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:

```fortran
program calculate_three_values
write(*,*) 'Please, input a value for a1'
read(*,*) a1
write(*,*) 'Please, input a value for a2'
read(*,*) a2
write(*,*) 'Please, input a value for a3'
read(*,*) a3
write(*,*) 'Please, input a value for a4'
read(*,*) a4
write(*,*) 'Please, input a value for a5'
read(*,*) a5
write(*,*) 'Sum: ', (a1+ a2 + a3 + a4 + a5)
write(*,*) 'Arithmetic Mean: ', (a1+ a2 + a3 + a4 + a5)/5.0
write(*,*) 'Geometric Mean: ', (a1 * a2 * a3 * a4 * a5)**(1.0/5.0)
end program calculate_three_values
```

2 Answers by the program

2.1 Answers by the today's calculation

This is the programming running:

```
Please, input a value for a1
1.5
 Please, input a value for a2
```

```
2.3
 Please, input a value for a3
3.2
 Please, input a value for a4
1.2
 Please, input a value for a5
3.2
 Sum:    11.3999996
 Arithmetic Mean:    2.27999997
 Geometric Mean:    2.11572909
```

2.2 What I have learned today

- FORTRAN is a fast compiled language that has deep root in scientific computing community.

- Using IO of FORTRAN

2.3 Difficult points

- As FORTRAN is strong typing, it would require more work than popular weak typing language. On the other hand, it is much faster.

- It is hard to interpret a certain output sometimes. For example, why the above sum had output 11.3999996.