The Core Memory Project

APTITUDE TEST E51

(REVISION 3)

for electronic

data-processing programmers

NAME_____

ADDRESS OR COMPANY_____

FILL IN THE ABOVE BLANKS, AND THEN STUDY THESE DIRECTIONS CAREFULLY:

In this booklet, a number of problems are stated in the form of flow-charts.

1 A flow-chart is simply a "road map" by which you must find your way from one "town" to the next, and obey every instruction you come to.

2 Always follow the "road" downward, or to the right, unless an arrow indicates a different direction, or unless an instruction requires you to do otherwise.

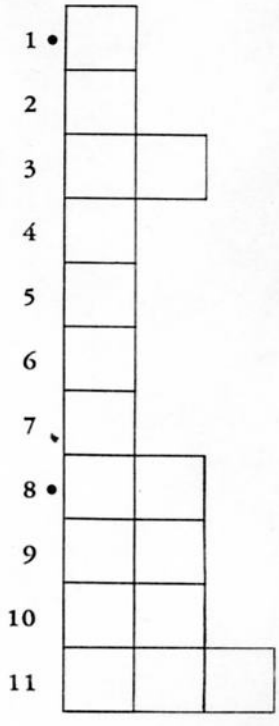
3 When you come to a fork in the "road" there will be a question for you to answer; match your answer with the "signposts" on the branches leading out of the fork, and you will know which way to go.

4 When you are told to put a number into a box, it is understood that whatever number was previously in that box has just been erased.

5 Mark up the flow-charts in any way you feel will help you. Use the margins, or the blank left-hand pages, for your "scratch" work. **Do all your work in this booklet.**

6 When you are finished, copy your answers into the spaces on this cover. **Use extreme care in doing so,** since this copy of your answers will be used in scoring the test.

COPY YOUR ANSWERS HERE



OPEN THIS BOOKLET, AND DO EXAMPLE A

Copyright © 1958 by

National **THE NATIONAL CASH REGISTER COMPANY**

DAYTON 9, OHIO

www.thecorememory.com

F-5700—12-21-60

TRADE MARK REG. U.S. PAT. OFF.

EXAMPLE A:

The Core Memory Project

Box No.	1	2	3	4	5	6	7	8	9	10
	6	3	9	2	11	2	91	48	66	1

START

1. Add: (number in box 4) + (number in box 2), put result into box 7.
2. Add: (number in box 7) + (number in the box whose number is in box 6), put result into box 6.
3. Multiply: (number in box 6) × (number in box 1), put result into box 5.

END

What number is now in box 5? . . . . . _____

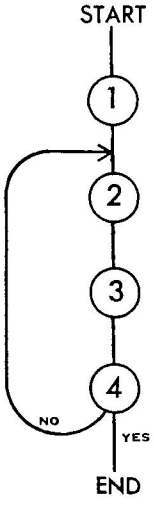
DO NOT TURN THE PAGE UNTIL YOU ARE TOLD TO DO SO

www.thecorememory.com

EXAMPLE B:

The Core Memory Project

Box No.	1	2	3	4	5	6	7	8
	3	7	2	1	5	12	4	0



Put (number in box 8) into box 1.

Add: (number in box 1) + (number in box 2), put result into box 1.

Change Instruction 2: increase the second box-number mentioned in it, by 1.

Is the second box-number mentioned in Instruction 2, greater than (number in box 7)?

What number is now in box 1? . . . . . _____

DO NOT TURN THE PAGE UNTIL YOU ARE TOLD TO DO SO

NOW, GO BACK AND READ THE DIRECTIONS AGAIN

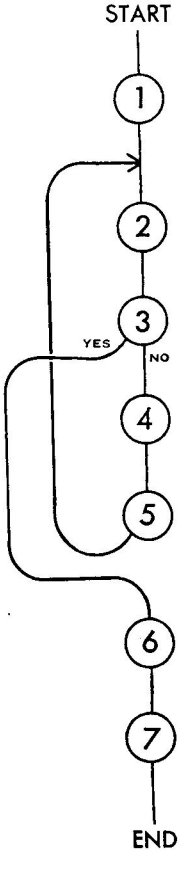
Be sure to refer to the directions as often as necessary during the test, if you have any doubt whatever about the "ground rules".

