2020 Numerical Analysis Hw #1

1. Write a Fortran program that computes all the palindromic prime numbers less than 10,000. A palindromic number is, for ex, 11, 131, 323, that becomes equal read from backwards. A palindromic prime number starts from 11. For that first, you have to find prime numbers k, and test whether k is palindromic.

2. Write a Fortran function that computes $\|A\|_1$ norm.

$$\|A\|_1 = \max_{1 \leqq j \leqq n} \sum_{i=1}^{m} |A_{ij}|$$

It is assumed that A is a 2-dimensional matrix. The function header should be

```
real*8 function A1norm(A, M)
real*8 A(M, *)
```

3. Using Taylor series expansion for cos(x),

cos(x) = $1 - x^2/2 + x^4/4! - x^6/6! \ldots.$

compute cos(0.5) up to 7 decimal digits. In this case for 7 decimal digits terminate if the absolute value of the term is less that 10**(-7).