

Practice of Basic Informatics - Homework 9

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1 Problem

Three equations:

$$\text{Sum} = \sum_{i=1}^5 x_i$$

$$\text{Arithmetic Mean} = \frac{1}{5} \sum_{i=1}^n x_i$$

$$\text{Geometric Mean} = \sqrt[5]{x_1 \times x_2 \times x_3 \times x_4 \times x_5}$$

FORTRAN Program to solve the problem:

```
program calculate_three_values

implicit none
REAL          :: thesum = 0, themultiple = 1, a
INTEGER       :: i, n
write(*,*) 'Please, input the number of sample n'
read(*,*) n

if(n < 2 .or. n > 50) then
    write(*,*) 'Sample data must be between 2 and 50'
    stop
end if

do i = 1, n
    write(*,*) 'Please, input the sample', i
    read(*,*) a
    thesum = thesum + a
    themultiple = themultiple * a
end do

write(*,*) 'Sum: ', thesum
write(*,*) 'Arithmetic Mean: ', thesum/dbble(n)
write(*,*) 'Geometric Mean: ', themultiple**(1/dbble(n))
end program calculate_three_values
```

2 Answers by the program

2.1 Set 1

This is the programming running for Set 1:

```
Please, input the number of sample n
4
Please, input the sample          1
1
Please, input the sample          2
5
Please, input the sample          3
10
Please, input the sample          4
11
Sum:      27.0000000
Arithmetic Mean:    6.7500000000000000
Geometric Mean:    4.8427346405845064
```

2.2 Set 2

This is the programming running for Set 1:

```
Please, input the number of sample n
9
Please, input the sample          1
57.9
Please, input the sample          2
655.7
Please, input the sample          3
44.3
Please, input the sample          4
1000.5
Please, input the sample          5
3.5
Please, input the sample          6
6.4
Please, input the sample          7
5.3
Please, input the sample          8
78.6
Please, input the sample          9
12.5
Sum:      1864.70007
Arithmetic Mean:    207.18889702690973
Geometric Mean:    38.734296233169147
```

2.3 Error Message

This is the programming running for Error Message:

```
Please, input the number of sample n  
1  
Sample data must be between 2 and 50
```

3 FORTRAN programming

3.1 What I have learned today

- Using loop and conditional in FORTRAN.

3.2 Difficult points

- I am trying to figure out how to write without space.