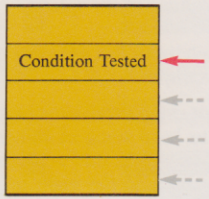
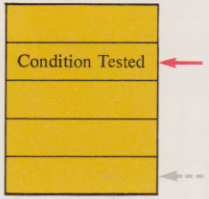
Conditional Testing

Nine different program instructions give your HP-65 the ability to make decisions within a program. These "conditionals" modify program execution depending on conditions in the program. They all work similarly.



Condition Met
(*continue*)



Condition Not Met
(*skip two steps*)

Continue here.

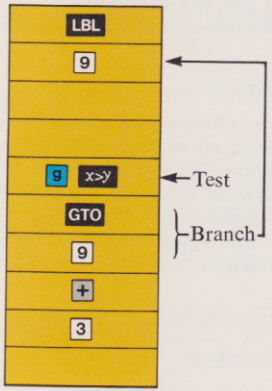
If the condition *is* met, the program will execute the next two steps, which often contain a branch instruction. If the condition *is not* met, the program will skip over these two steps. Sometimes, you'll even be able to condense the operations that would normally require a branch into the two steps. There will be examples of both these possibilities in the text to follow.

Numerical Comparisons

Four tests compare the contents of the X- and Y-registers. These are:

- g x≠y — Are the values in X and Y unequal?
- g x≤y — Is the value in X less than or equal to the value in Y?
- g x=y — Are the values in X and Y equal?
- g x>y — Is the value in X greater than the value in Y?

In each case, if the answer to the question is **YES**, then program execution **continues** sequentially. If the answer to the question is **NO**, then the program pointer **skips two** steps before continuing.



In this program segment, execution of g x>y compares the current values in X and Y.

1. If the value in X **is** greater than the value in Y, GTO 9 is executed and the preceding section is repeated.
2. If the value in X **is not** greater than value in Y, GTO 9 is skipped and + is executed.

Each time a comparison test is made in a program, a copy of the value in X is stored in R_9. The value in the Last X register does not change. R_9 should therefore be used with caution for storage purposes when these tests are a part of your program. Now let's write some programs using these numerical comparisons.

Two Programs Using Numerical Tests. This first program is derived from the following anecdote:

According to unreliable sources, many years ago there was a prosperous kingdom where a tired and grumpy king ruled. One day, looking for new amusement, the king sent out the following message throughout his kingdom: "Whosoever finds a game of suitable amusement for me, shall be granted any wish he desireth."

Lo and behold, a young gentleman presented the king with the game of chess. The king was ecstatic! "What is your wish?" asked the delighted king. Replied the gentleman, "O wise and noble king, all I ask is that you put down one stalk of wheat for the first square on the chessboard, merely double this amount for the second square, then double the new amount for the third square, and so on for the remaining squares. All I wish to be given is the amount of wheat put down for the final chess square."