2020 Numerical Analysis HW #1

소프트웨어학부

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1. 소스코드

```
1    PROGRAM palindrome_prime
2        implicit none
3        integer :: ans, temp, tf
4        real :: n = 11, i
5        Write(*,*) 'Palindromic Prime Number is ..'
6        prime : Do While(n <= 10000)
7            tf = 0
8            i = 2
9            Do While(i <= sqrt(n))
10               IF(MOD(n, i) == 0) Then
11                   tf = 1
12                   Exit
13               End If
14               i = i + 1
15           END Do
16           IF(tf == 0) Then
17               temp = int(n)
18               ans = 0
19               palin : Do While(temp > 0)
20                   ans = ans * 10
21                   ans = ans + MOD(temp,10)
22                   temp = temp / 10
23               END Do palin
24               if(n == ans) Write(*,*) int(n)
25           END IF
26           n = n + 1
27       END Do prime
28   END PROGRAM palindrome_prime
```

실행 결과

```
 yerim □ ~/Downloads/2020 수치해석/HW #1□
❯ gfortran pb1.f90
 yerim □ ~/Downloads/2020 수치해석/HW #1□
❯ ./a.out
 Palindromic Prime Number is ..
          11
         101
         131
         151
         181
         191
         313
         353
         373
         383
         727
         757
         787
         797
         919
         929
 yerim □ ~/Downloads/2020 수치해석/HW #1□
❯
```

2. 소스코드

```
real*8 function A1norm(A, M, N)
    real*8 A(M, N)
    real*8 :: max = 0, sum = 0
    integer :: M, N, i = 0, j
    Do While(j < N)
        j = j + 1
        i = 0
        sum = 0
        Do While(i < M)
            i = i + 1
            sum = sum + abs(A(i,j))
        End do
        IF(sum > max) Then
            max = sum
        End If
    End do
    A1norm = max
    return
END function

program test
    implicit none
    real*8 A(3, 4), A1norm
    integer :: i, j, k=1
    do i = 1, 3
        do j = 1, 4
            A(i,j) = -1 * k
            k = k + 1
        end do
    end do
    print*, A1norm(A, 3, 4)
end program
```

실행 결과

```
 yerim  ~/Downloads/2020 수치해석/HW #1
❯ gfortran pb2.f90
 yerim  ~/Downloads/2020 수치해석/HW #1
❯ ./a.out
   24.000000000000000
 yerim  ~/Downloads/2020 수치해석/HW #1
❯
```

3. 소스코드

```
real*8 function mycos(x)
    implicit none
    real*8 :: term, k, sign, cosx, x
    term = 1
    k = 0
    sign = 1
    cosx = 0

    Do while(abs(term) > real(10)**(-7))
        term = ((x ** k) / gamma(k + 1)) * sign
        sign = -1 * sign
        k = k + 2
        cosx = cosx + term
    End Do
    mycos = cosx
end function mycos

program test
    real*8 :: x = 0.5, mycos
    print*, mycos(x)
end program test
```

실행 결과

```
 yerim  ~/Downloads/2020 수치해석/HW #1
❯ gfortran pb3.f90
 yerim  ~/Downloads/2020 수치해석/HW #1
❯ ./a.out
  0.877582562158978l2
 yerim  ~/Downloads/2020 수치해석/HW #1
❯
```