CSO Lab

April 26, 2023

1 Lab Exam

1.1 Problem 1

Given two numbers (N and M) perform basic arithmetic operations, i.e. add, subtract, divide, modulus- using switch case(S).

1.1.1 Input/Output Format

- Input: MNS
- Output: Result of chosen operation in integer format
- Switch case: '1' for $addition(M + N)$, '2' for $subtract(M - N)$, '3' for $divide(M/N)$ and '4' for $modulus(M\%N)$

1.2 Problem 2

Check if a given 64-bit number contains odd number of 1s in its bit representation.

1.2.1 Input/Output Format

- Input: N
- Output: "Y" if the input has odd number of 1s, else "N".

1.3 Problem 3

Given a number X, find the first natural number i whose factorial is divisible by X.

1.3.1 Input/Output Format

- Input: X
- Output: Integral value of the number whose factorial is to be taken.

1.4 Problem 4

Given two numbers M and N, find $GCD(M, N)$.

1.4.1 Input/Output Format

- Input: $MN \quad (0 < M, N < LONG\_MAX)$
- Output: Integral value of the GCD

1.5 Problem 5

Given a number N ,check if the sum of the factorial of digits is equal to N (special number).

1.5.1 Input/Output Format

- Input: N
- Output: "Y" if the input is a special number, else "N".

1.6 Problem 6

Compute the sum of first N numbers and return the modulus of sum with respect to K.

1.6.1 Input/Output Format

- Input: NK
- Output: Integral value of the modulus.

1.7 Problem 7

Matrix multiplication. Given two 2×2 matrices perform matrix multiplication and output the sum of the values of the 4 entries of the resulting matrix. a_{ij} implies i^{th} row and j^{th} column.

1.7.1 Input/Output Format

- Input: $a_{11}\ a_{12}\ a_{21}\ a_{22}\ b_{11}\ b_{12}\ b_{21}\ b_{22}$
- Output: Integral value of the sum.

1.8 Problem 8

Given 5 numbers output the minimum and maximum numbers.

1.8.1 Input/Output Format

- Input: a_1 a_2 a_3 a_4 a_5
- Output: $min \quad max$

1.9 Problem 9

Given a number N, output if it is prime or not.

1.9.1 Input/Output Format

- Input: N
- Output: "Y" if the input is a prime number, else "N".

1.10 Problem 9

Given a number N, output if it is prime or not.

1.10.1 Input/Output Format

- Input: N
- Output: "Y" if the input is a prime number, else "N".

1.11 Problem 10

Given two numbers H, W (height, width), output the area and perimeter of the rectangle.

1.11.1 Input/Output Format

- Input: H, W
- Output: $Area \ Perimeter$