RETAIN Statement

Allows SAS to remember value of a variable from the previous observation. SAS usually sets each variable's value to missing, after processing the current obs. and prior to reading the next observation. RETAIN stmt tells SAS to remember value of variable(s) from the previous obs.
RETAIN stmt also allows user to initialize the value of variable(s) prior to reading the first obs.

General Form

RETAIN variablename initial_value;

Ex: RETAIN TOTAL 0;
    Total = Total + Amount;

can be used to set Total to 0 before the first obs. is read, and compute a Total of the amounts of all observations in the data set.
Implicit RETAIN

SUM stmt is a special assignment stmt of the form

    variable + operand;

but does not explicitly use on = sign.
EX: Total + Amount;
   has the same result as
   RETAIN Total 0;
   Total = Total + Amount;
1) Initializes Total to 0 before first obs.
2) Remembers the value of Total from the previous obs.
3) The result of the operation
   Total + Amount
   is stored in the variable Total.
Using a logical comparison to assign a value to a variable:

```
variable = (comparison)
```

If the logical comparison is True, 1 will be assigned to the variable. If the logical comparison is False, 0 will be assigned to the variable.
**Ex:** (refer to ch9 Ex 4)

\[
\text{SCORE}[I] = (\text{KEY}[I] = \text{ANS}[I]),
\]

If the current student's answer for question I matches the correct answer for question I, the student's score for question I is set equal to 1. If the student provides the incorrect answer, the student's score for question I is set equal to 0.

We can sum the SCORES to get the number of correct answers for the student.
Caution: Problems may occur if the RETAINED variable has missing values.

LAG function

LAG (variable)

cause SAS to remember the value of the variable from the previous obs.
LAGn (variable) causes SAS to remember the value of the variable from the n\textsuperscript{th} previous obs.

Can use RETAIN and LAG together to check for new group of records.
Third Alternate Method

Use PROC SORT
and First, variable
with IF... THEN ELSE