Problem 4. 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.

Programming Knowledge required: How to write nested for loops. How to check a number is a palindrome

Solution Outline: This is an implementation problem where you are needed to find two *three* digit numbers, whose product is a palindrome. The smallest three digit number is 100, and the largest is 999. We initialize the variable `max_palin_prod` to 0, then we run nested for loop, calculating product of two numbers and checking if it is a palindrome. If it is then we update the `max_palin_prod`. Finally, `max_palin_prod` will contain the final answer.

Python Solution

```python
def reverse(n):
    ret = 0
    while n:
        ret = ret * 10 + n % 10
        n //= 10
    return ret


def check_palindrome(n):
    rev_n = reverse(n)
    return n == rev_n


max_palin_prod = 0

for i in range(100, 1000):
    for j in range(100, 1000):
        prod = i * j
        if check_palindrome(prod):
            max_palin_prod = max(max_palin_prod, prod)

print(max_palin_prod)
```