

Largest palindrome product

A palindromic number reads the same both ways. The largest palindrome made from the product of two 2-digit numbers is $9009 = 91 \times 99$.

Find the largest palindrome made from the product of two 3-digit numbers.

Solution

Compiling the accompanying C program results in

$$906\,609 = 913 \times 993 = 3 \times 11 \times 83 \times 331.$$

This prime factorization is found using the program for Problem 3. As mentioned in the code, there should be a better way to assign the six digits of the product to variables. In fact, starting x and y from 700 instead gives a wrong number. Listing all elements of the “palindromes” array shows mostly legitimate palindromes, but there are a few numbers that are clearly not. Among the legitimate ones, though, 906 609 is the highest one.