The directions are complete, and no questions will be answered by the supervisor.

www.thecorememory.com

The Core Memory Project

Box No.	1	2	3	4	5	6	7	8	9	10	11	12
	2	1	1	4	6	5	2	12	5	19	1	0



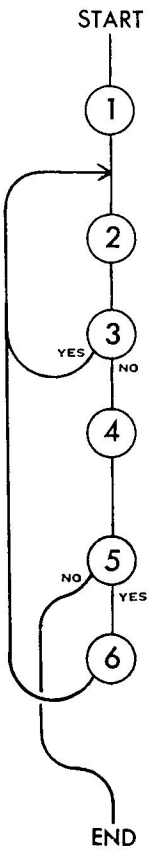
1. Add: (number in box 3) + (number in the box whose number is in box 8), put result into box 4.
2. Multiply: (number in box 7) × (number in box 7), put result into box 7.
3. Is (number in box 4) = (number in box 9)?
4. Add: (number in box 4) + (number in box 1), put result into box 4.
5. Subtract: (number in box 7) — (number in box 2), put result into box 7.
6. Add: (number in box 3) + (number in box 9), put result into box 10.
7. Subtract: (number in box 7) — (number in box 10), put result into box 11.

What number is now in box 11? . . . . . _____

www.thecorememory.com

The Core Memory Project

Box No.	1	2	3	4	5	6	7	8	9	10	11	12	13
	9	8	5	2	11	3	5	12	5	-2	4	-6	6

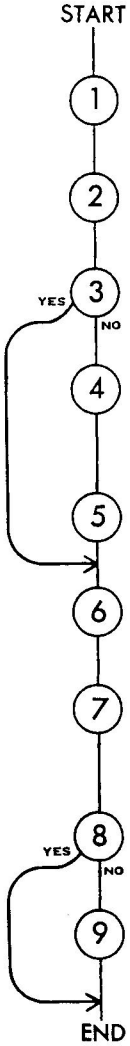


1. Subtract: (number in box 7) — (number in the box whose number is in box 6), put result into box 12.
2. Add: (number in box 12) + (number in box 13), put result into box 12.
3. Is (number in box 12) exactly divisible by 5?
4. Change Instruction 2: decrease the second box-number mentioned in it, by (number in the box whose number is in box 11).
5. Is (number in box 2) less than the second box-number mentioned in Instruction 2?
6. Subtract: (number in box 9) — 1, put result into box 9.

What number is now in box 12? ..... _____

The Core Memory Project

Box No.	1	2	3	4	5	6	7	8	9	10	11	12
	2	11	-9	2	-2	12	6	9	6	3	1	4



1. Subtract: (number in box 10) — 1, put result into box 10.
2. Put (number in box 9) into box 1.
3. Is the first box-number mentioned in Instruction 2, an even number?
4. Take as your next Instruction, the one whose number is in the box whose number is in box 8.
5. Change Instruction 2: Decrease the first box-number mentioned in it, by 1.
6. Add: (number in box 10) + (number in box 4), put result into box 10.
7. Change Instruction 2: Decrease the first box-number mentioned in it, and increase the second box-number mentioned in it, each by (number in box 11).
8. Is the last box-number mentioned in Instruction 2, equal to (number in box 12)?
9. Take as your next Instruction, the one before Instruction 3.

END

What number is now in ..... box 3? _____

..... box 10? _____

www.thecorememory.com

READ THESE DIRECTIONS

The Core Memory Project

The problems in the next part of the test are slightly different from those you have just done.

