project euler 0004

June 12, 2023

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

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

Final result : 906609

[1]:
```
# We first define a function that says if a given number is a
# palindrome or not
def is_a_palindrome(n):
    n_string = str(n)
    if len(n_string) == 5:
        if n_string[0] == n_string[-1] and n_string[1] == n_string[-2]:
            return(True)
        else:
            return(False)
    if len(n_string) == 6:
        if n_string[0] == n_string[-1] and \
           n_string[1] == n_string[-2] and \
           n_string[2] == n_string[-3]:
            return(True)
        else:
            return(False)
```

[2]:
```
# We then loop over all the products of 3-digit integers and
# we list all the palindromes it produced
list_palindrome = []

for i in range(999, 99, -1):
    for j in range(i, 99, -1):
        if is_a_palindrome(i*j):
            list_palindrome.append(i*j)
```

[3]:
```
# The final result is the largest element of the list
show(sorted(list_palindrome)[-1])
```

906609