remove then direction=0;  
    output;  
end;  
else do;  
    if (djia-pdc)>=remove then direction=1;  
    else if (djia-pdc)<remove then direction=0;  
    output;  
end;  
run;
```

```
data djia2;  
set djia;  
by d t;  
retain direction;  
if first.d then direction=0;  
if direction=0 then do;  
    if (pdc-djia)>trigger then direction=-1;  
    else if (djia-pdc)>trigger then direction=1;  
    else direction=0;  
    output;  
end;  
else if direction=-1 then do;  
    if (pdc-djia)>=remove then direction=-1;  
    else if (pdc-djia)<remove then direction=0;  
    output;  
end;  
else do;  
    if (djia-pdc)>=remove then direction=1;  
    else if (djia-pdc)<remove then direction=0;  
    output;  
end;  
run;
```

```
data djia2;
set djia;
by d t;
retain direction;
if first.d then direction=0;
if direction=0 then do;
    if (pdc-djia)>trigger then direction=-1;
    else if (djia-pdc)>trigger then direction=1;
    else direction=0;
    output;
end;
else if direction=-1 then do;
    if (pdc-djia)>=remove then direction=-1;
    else if (pdc-djia)<remove then direction=0;
    output;
end;
else do;
    if (djia-pdc)>=remove then direction=1;
    else if (djia-pdc)<remove then direction=0;
    output;
end;
run;
```

```
data djia2;
set djia;
by d t;
retain direction;
if first.d then direction=0;
if direction=0 then do;
    if (pdc-djia)>trigger then direction=-1;
    else if (djia-pdc)>trigger then direction=1;
    else direction=0;
    output;
end;
else if direction=-1 then do;
    if (pdc-djia)>=remove then direction=-1;
    else if (pdc-djia)<remove then direction=0;
    output;
end;
else do;
    if (djia-pdc)>=remove then direction=1;
    else if (djia-pdc)<remove then direction=0;
    output;
end;
run;
```

```
data djia2;
set djia;
by d t;
retain direction;
if first.d then direction=0;
if direction=0 then do;
    if (pdc-djia)>trigger then direction=-1;
    else if (djia-pdc)>trigger then direction=1;
    else direction=0;
    output;
end;
else if direction=-1 then do;
    if (pdc-djia)>=remove then direction=-1;
    else if (pdc-djia)<remove then direction=0;
    output;
end;
else do;
    if (djia-pdc)>=remove then direction=1;
    else if (djia-pdc)<remove then direction=0;
    output;
end;
run;
```

The SAS System

The FREQ Procedure

direction	Frequency	Percent	Cumulative Frequency	Cumulative Percent
<i>ff</i>				
-1	32587	15.91	32587	15.91
0	138385	67.57	170972	83.49
1	33816	16.51	204788	100.00

The SAS System

Obs	PDC	DJIA	direction	Trigger	Remove	d	t
28	8799.81	8750.74	0	50	25	01APR98	9:59:00
29	8799.81	8749.49	-1	50	25	01APR98	10:00:00
30	8799.81	8754.22	-1	50	25	01APR98	10:01:00
31	8799.81	8757.96	-1	50	25	01APR98	10:02:00
32	8799.81	8759.21	-1	50	25	01APR98	10:03:00
33	8799.81	8761.45	-1	50	25	01APR98	10:04:00
34	8799.81	8762.69	-1	50	25	01APR98	10:05:00
35	8799.81	8765.19	-1	50	25	01APR98	10:06:00
36	8799.81	8762.94	-1	50	25	01APR98	10:07:00
37	8799.81	8760.70	-1	50	25	01APR98	10:08:00
38	8799.81	8761.20	-1	50	25	01APR98	10:09:00
39	8799.81	8762.69	-1	50	25	01APR98	10:10:00
40	8799.81	8762.69	-1	50	25	01APR98	10:11:00
41	8799.81	8761.20	-1	50	25	01APR98	10:12:00
42	8799.81	8756.96	-1	50	25	01APR98	10:13:00
43	8799.81	8757.21	-1	50	25	01APR98	10:14:00
44	8799.81	8759.71	-1	50	25	01APR98	10:15:00
45	8799.81	8762.20	-1	50	25	01APR98	10:16:00
46	8799.81	8767.93	-1	50	25	01APR98	10:17:00
47	8799.81	8769.42	-1	50	25	01APR98	10:18:00
48	8799.81	8771.91	-1	50	25	01APR98	10:19:00
49	8799.81	8772.66	-1	50	25	01APR98	10:20:00
50	8799.81	8773.90	-1	50	25	01APR98	10:21:00
51	8799.81	8774.65	-1	50	25	01APR98	10:22:00
52	8799.81	8775.90	0	50	25	01APR98	10:23:00
53	8799.81	8774.90	0	50	25	01APR98	10:24:00

The SAS System

Obs	PDC	DJIA	direction	Trigger	Remove	d	t
28	8799.81	8750.74	0	50	25	01APR98	9:59:00
29	8799.81	8749.49	-1	50	25	01APR98	10:00:00
30	8799.81	8754.22	-1	50	25	01APR98	10:01:00
31	8799.81	8757.96	-1	50	25	01APR98	10:02:00
32	8799.81	8759.21	-1	50	25	01APR98	10:03:00
33	8799.81	8761.45	-1	50	25	01APR98	10:04:00
34	8799.81	8762.69	-1	50	25	01APR98	10:05:00
35	8799.81	8765.19	-1	50	25	01APR98	10:06:00
36	8799.81	8762.94	-1	50	25	01APR98	10:07:00
37	8799.81	8760.70	-1	50	25	01APR98	10:08:00
38	8799.81	8761.20	-1	50	25	01APR98	10:09:00
39	8799.81	8762.69	-1	50	25	01APR98	10:10:00
40	8799.81	8762.69	-1	50	25	01APR98	10:11:00
41	8799.81	8761.20	-1	50	25	01APR98	10:12:00
42	8799.81	8756.96	-1	50	25	01APR98	10:13:00
43	8799.81	8757.21	-1	50	25	01APR98	10:14:00
44	8799.81	8759.71	-1	50	25	01APR98	10:15:00
45	8799.81	8762.20	-1	50	25	01APR98	10:16:00
46	8799.81	8767.93	-1	50	25	01APR98	10:17:00
47	8799.81	8769.42	-1	50	25	01APR98	10:18:00
48	8799.81	8771.91	-1	50	25	01APR98	10:19:00
49	8799.81	8772.66	-1	50	25	01APR98	10:20:00
50	8799.81	8773.90	-1	50	25	01APR98	10:21:00
51	8799.81	8774.65	-1	50	25	01APR98	10:22:00
52	8799.81	8775.90	0	50	25	01APR98	10:23:00
53	8799.81	8774.90	0	50	25	01APR98	10:24:00