In these problems, you will be told exactly what each flow-chart is to accomplish, and you must decide what number must be in a specified box, in order that someone following the flow-chart will do the required job—*no more and no less.*

TURN THE PAGE, AND CONTINUE

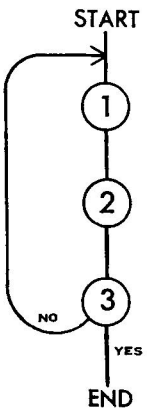
www.thecorememory.com

The Core Memory Project

The purpose of the following flow-chart is to put a zero in each of the boxes: 2, 3 and 4.

In order to accomplish exactly this—no more and no less—what number must be in box 11?

1	2	3	4	5	6	7	8	9	10	11	12
7	9	2	2	8	4	1	-9	-3	6		4



Subtract: (number in box 1) — (number in box 1), put result into box 2.

Change Instruction 1: Increase the last box-number mentioned in it, by 1.

Is the last box-number mentioned in Instruction 1 equal to (number in box 11)?

What number must be in box 11? ..... _____

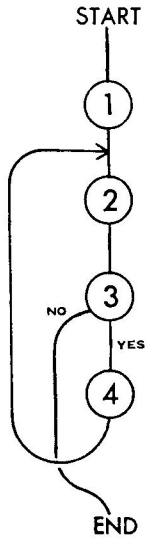
The Core Memory Project

5

The purpose of the following flow-chart is to add up the numbers in boxes 4, 5, 6 and 7, and put the total in box 1.

In order to accomplish exactly this—no more and no less—what number must be in box 3?

1	2	3	4	5	6	7	8	9
3	15		2	1	4	3	12	10



Subtract: (number in box 1) — (number in box 1), put result into box 1.

Add: (number in box 1) + (number in box 4), put result into box 1.

Is (number in box 3) greater than the second box-number mentioned in Instruction 2?

Change Instruction 2: Increase the second box-number mentioned in it, by 1.

What number must be in box 3? ..... _____

www.thecorememory.com

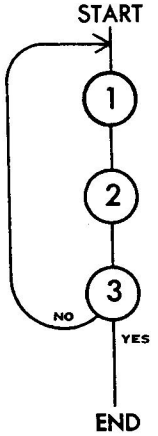
6

The Core Memory Project

The purpose of the following flow-chart is to double the number in each of the boxes: 15, 12, 9 and 6.

In order to accomplish exactly this—no more and no less—what is the smallest number which may be in box 14?

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15



Add: (number in box 15) + (number in box 15), put result into box 15.

Change Instruction 1: Decrease all box-numbers mentioned in it, by 3.

Is (number in box 14) greater than the second box-number mentioned in Instruction 1?

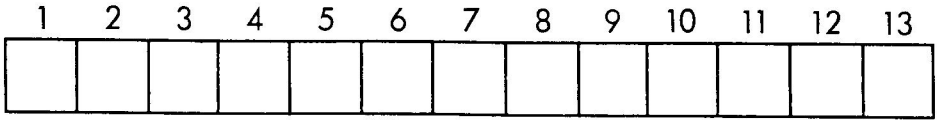
What is the *smallest* number which may be in box 14?. . _____

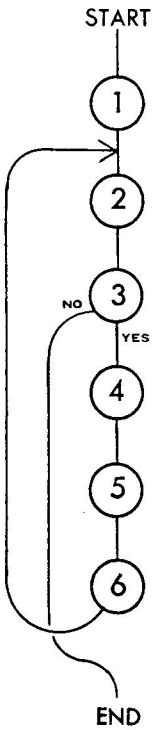
www.thecorememory.com

The Core Memory Project

The purpose of the following flow-chart is to add up the numbers in boxes 1, 2, 3, 4, 9, 10, and 11, and put the total in box 7.

In order to accomplish exactly this—no more and no less— what number must be in box 6?





Put a zero into box 7.

Add: (number in box 7) + (number in box 1), put result into box 7.

Is the second box-number mentioned in Instruction 2, less than (number in box 6)?

Add: (number in box 11) + (number in box 7), put result into box 7.

Change Instruction 2: Increase the second box-number mentioned in it, by 1.

