Lab 2

pingala.iiit.ac.in/courses/cs0-101-m24/assessments/l2d/writeup

Lab 2 D

Problem 1: Secret Equation

Your friend believes he has found an equation that will solve all of lifes problem, it is of the form 1 - X^2/2! + X^4/4! - ...., he wants you to help him find the value of this equation for various values of X and n (n is the number of terms)

Input:

A single line containing two numbers X and n.

Output:

A single line containing value of the series upto n terms upto 2 decimal places.

Constraints:

- -30 ≤ x ≤ 30
- 1 ≤ n ≤ 100

Good luck!

Example:

Input:

```
5 2
```

Output:

```
-11.50
```

Input:

```
2 5
```

Output:

```
-0.47
```

Problem 2: Bob in a Restaurant

Bob and his friends went out for dinner, and while looking at the menu, Bob made a commitment to eat only exactly k items from a variety of dishes offered (N dishes in total). However, Bob is curious about the number of ways he can choose different combinations of dishes that total k items.

Help Bob determine the possible combinations by finding the number of ways to choose k items from n dishes.

Input Format:

A single line containing two space seperated integers `n,k`.

Output Format:

A single line containing one integer, the total combinations

Constraints:

$1 \leq n \leq 12$

Examples:

```
Input:
5 2
Output: 10

Input:
9 6
Output: 84
```

Problem 3: Arm-stronk Numbers

Bob recently learned about Armstrong numbers and found them fascinating. An Armstrong number for a given number of digits is an integer such that the sum of its own digits each raised to the power of the number of digits equals the number

itself.
For example, `153` is an Armstrong number because: 1^3 + 5^3 + 3^3 = 153

However, Bob is very ambitious and wants to explore further, He is curious about finding all Armstrong numbers within a given range [a, b] and also determining which of these Armstrong numbers has the highest digit sum.

Input Format:

A single line containing two integers `a,b`.

Output Format:

- Print all Armstrong numbers within the range [a, b], Followed by the a line showing the number with highest digit sum
- If there's no Armstrong values found, print `-1`
- Note: If there are multiple Armstrong numbers with the maximum digit sum, output the highest one in value

Constraints:

```
-1000000 <= n <= 1000000
```

Examples:

```
Input: 200 1500
Output:
370 371 407
407

Input: 900 9500
Output:
1634 8208 9474
9474

Input: 500 600
Output:
-1
```

Submission Guidelines

Do not rename any files given in the handout. Only write the code in the specified C files in the respective directories.