THE PALINDROME-NUMBER PROBLEM

Determining if a string is a palindrome

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THE PROBLEM

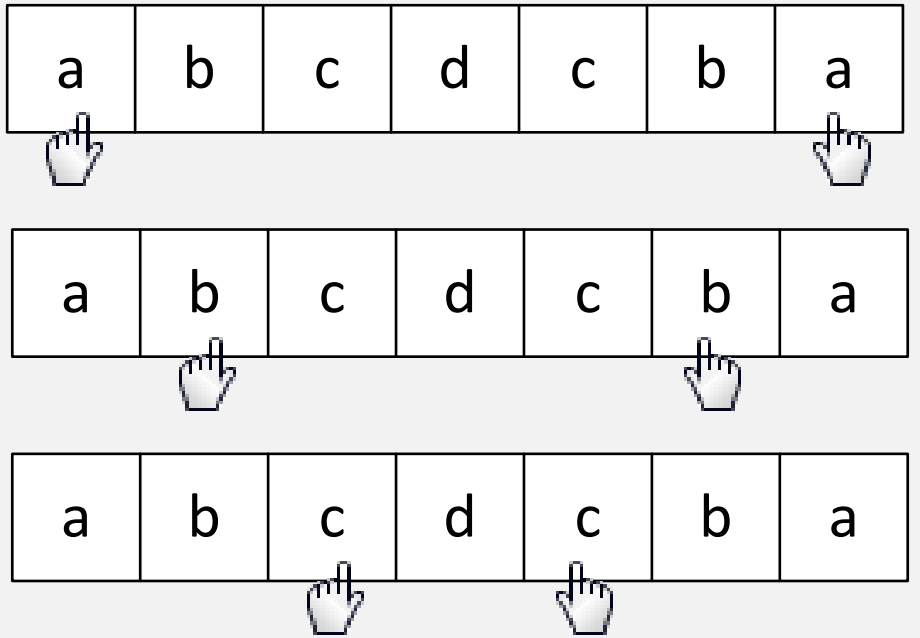
- Find the smallest positive integer that when squared produces
  - a palindrome
  - of at least 6 digits
  - that does not begin or end with a 0
- Work with numbers until the squaring operation is done, then convert the number to a string for testing

SOLUTION OUTLINE

- Generate a list of candidate numbers
- Square the number
- Convert the squared number to a string
- Use string operations to verify that the squared number satisfies the puzzle requirements
  - Squared number is at least six digits long
  - Squared number does not begin or end with a 0
  - The digits of the squared number form a palindrome

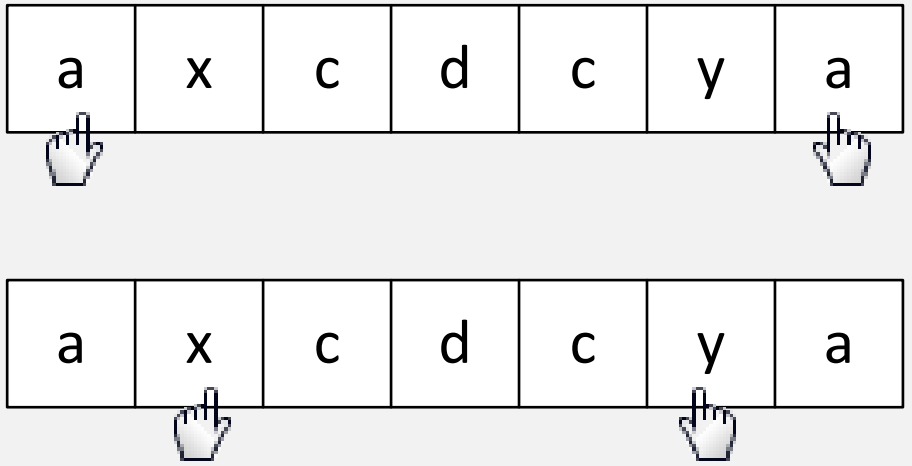
PALINDROME ALGORITHM I

- Imagine the string written on a whiteboard
  - Short palindromes are easily spotted
  - Long palindromes require a systematic test
  - Copying or rewriting is undesirable
  - Keep testing as long as the characters match

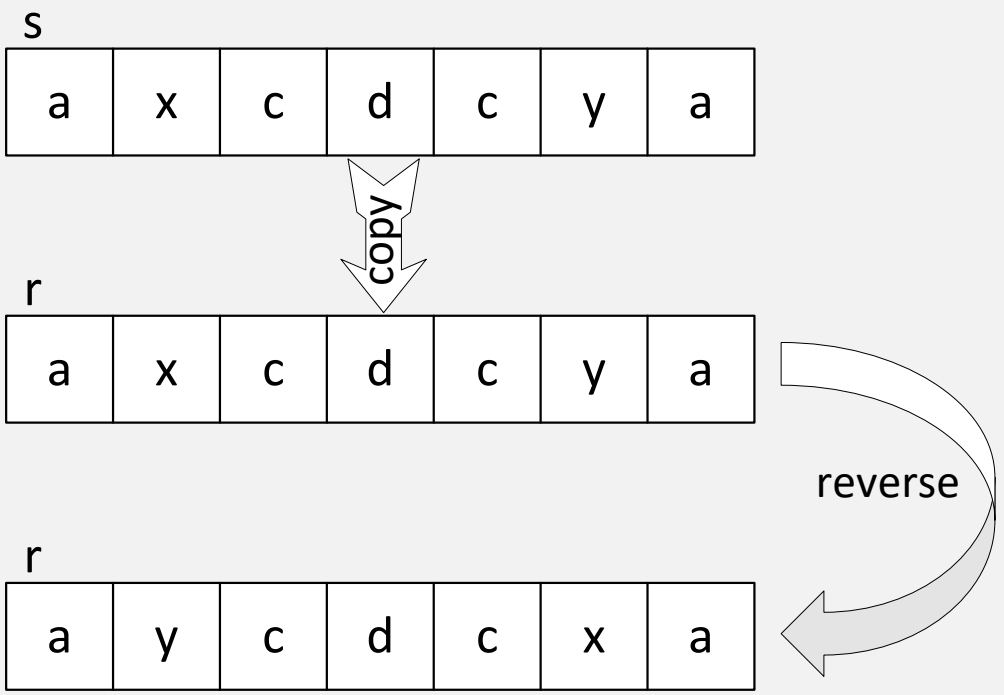


ALGORITHM 1, CONTINUED

- A matched characters do not establish a palindrome
- But mismatched characters do establish a non-palindrome
- A palindrome is established only if our fingers meet in the center of the string



PALINDROME ALGORITHM 2



PROGRAM LOGIC