Change Instruction 4: Decrease the first box-number mentioned in it, by 1.

What number must be in box 6? .....

The Core Memory Project

READ THESE DIRECTIONS

In the following problems, you are told something about the result, and you must determine what the contents of the boxes must have been, in order to obtain that result.

In these problems, the expression (number in box X) is abbreviated as (X).

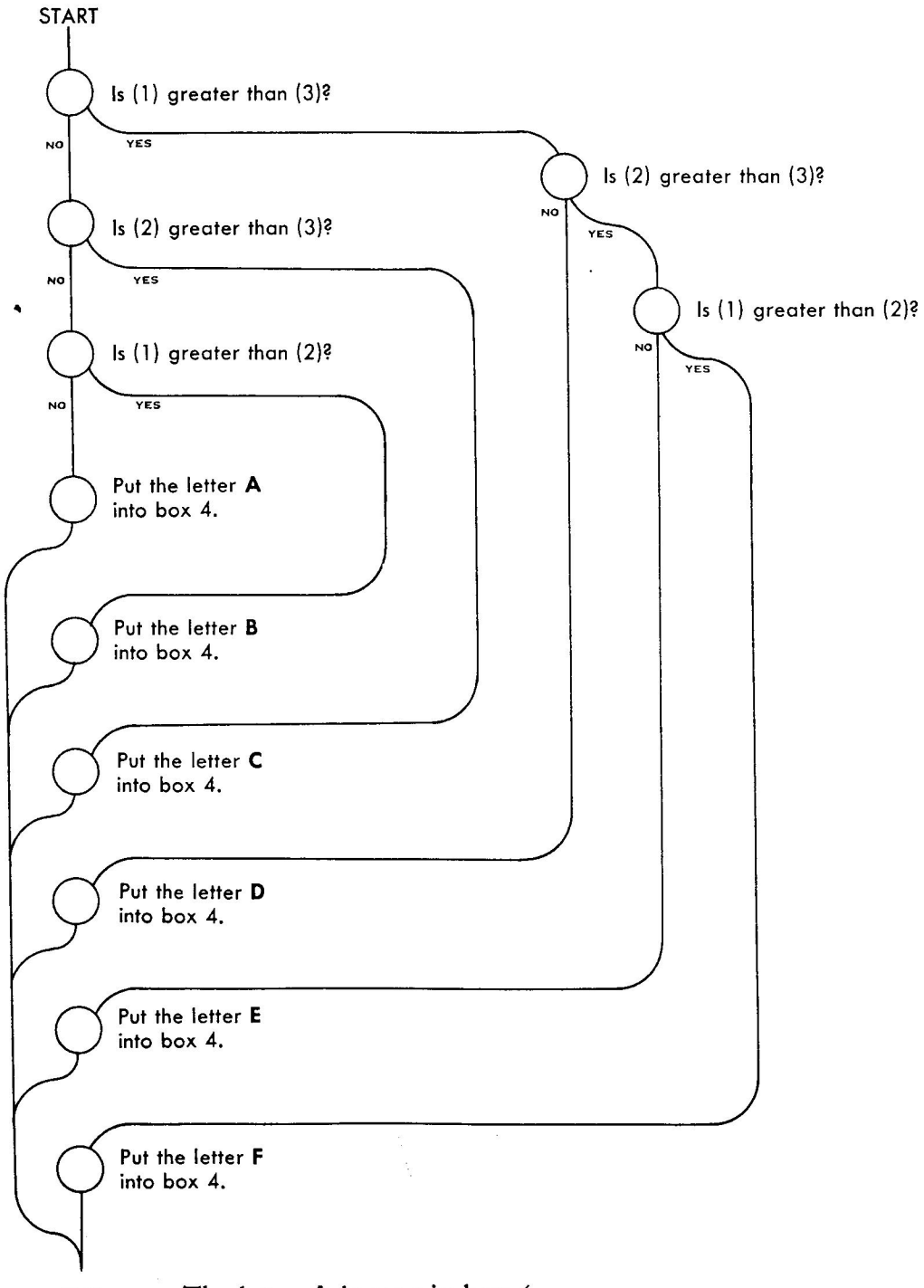
For example: "Is (4) greater than (7)?"
means "Is (number in box 4) greater than (number in box 7)?"

In each of the following problems, no two boxes contain the same number.

TURN THE PAGE, AND CONTINUE

www.thecorememory.com

The Core Memory Project

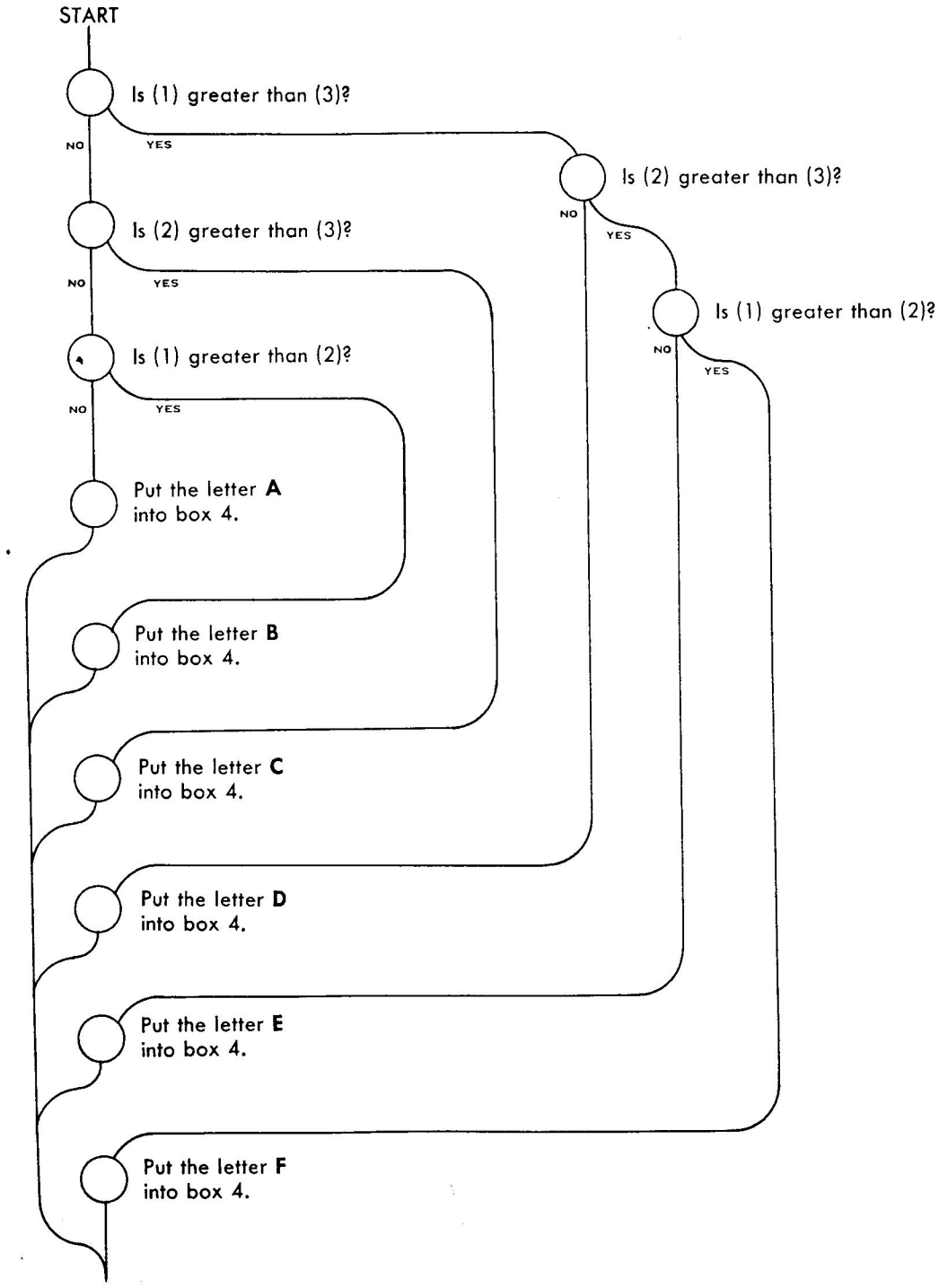


The letter **A** is now in box 4.

Which of the boxes 1, 2, 3 contains . . . . . the largest number? _____

the smallest number? _____

www.thecorememory.com



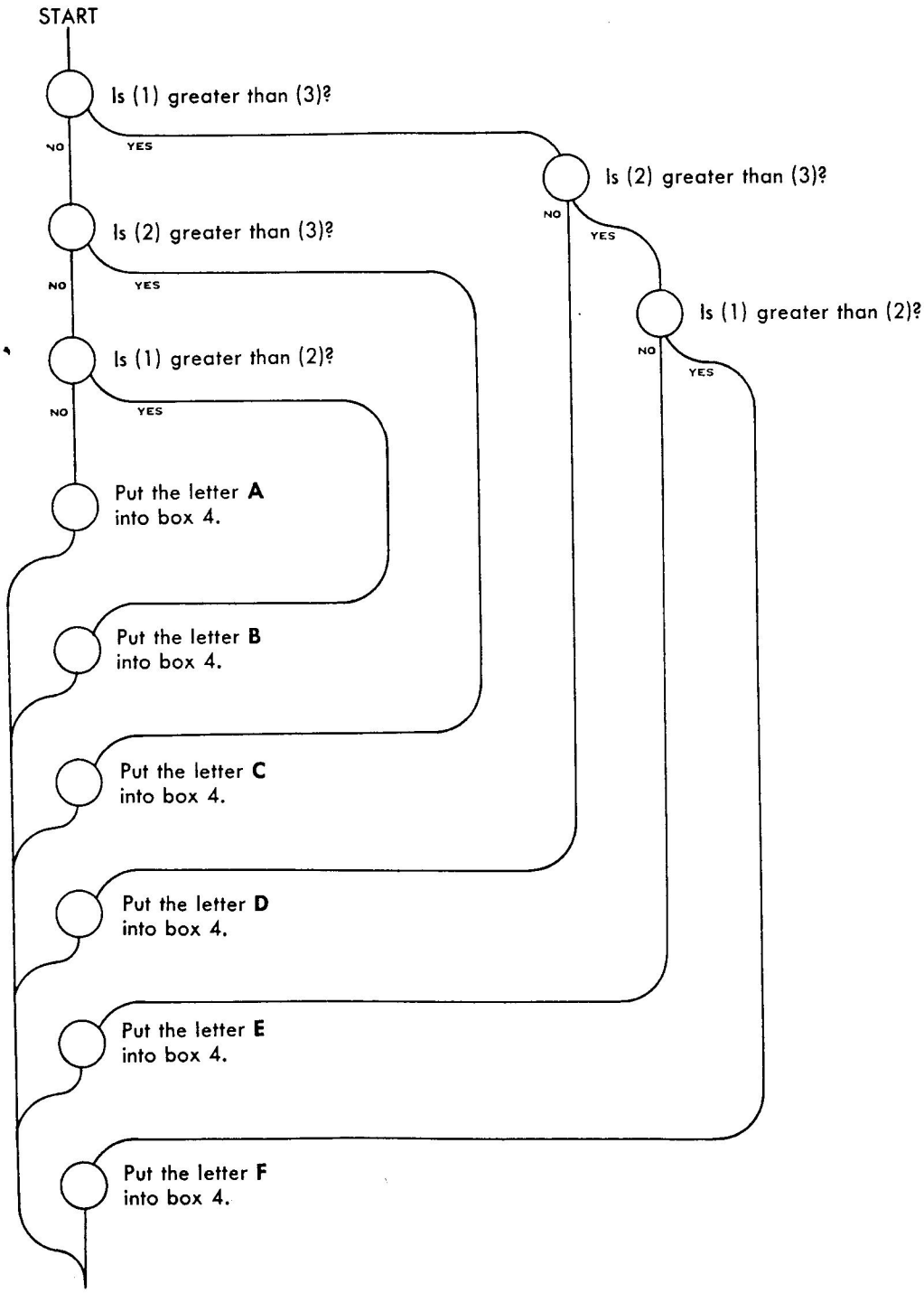
Either the letter **C** *or* the letter **F** is in box 4.

Which of the boxes 1, 2, 3 *cannot possibly* contain the largest number? _____

the smallest number? _____

www.thecorememory.com

The Core Memory Project



Either the letter **B** *or* the letter **E** is in box 4.

Which of the boxes 1, 2, 3 *cannot possibly* contain the largest number? _____

the smallest number? _____

www.thecorememory.com

The Core Memory Project

READ THESE DIRECTIONS

In the following problem, you must grasp the significance of the individual steps in the flow-chart, and correct an error which has been deliberately placed there.

www.thecorememory.com

The Core Memory Project

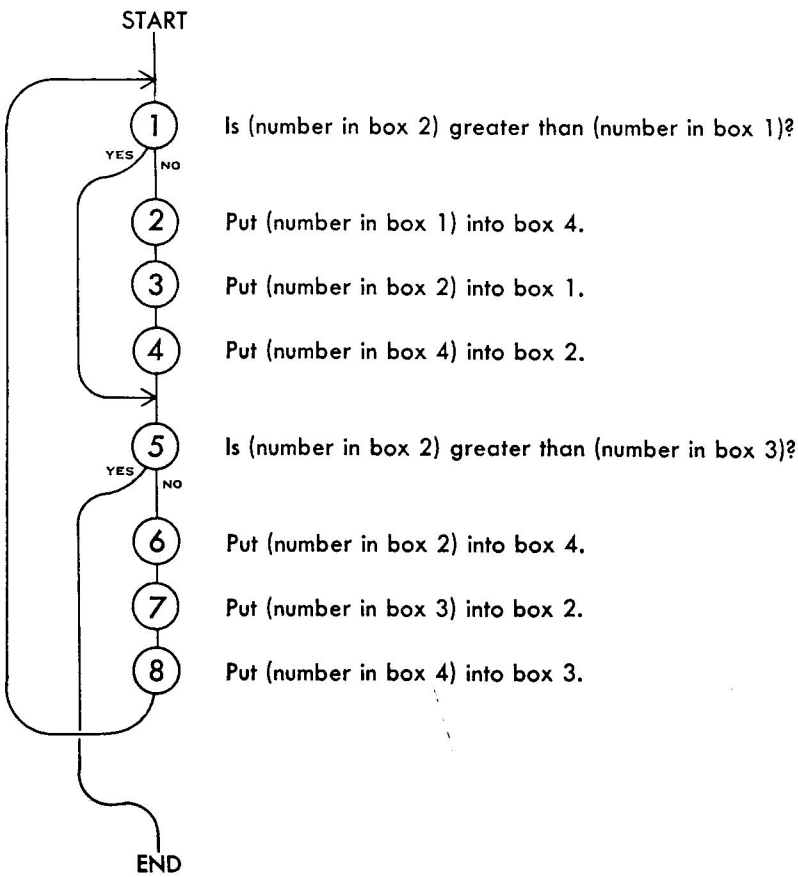
11

The object of the following flow-chart is to rearrange the numbers in boxes 1, 2, 3 in such a fashion that, at the end:

Box 3 will always contain the largest number;
Box 1 will always contain the smallest number.

However, this flow-chart is *incorrect*. As it stands, it will not accomplish the desired purpose.

Which one instruction must be changed to correct the flow chart?



In order to correct this flow-chart, we must change Instruction No. _____

So that the first box-number mentioned in it is box number ..... _____

and the second box-number mentioned in it is box number ..... _____

www.thecorememory.com